

Philosophy of Science
PHIL280, TR, 9:30am-10:45am, Candelaria 1085
UNC Syllabus – Spring 2024

INSTRUCTOR INFORMATION:

Instructor: Josh Brekel (He/Him/His)

Office: McKee 328

Email: josh.brekel@unco.edu

Office Hours: Tuesdays—11am-Noon, Thursdays—1pm-1:50pm, and by appointment.

REQUIRED TEXTS:

Strevens, Michael. *The Knowledge Machine: How Irrationality Created Modern Science*, 2020.

COURSE DESCRIPTION:

The University of Northern Colorado (UNC) course description for PHIL280 states that the course is “An introduction to philosophy of science focused on questions about its nature, methods and goals, e.g., What distinguishes science from pseudo-science? What constitutes the ‘scientific method?’ What is scientific objectivity?” Along the way, students will be exposed to issues relevant to history, logic, philosophy, and science itself. It is my hope that students will leave this course with a more nuanced understanding of the role science plays in their lives.

DIVERSITY & RESPECT OF OTHERS:

Philosophical inquiry requires diversity in perspectives. In this class, the perspective of each student matters, regardless of the student’s race, gender, sexual orientation, abilities, ancestry, and religious or political views. Recognize that as your instructor, part of my job is to put pressure on your opinions and help you consider the value in the opinions with which you disagree. You are welcome to fervently disagree with the opinions of others, but it is **never** acceptable to disrespect the *people* who hold those opinions. If something I or another student says offends you, then let me know so that we can work together to resolve the issue.

LEARNING OUTCOMES:

Students will read approximately 700 pages of philosophy of science, with the goal of learning what philosophy of science is as well as how it can be useful to the practice of science. During every class session this semester, we will carefully examine philosophical arguments and texts. By engaging in close-reading of complex works, students will hone their ability to retain information and gain understanding via reading. Throughout the semester, students will practice the craft of argumentative writing. Many of the course assignments give students the opportunity to refine their ability to write in a clear, charitable, and persuasive manner. By the end of the semester, students will not only have

a better understanding of the nature of philosophy of science—they will also possess a better understanding of the ways to clearly present and defend their own views on philosophy of science.

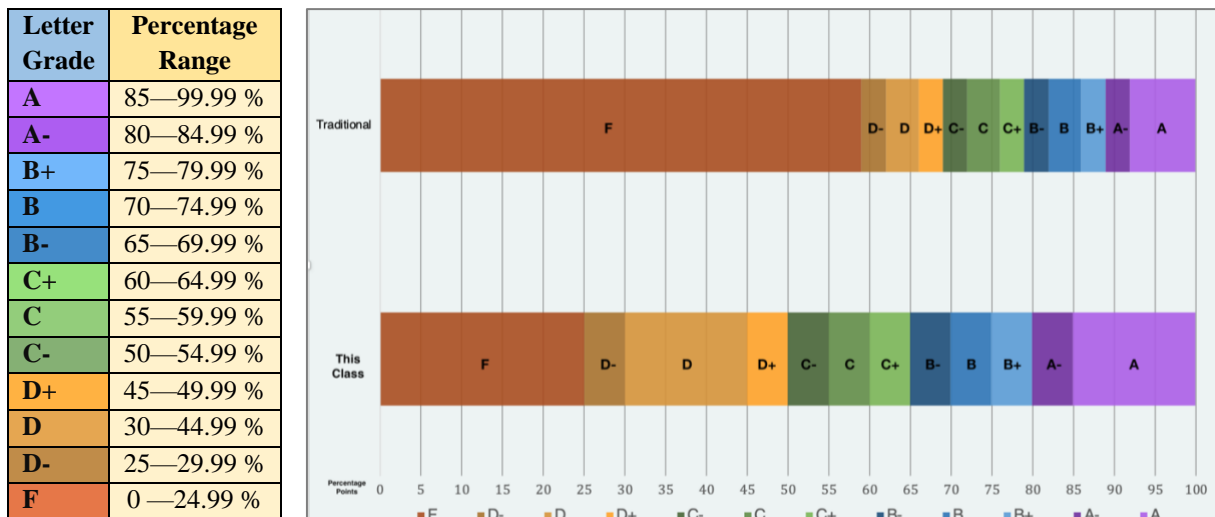
EXPECTATIONS:

Academic credits are expected to meet the federal credit hour definition of **2-3 hours** (minimum) of work outside of class **for every hour** of time spent in class. For a 3-credit course such as this, you should expect to be spending a minimum of 5-7 hours per week working on this course (outside of regular class time). To get the most out of that time, meet these basic class expectations:

- Carefully read the listed readings *prior* to class,
- Come to class and take handwritten notes on the material presented in class,
- Engage in class discussion, and
- Complete listed assignments by the listed due dates.

GRADING SCHEME:

This course uses letter grades corresponding to the grading scheme specified in the table to the bottom left. For the sake of clarity, I also created a graphic that contrasts this course’s grading scale with the grading scale you are (probably) most familiar with. I titled the grading scale that you are used to “Traditional” and I titled this course’s grading scale “This Class” in the chart below.



For the final overall course grade, the instructor will calculate each student’s average letter grade weighted by the assignments listed in Course Assignments section. Then, the instructor will report the nearest allowed letter grade to the UNC Registrar’s Office. Note that the University only records letter grades for use on Transcripts and GPA calculations. For that reason, receiving a 67.5% in this course (a B-) is no different (from the perspective of the University) from receiving an 81% (a B-) in a course that uses a “Traditional” grading scale. You should *not* infer your letter grade from the

percentage you see in Canvas—doing so will mislead you. Canvas will also display letter grades based on the grading scale above. Rely on ***the letter grade*** to determine your standing in the course.

Note that most philosophical work is best graded using qualitative assessment of the work. For that reason, percentages are not typically utilized while grading—instead, the percentages are there to provide a mechanism for translating a qualitative assessment of work (i.e., the letter grade) into a quantitative assessment of work (i.e., the percentage grade). Unfortunately, Canvas requires instructors to use points/percentages to some degree, but note that I typically assess work by assigning letter grades.

In this class, papers will be graded using a Satisfactory/Unsatisfactory scheme that assesses two dimensions of the paper: the quality of the Philosophical Writing, and the understanding of the Philosophical Content. Satisfactory thresholds are set to what I would normally consider a “B+” grade. If a paper receives Satisfactory marks on both dimensions, then the student earned full credit (A, 100%) for that paper. If a paper receives a Satisfactory mark on one dimension and an Unsatisfactory mark on the other dimension, then the student earned half credit (C-, 50%) for the paper. If a paper receives Unsatisfactory marks on both dimensions, then the student earned no credit (F, 0%) for the paper. Students can revise their paper after the initial round of grading and then resubmit the paper once for regrading prior to that assignment’s R&R deadline. Students should plan on revising their papers to try to earn Satisfactory marks on both dimensions.

ACADEMIC INTEGRITY:

Academic integrity is taken seriously in this course. It is expected that students will maintain a high standard of academic integrity—cheating will not be tolerated. This course will adhere to the UNC Academic Integrity Policy and the BEAR Code found in Section 3-2-211 of the UNC Student Code of Conduct. Unless written permission is given by the instructor, the use of ChatGPT, Google Bard, or other Large-Language Models (LLM) is strictly prohibited and will be treated as academic misconduct. At an absolute minimum, instances of academic misconduct will result in a substantial grade penalty on the assignment. Often, academic misconduct provides grounds for a failing grade in the course. Talk to the instructor if you have questions about academic integrity.

COURSE ASSIGNMENTS:

All course assignments are outlined in the table below.

Category	Description	Overall Course Grade Allocation
Skill-Building Assignments	<p>3 low-stakes assignments designed to build philosophical skills. Each skill-building assignment (SBA) is worth 3% of the overall course grade.</p> <p>1 reflection assignment worth 1% of the overall course grade.</p>	10%
Reading Questions	<p>Prior to each class with an assigned reading, students are expected to complete a Reading Question Assignment (see Canvas for detailed RQA instructions). Reading Question Assignments will be collected 15-16 times randomly throughout the semester.</p> <p>Individual Reading Question Assignment Grading Criteria:</p> <ul style="list-style-type: none"> • ⊗ : No submission. • ✓ : Inadequate submission indicating a lack of effort or failure to engage with and/or complete the reading. • ✓✓ : Satisfactory submission demonstrating thoughtful engagement with the material. <p>Semester-long RQA performance is assessed out of 200 points:</p> <ul style="list-style-type: none"> • 0-15 ✓s: 0 points (Non-existent engagement) • 16-17 ✓s: 50 points (Poor reading engagement) • 18-20 ✓s: 100 points (Minimal reading engagement) • 21-23 ✓s: 150 points (Satisfactory engagement) • 24+ ✓s: 200 points (High-quality engagement) <p>Reading Question Assignments are an integral part of your overall course grade. <i>Be prepared for the ROAs to be collected at the beginning of any given class day.</i></p>	20%
Papers	<p>2 short papers. Each paper is worth 20% of the overall course grade. The paper topics will be given out approximately two weeks before the paper's due date. Papers focus on clear and accurate presentation of class readings.</p> <p>Papers will be graded using Satisfactory/Unsatisfactory marks for two dimensions: Philosophical Writing and Philosophical Content. Students will have the opportunity to revise and resubmit each paper once in an attempt to earn a better grade.</p>	40%
Exams	<p>One closed-book midterm exam which will count for 15% of the overall course grade. One closed-book, cumulative final exam*, which will count for 15% of the overall course grade.</p> <p>There is a chance that there will be small extra credit opportunities on the exam(s). All extra credit opportunities are up to the instructor's discretion.</p> <p>*In the event of a university closure on exam day, there will be a "take-home" exam in place of the final.</p>	30%

With the exception of the randomly assigned Reading Question Assignments, all other assignment due dates are provided in the table below:

Assignment	Due Date
SBA #1 (Syllabus Quiz)	1/16/24
SBA #2 (Paper Writing)	1/31/24
Paper #1	2/3/24
Paper #1 R&R Deadline	2/27/24
Midterm Exam	3/7/24
SBA #3 (Paper Writing)	3/26/24
Paper #2	4/2/24
Paper #2 R&R Deadline	4/25/24
Reflection Assignment	4/26/24
Final Exam	4/30/24, 8:00am-10:30am

LATE-WORK AND EXTENSIONS POLICIES:

Except for Reading Question Assignments, all late work will be subject to penalty of **10% per day late** for 10 days after the assignment is due. After **10 calendar days**, late assignments will no longer be accepted. Reading Question Assignments will not be accepted late. No assignments will be accepted after the Wednesday of Finals Week.

Assignment extensions will not be granted unless: The student provides official documentation (from the university or a legitimate medical institution) that sufficiently explains why the assignment must be turned in late. Note that pictures of at-home COVID-19 (or similar) diagnostic tests **do not** count as official documentation. Extensions can be granted after the assignment due date (within reason), provided that the student offers sufficient justification for the lack of prior notice.

There are **no exceptions** to these policies. This course uses a generous grading scheme and late policy in recognition of the difficulty of balancing college with other aspects of life. However, success in college requires dedication and commitment from students. It is the student's responsibility to take the initiative to make-up missed work in a timely fashion.

ATTENDANCE POLICY:

Attendance is **expected** for this class. You must attend class to submit any Reading Question Assignments or to take in-class exams. **What to do if you miss class:** do not email the instructor. If you are worried about what you missed, please contact a classmate for assistance.

ARTIFICIAL INTELLIGENCE & PAPER ASSIGNMENTS:

For **paper assignments**, a genuine honor pledge must be included in the student's submission. The honor pledge must specify whether generative artificial intelligence (AI; e.g., large-language models such as ChatGPT) was used in the process of writing the paper.

- If a student chooses to use AI on their paper (strongly not advised), then the student must obtain **approval** from the instructor **in writing** before submitting the paper. In this case, the student must also provide all AI conversations to demonstrate that they used the tool in the proper manner.
- If a student chooses not to use AI on their paper (strongly advised), then the student should specify in their honor pledge that AI was not used in the writing process.

If a student's paper does not include an honor pledge, then **the paper will not be graded until one is provided**. If a student's honor pledge is provided late, then that student's paper is considered late and thus will receive the late penalty specified in the syllabus. If a student's honor pledge (on a paper assignment) fails to mention AI, then that paper submission will receive a full letter-grade penalty. If a student used AI and failed to follow the steps above, the student will receive an F in the course. The instructor reserves the right to use oral exams to test whether students used AI.

TENTATIVE READING AND CLASS MEETING SCHEDULE:

This is an extremely tentative plan for the semester. As the semester proceeds, it may become necessary to check Canvas for updates to the reading schedule. It is the student's responsibility to ensure that they are staying up-to-date with the course readings and assignments.

Week	Date	Class Meeting	Readings (authors bolded)
1	1/9/24	No Class!	No Class—Watch Syllabus Video on Canvas.
	1/11/24	1	Strevens , "Introduction"
2	1/16/24	2	Aristotle , <i>Physics</i> , Book 2 selections
	1/18/24	3	Descartes , "Discourse on Method" parts 1 & 2
3	1/23/24	4	Peirce , "The Fixation of Belief"
	1/25/24	5	Hume , "The Nature of Cause and Effect"
4	1/30/24	6	Hume , "The Problem of Induction"
	2/1/24	7	Popper , "The Problem of Induction", and Popper , "Science: Conjectures and Refutations" (Sections I-III)
5	2/6/24	8	Kuhn , "Logic of Discovery or Psychology of Research?" & Salmon , "Rational Prediction"
	2/8/24	9	Kuhn , "The Nature and Necessity of Scientific Revolutions"
6	2/13/24	10	Kuhn , "Objectivity, Value Judgment, and Theory Choice"

	2/15/24	11	Strevens , Chapters 1 and 2
7	2/20/24	12	Chalmers , Chapter 10 & Strevens Chapter 3
	2/22/24	13	Strevens , Chapters 4 and 5
8	2/27/24	14	Strevens , Chapters 6 and 7
	2/29/24	15	Strevens , Chapters 8 and 9
9	3/5/24	16	Strevens , Chapters 10 and 11
	3/7/24	17	Midterm
10	3/12/24		Spring Break
	3/14/24		Spring Break
11	3/19/24	18	Strevens , Chapters 12-14
	3/21/24	19	Goodman , "The New Riddle of Induction"
12	3/26/24	20	Hempel , "The Raven Paradox"
	3/28/24	21	Godfrey-Smith , "Bayesianism and Modern Theories of Evidence"
13	4/2/24	22	McGrayne , "Bayes Goes to War" from <i>The Theory That Would Not Die</i>
	4/4/24	23	Salmon , "Rationality and Objectivity in Science or Tom Kuhn Meets Tom Bayes"
14	4/9/24	24	Mayo , "A Critique of Salmon's Bayesian Way"
	4/11/24	25	Longino , "Values and Objectivity"
15	4/16/24	26	Okruhlik , "Gender and the Biological Sciences"
	4/18/24	27	Douglas , "Science and Values" and Brown , "The Descriptive, the Normative, and the Entanglement of Values in Science"
16	4/23/24	28	Douglas , "Science and Democracy" and Wilholt , "Expertise and Accountability"
	4/25/24	29	Douglas , "Science and Communication" and Schliesser , "Science's Image: Bringing Douglas into Focus"
Finals Week	4/30/24	30	Final Exam