PHIL 339 Intro Phil of Science, UO Philosophy Dept, Winter 2018

PHIL 339 Intro Phil of Science > 2 cr.

Examines theories of scientific practice, rationality, objectivity, values in science, and the role of science in society.

Grading Options: Optional for all students

Instructor: Zack N
Office: 239 Susan Campbell Hall
Phone: (541) 346-1547

Office Hours: 2-4 THURS and by Appointment

Prereq/Comments: Prereq: one philosophy course.

Web-related Resources: This course has a waitlist which can only be accessed via one of the discussion sections associated with the lecture (not via the lecture itself). For more information, see How to Use Wait-listing on DuckWeb

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Associated Sections

- Dis 26527 30 1100-1150 f tba WL*
- Dis 26528 30 1200-1250 f tba

*Note: This is a 3-hr course but there will be breaks and variations in subject matter to keep it interesting.

OVERVIEW/DESCRIPTION (See also APPENDICES A-D AFTER SYLLABUS)

Philosophy of Science is unique to philosophy. It raises questions about facts, theories, reality, explanation, and truth not often addressed by scientists or other humanistic scholars. This course will provide the basics of Philosophy of Science with concrete examples as science now applies to contemporary subjects such as Climate Change, Feminism, and Race. Students will have an opportunity to choose their own branches of inquiry for end-of-term reports. Work will consist of reading, discussion, and 4 3-page papers. Each week will involve a reading about core philosophy of science issues. There will be 4 main topics: The line between science and pseudo-science; climate change; feminism; race. Also, specific subjects of interests to students will form end-of-term reports. Short videos, some still TBA will be regularly shown.

Required texts (on sale at the DUCKSTORE and on reserve at Knight)


3 books (on sale at Duckstore and on reserve at Knight Library)


Lecture notes with key ideas will be regularly posted on Canvas. Please print these out and bring them to class to add your own notes. Also, please bring your required texts to class for the days for which they are assigned. All readings attached to a date are to be read by students before the class meets on that date.

**Course Objectives**

- Acquire a familiarity with contemporary key ideas in the philosophical subfield of Philosophy of Science.
- Critically engage these ideas and representative scholars by using philosophical methods of analysis, as well as contemporary scientific examples.
- Contrast and compare scientific treatments of contemporary scientific examples, using the methods and principles of philosophy of science.

**Learning Outcomes**

- Knowledge of an important philosophical tradition and some of its paradigm examples and subjects.
- Ability to criticize and defend claims to science.
- Ability to understand how science influences culture and vice versa.
- Literacy/competency about science if your major is not in STEM and an understanding of a philosophical approach if it is.

**Requirements (See Appendix, A-D)**

**GRADE Components** 4 three-page papers @ 15 points each (60%) Informed class participation (you have done the readings before class) (10%) and attendance at lecture and discussion (15%) Oral or Written Presentation on Selected material (15%) ***Please see paper assignments within syllabus.


**Absences** - You are allowed 1 free absence from lecture, which does not require a written excuse or advance notification, unless you are missing a due date for a paper, and, 1 free absence from section. ATTENDANCE WILL BE TAKEN FOR ALL CLASSES. Absences over these amounts require documentation to be excused. Otherwise, each unexcused absence from lecture or section will detract 2 points from your final grade for a lecture absence and 1 point from your final grade for a section absence. Lateness – if you expect to be late or leave early, please make arrangements beforehand with your GE.

**OBJECTIVE GRADING OPTION** – If you get full credit for attendance and participation and your total points on all papers is 35 (out of 60), you will automatically get a B for the course. You have to have full credit for attendance and participation, including participation in the final reports, to take this option. If you do not have full credit for attendance and participation, or you do and your paper total is more or less than 35, you will be graded in the usual way. If you do not take this option, your final grade will be computed in the usual way.

**Class atmosphere** – mutual respect, no electronic devices (unless related to a disability or course reading), community building in the classroom.
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Late papers will be accepted without penalty if you have the kind of documentation that would count as an excused absence. Otherwise, late papers will lose a third of a letter grade for each class day they are handed in late. E.g. if a paper due on Friday (which they all are) is handed in on Monday, a B grade will be lowered to a B-. If it is handed in the following Tuesday, to a C+ and on the next Thursday, to a C. The maximum penalty for late papers is a deduction of 2 letter grades. If you fall behind, please stay in touch with your GE about plans to catch up.

SCHEDULE OF READINGS and Papers

Week 1

Introduction to Philosophy of Science. Overview of Distinction between Science and Pseudo Science

READINGS IN PACKET

1 | Science and Pseudoscience

Introduction
Karl Popper, Science: Conjectures and Refutations
Thomas S. Kuhn, Logic of Discovery or Psychology of Research?
Imre Lakatos, Science and Pseudoscience
Paul R. Thagard, Why Astrology Is a Pseudoscience
Michael Ruse, Creation-Science Is Not Science
Larry Laudan, Commentary: Science at the Bar—Causes for Concern
Commentary

Week 2

1. Okasha, Chap. 1, “What is Science?” Note, we will in addition to other assignments, read a chapter a week from over weeks 2-8, from Samir Okasha, Philosophy of Science: A Very Short Introduction, Oxford University Press, 2016.
2. continuation of course packet articles.

Week 3

Paper no. 1. DUE before 2PM on Friday, Jan 26. Write an essay about whether or not Astrology or Creation-Science is a pseudo-science. (you can take either side, but you do have to focus on one.)
1. Okasha, Chap. 2. “Scientific Inference”
2. Climate change, Hoffman, pp. 1-48

Video
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Week 4  Hand in the project selected for group presentations from pp. 6-7, below.
1. Okasha, Chap.3. “Explanation in Science.”
2. Climate Change
Hoffman, pp. 49-90
Video

Week 5
Paper no. 2. DUE before 2PM on Friday, Feb. 9. Write an essay about how cultural factors in your life have affected your view of climate change. Make sure to refer to Hoffman’s book, with citations.
1. Okasha, Chap. 4. “Realism and Anti-Realism”
2. Feminism and Philosophy of Science
   From course packet, Kathleen Okruhlik, “Gender and the Biological Sciences”
   Posted on canvas, Dana Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.”

Week 6
1. Okasha, Chap. 5. “Scientific Change and Scientific Revolutions.”
2. Feminism and Philosophy of Science, Rosalind Franklin and the discovery of DNA:
   Watson and Crick – The Discovery of DNA
   Video
   “How I discovered DNA,” –James Watson
   https://www.youtube.com/watch?v=RvdxGDJogtA
   Guardian article, M. Cobb and other bio info (on canvas)
   Scientific American article and podcasts (canvas)

Week 7 – additional videos TBA FOR WEEKS 7 AND 8
PAPER no. 3 Due before 2PM, Friday, Feb. 23. Write a 900-1000 word essay explaining the facts of Rosalind Franklin’s contribution to the discovery of DNA and whether you think she was or was not given insufficient credit based on the feminist analyses from Week 6. Refer to those analyses in your assessment.
1. Okasha, Chap. 6. “Philosophical Problems in physics, biology, and psychology.”
2. Nina G. Yoblonski, Living Color: The Biological and Social Meaning of Skin Color, first half. HOMEWORK before reading Yoblonski’s book. Please write and keep for your own records and answer to this question. What is the scientific/biological basis for racial differences? This can be only a paragraph and will be collected at the beginning of class.

Week 8
1. Okasha, Chap. 7. “Science and its Critics”
**Week 9**

Paper no. 4. Due Friday, before 2PM, March 9. Begin your paper with what you wrote for homework for Week 7, before reading Yoblonski. Title it. Then, in a 900 word essay explain how Yoblonski’s findings do or do not support that view you began with.

**Student Reports**

**Week 10**

Student Reports – Please note that this part of the course is an important part of the course objectives and learning outcomes listed on p. 3, above, and that attendance will be taken and participation noted.

5. Selections to be individually acquired by students of material from class projects/presentations listed below.

SELECT A BOOK OR MOVIE, OR IN THE CASE OF 4, BOTH, AND EXPLAIN WHAT ASPECT OF SCIENTIFIC METHODS THE SUBJECT EITHER EXEMPLIFIES OR DEFIES. THESE ARE TO BE GROUP/TEAM PRESENTATIONS, WITH NO MORE THAN A TBA NUMBER OF PEOPLE IN EACH GROUP. YOUR SUBJECT WITH NAMES IS DUE BEFORE CLASS ON WEEK 4. (IF YOU CANNOT FORM OR JOIN A GROUP, GROUPS WILL BE ASSIGNED.) THIS IS AN ORAL PRESENTATION. NOT EVERYONE IN THE GROUP NEEDS TO SPEAK BUT ALL NEED TO PARTICIPATE. 10 MINUTES FOR EACH GROUP PRESENTATION, PLUS TIME FOR DISCUSSION—10 POINTS OUT OF THE FINAL GRADE. IF YOU CANNOT/DO NOT WISH TO PARTICIPATE IN THE ORAL REPORT ON THE LAST 2 DAYS OF CLASS, PLEASE SUBMIT A 3-PAGE PAPER, ON THE SUBJECT, NO LATER THAN THE BEGINNING OF THE LAST DAY OF CLASS. IF YOU DO PARTICIPATE EITHER BY SPEAKING OR WORKING WITH THOSE IN YOUR GROUP WHO WILL SPEAK, YOU DO NOT HAVE TO SUBMIT ANY WRITTEN MATERIAL. ATTENDANCE IS REQUIRED OF ALL STUDENTS ON BOTH DAYS FOR PRESENTATIONS.

1. *Hidden Figures*, account of African American female mathematicians who worked at the National Aeronautics and Space Administration (NASA) during the Space Race.

   Book by Margot Lee Shetterly,

   2016 movie, Meli and Allison Shroeder, directors.

2. *The Double Helix*, account of James Watson and Francis Crick’s discovery of the model of DNA.

   book by James D. Watson

   1986, British made-for-television movie.

3. *Galileo*, early empiricist during the scientific revolution.
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1975 movie, Galileo, directed by Joseph Losey

4. **Something the Lord Made**, clinical work on modern heart surgery by African American and white surgeons, Vivien Thomas and Alfred Blalock. For this option, you are required to read both the article and watch the movie.

   Article – *Washingtonian magazine* "Like Something the Lord Made" by Katie McCabe (posted on canvas)

   Movie – 2004 HBO film, also on youtube. Something the Lord Made is a 2004 film about the black cardiac pioneer Vivien Thomas and his partnership with white surgeon Alfred Blalock, the world famous "Blue Baby doctor."

5. **Albert Einstein**, Books – publications on Einstein’s theory of relativity are too numerous to cite. If this subject interests you, find one or two and list sources in your paper.

   Movie, *Albert Einstein’s Big Idea*, NovaHD [https://www.youtube.com/watch?v=B4vDGTYTCLo](https://www.youtube.com/watch?v=B4vDGTYTCLo)


   Film/youtube, [https://www.youtube.com/watch?v=MtkQpR0acAQ](https://www.youtube.com/watch?v=MtkQpR0acAQ)

7. Articles and a movie or a scholarly book on addiction – check with GE or Prof.

8. **Select a biography of a famous scientific figure.**

9. **Do research involving articles, videos/movies, books on pandemics, especially involving the species barrier.**

10. **Skloot, Rebecca (2010), The Immortal Life of Henrietta Lacks, New York City:** Random House, There was also an HBO movie, with Oprah Winfrey. If you choose the movie, it needs to be supported by scholarly material that you will find. See also the family disputes after the publicity from the book and movie.

APPENDICES, A-D

**A. Disability**
Philosophy Department faculty and instructors do their best to comply with Disability Services policy and instructions, as follows. Please see no. 4 in particular. At a minimum, Instructors have the responsibility to ensure Full access for students with disabilities by responding to a student's need or request for accommodations as outlined below.
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1. If a student presents you with a notification letter from DS:
2. You have the responsibility to cooperate with DS in providing authorized accommodations in a reasonable and timely manner. The specific accommodation determines the amount of involvement required. Refer to the section below entitled "Examples of Shared Responsibility" for a description of your involvement in providing the most common accommodations.

3. If a student does not present you with a notification letter from DS:
4. If a student requests an accommodation without having presented you with the notification letter from DS, please refer the student to DS. If the student is already on file with DS, a request form just needs to be filled out. If the student is new to DS, the process to review documentation and meet with the student may take some time. If the disability is obvious and the accommodation appears appropriate, you may need to provide the accommodation while awaiting official notification. If you are unsure, please call DS for assistance.

5. If a student discloses a disability to you:
6. Ask to see the notification letter from DS. This letter describes the accommodations that the institution is legally mandated to provide. During an office hour or at another convenient time, discuss the letter and the accommodations with the student. Students MUST present a notification letter from DS to receive testing accommodations. If the student does not have a letter, please refer the student to DS. Appropriate accommodations will be determined after reviewing documentation of the disability and the student will be issued the notification letter.

7. If you have a question about the appropriateness of an accommodation:
8. Questions about the appropriateness of certain accommodations should be directed to the Director of DS.

9. If a disability is suspected:
10. Share your concerns with the student regarding his or her performance. If the concern seems disability-related, ask if he or she has ever received assistance for a disability. If it seems appropriate, refer the student to DS for further discussion and guidance. It is the student's decision whether or not to self-identify to DS; however, to receive accommodations, disclosure to DS with proper documentation is required.

B. GRADES: U of O Philosophy Department Policy

What kind of paper deserves an “A,” “B,” etc.? The following reflects the general standards of the Philosophy Department at the University of Oregon.

A = excellent. No mistakes, well-written, and distinctive in some way or other.

B = good. No significant mistakes, well-written, but not distinctive in any way.

C = OK. Some errors, but a basic grasp of the material.

D = poor. Several errors. A tenuous grasp of the material.

F = failing. Problematic on all fronts indicating either no real grasp of the material or a complete lack of effort.

Please note: what counts as “excellent” or “OK,” for example, depends in part upon the nature and level of the class in question.

Discussion forms an integral part of the course, and your performance will be graded on the basis of the quantity and quality of your participation. You should arrive prepared to discuss the material and course assignments.

C. Academic Honesty
The stiffest punishments possible will be sought for those who plagiarize, fabricate, or cheat. (The usual punishment is an “F” for the course.) The following offers examples of academic dishonesty.

**Plagiarism**  
Plagiarism is the inclusion of someone else's product, words, ideas, or data as one's own work. When a student submits work for credit that includes the product, words, ideas, or data of others, the source must be acknowledged by the use of complete, accurate, and specific references, such as footnotes. Expectations may vary slightly among disciplines. By placing one's name on work submitted for credit, the student certifies the originality of all work not otherwise identified by appropriate acknowledgements. On written assignments, if verbatim statements are included, the statements must be enclosed by quotation marks or set off from regular text as indented extracts.

*A student will avoid being charged with plagiarism if there is an acknowledgement of indebtedness. Indebtedness must be acknowledged whenever:*

1. one quotes another person's actual words or replicates all or part of another's product;
2. one uses another person's ideas, opinions, work, data, or theories, even if they are completely paraphrased in one's own words;
3. one borrows facts, statistics, or other illustrative materials—unless the information is common knowledge.

Unauthorized collaboration with others on papers or projects can inadvertently lead to a charge of plagiarism. If in doubt, consult the instructor or seek assistance from the staff of Academic Learning Services (68 PLC, 346-3226). In addition, it is plagiarism to submit as your own any academic exercise (for example, written work, printing, computer program, art or design work, musical composition, and choreography) prepared totally or in part by another.

Plagiarism also includes submitting work in which portions were substantially produced by someone acting as a tutor or editor.

**Fabrication**  
Fabrication is the intentional use of information that the author has invented when he or she states or implies otherwise, or the falsification of research or other findings with the intent to deceive. Examples include, but are not limited to:

1. citing information not taken from the source indicated;
2. listing sources in a reference not used in the academic exercise;
3. inventing data or source information for research or other academic exercises.

**Cheating**  
Cheating is an act of deception by which a student misrepresents or misleadingly demonstrates that he or she has mastered information on an academic exercise that he or she has not mastered, including the giving or receiving of unauthorized help in an academic exercise.

Examples include, but are not limited to:

1. copying from another student's paper, computer program, project, product, or performance;
2. collaborating without authority or allowing another student to copy one's work in a test situation;
3. resubmitting substantially the same work that was produced for another assignment without the knowledge and permission of the instructor;
4. writing a paper for someone else or permitting someone else to take a test for you.

**D. HOW TO WRITE GOOD PHILOSOPHY PAPERS**
Note: When you get your papers back, there will be comments. The letters in parentheses indicate what aspect of your writing might need improvement and you may see them the second or third time this aspect still needs work.

**CLARITY (CL)** Since this is a philosophy paper, make sure that you define your terms and give reasons for claims. All of your ideas should be explicitly stated and not left to the reader to infer. One difference between philosophy and literature is that philosophers spell everything out, while creative writers depend on the imagination of the reader.

**PRECISION (P)** Try not to make vague claims or general statements about the ideas in the readings. Be accurate in reporting the views of others and exact in stating your own.

**ORGANIZATION (O)** Organize the ideas in the paper into a few coherent paragraphs. Summarize the main claims of your paper in 2 or 3 sentences that you write *after* you write the paper, but put at the very beginning of the paper. This is an appropriate introductory paragraph for a philosophy paper, not a filler or a fluffy beginning.

**WRITING MECHANICS (WR)** The mechanics include spelling, punctuation, syntax and complete sentence structure. Make sure that you already have these down or consult a source if you don’t. Highly recommended is Strunk and White’s *The Elements of Style*. This is available on line at www.bartleby.com/141/

**ANALYSIS (A)** Analyze claims. This means breaking your ideas down into their simpler components, and defining them. Do not start with or rely on dictionary definitions, but use your own words and cite the dictionary only if necessary. Dictionary definitions report usage, whereas a philosophical definition may be critical of current usage or find it vague. Examine the logical consequences of your claims and the claims of others.

**CITATION (C)** Cite the required readings this way in your text: (author’s last name, page no.) As well, provide a list of citations at the end of the paper. It is important to do this to show you have done the required reading and are not just recycling notes from class or discussion group lectures. If you do use material from lecture, please make sure to cite that as well.

**QUOTATIONS (Q)** Quotations should be used to illustrate a claim that you are making about an author. They are not a substitute for explaining the author’s thought in your own words. A good strategy is to state the author’s ideas in your own words first and then “prove” your interpretation with a short quote.

**DIRECT (D)** Be direct. Make sure that you give a direct and focused answer to the question for the paper. This is the most important requirement for papers to reach the B and A range.