

Philosophy 3330: Philosophy of Science Spring 2016

Basic Information

Instructor: Joel Velasco

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Class meets T/TH 9:30-10:50 in Phil 150

Office hours: T/W/TH 2:00 – 3:00 and by appointment

Course Description

Within the last several centuries, scientific knowledge and the technology it has made possible have drastically altered our world. Yet many unresolved questions remain about how scientific knowledge is produced, what makes science different from other ways of learning about things (if there are any), and exactly what science says about what the world is really like. In this class, we will reflect on the nature of science and how it does and should affect our lives.

During the course we will examine such questions as whether there is a sharp dividing line between science and non-science (a “demarcation criterion”) and we will carefully consider the relationships between science and religion, between science and ethics, between science and the humanities, and between science, business, and politics. Finally, we will examine the role that science plays in a democratic society such as ours and how we as citizens should think about funding and directing scientific research.

In addition to introducing students to the philosophy of science and its relevance to contemporary life, the course also aims to develop students’ ability to think and write clearly about complex ideas and arguments.

Class Participation

Philosophy is a communal enterprise: the ability to make valuable oral contributions to philosophical discussions can be as important as the ability to write well. Moreover, since the written assignments will force the students to think carefully about very specific topics, participation in class discussion is an important way for students to demonstrate a broader competence with the material than is possible in the papers alone. Evaluation will be based upon the quality, not the quantity, of comments made during class. Students are encouraged to continue class discussions after the class is over, by meeting with me in person, or continuing the discussion over e-mail with me. Of course discussion with each other outside of class is strongly encouraged as well. Students who for any reason have difficulty speaking up in class are especially encouraged to (and must!) pursue these options. It should go without saying that attendance is an absolutely essential component of class participation.

Academic Integrity:

Cheating and plagiarism are, of course, prohibited in this class just as they are in all university classes. They will be taken particularly seriously in this class, and any cases that may arise will be treated in a manner consistent with University policy. These two violations of academic integrity are each defined in the section of the Texas Tech online official publications titled “Academic Integrity.” Plagiarism is there described as follows: “Plagiarism’ includes, but is not limited to, the appropriation of, buying, receiving as a gift, or obtaining by any means material that is attributable in whole or in part to another source, including words, ideas, illustrations, structure, computer code, other expression and media, and presenting that material as one’s own academic work being offered for credit.” <http://www.depts.ttu.edu/studentconduct/academicinteg.php>

You can find excellent explanations of what specifically constitutes plagiarism as opposed to proper citation, and also tutorials on how to avoid plagiarism at the following websites: <http://www.dartmouth.edu/~writing/sources/>

<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml> Note: If, at any time, you are at all unclear about what counts as plagiarism, or about whether you are properly citing sources in any of your written work, please just come by and ask me about it. You do not want to be confused or careless about this serious matter.

Grades

The grades will be based on class participation, short essays, a midterm exam, and a final essay.

- Weekly, ‘One-Minute’ Papers (10%): At the end of class on most Thursdays, we will do ‘one-minute’ papers individually. This involves answering two questions: (1) What is the most significant thing you learned this week?; and, (2) What question is uppermost in your mind after the previous two class discussions? These short assignments will help you isolate confusions about the course material and guide my instruction in subsequent class presentations. Each ‘one-minute’ paper (11 total) is worth 1% of your grade and you may miss one without penalty (no extra credit given). Grading is according to a ‘✓’ (done) or ‘Ø’ (not done) rubric. (This assignment must be completed in class, no exceptions).
- Short Essays (30%): Periodically throughout the semester (see due dates marked on the course schedule), you will be asked to write short essays (approximately 1 double-spaced page and absolutely not more than 2 double-spaced pages). These short essays are intended to stimulate you to think independently and creatively about the readings for that week. There will be 6 think pieces in all, and I will drop your lowest think piece score.
- In Class Exams (30% x2): There will be one midterm examination on Thursday, March 10th (before spring break) and one final exam (during the scheduled final exam time slot – 7:30 am Friday, May 13th). Each test will be divided into two parts, short answer and essay. The short answer section will test knowledge of important concepts, often by either providing an example to which you must apply the concept or by asking you to supply an example yourself that illustrates the concept. Questions in the essay portion of the exam will test your ability to reconstruct chains of philosophical argumentation, for example, the back-and-

forth between two contrasting views. The essay questions may also ask you critically assess ideas or arguments.

Rough Grading Scale:

92—100% → A

90—92% → A-

88—90% → B+

82—88% → B

80—82% → B-

78—80% → C+

70—78% → C

65—70% → C-

50—65% → D

0—49% → F

Late Paper Policy

In the absence of a documented excuse, I will subtract 5% per day from assignments submitted after the due date.

Religious holy days: a student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent for the observance of a religious holy day shall be allowed to take an exam or complete an assignment scheduled for that day within a reasonable time after the absence.

ADA Statement: Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

Rough Course Schedule (subject to change)

All readings and assignments will be posted on the class website at

<http://joelvelasco.net/teaching/3330>

Weeks 1, 2: Introduction and the Nature of Science

Karl Popper, “Conjectures and Refutations”

Stephen Jay Gould, NOMA defined and defended

Richard Dawkins, You can’t have it both ways: Irreconcilable differences

Weeks 3-6: History of Science episodes

The Copernican Revolution

The Darwinian Revolution

Week 7: More science and religion

Alvin Plantinga, “When Faith and Reason Clash: Evolution and the Bible”

Philip Kitcher, from *Living With Darwin: Evolution, Design, and the Future of Faith*

Weeks 8-9: Science and Ethics

Philippa Levine and Alison Bashford, “Introduction: Eugenics and the Modern World”

Rob Wilson, “Characterizing Eugenics”

Philip Kitcher, from *The Lives to Come*

E. O. Wilson and Michael Ruse, Moral Philosophy as Applied Science

Philip Kitcher, Four Ways of ‘Biologicizing’ Ethics”

Weeks 10-12: Science and Values, Politics, and Profit

Kristin Shrader-Frechette, from *Tainted: How Philosophy of Science can expose bad science*

Thomas McGarity and Wendy Wagner, from *Bending Science*

Robert Proctor, from *Cancer Wars: How Politics Shapes What We Know and Don't Know About Cancer*

Weeks 13-15: Science and Society

Philip Kitcher, *Science in a Democratic Society*