

Intro to the Philosophy of Science Philosophy

Andrea Sullivan-Clarke
Office Hours: TBD (and by appt.)
Savery Hall 384
Email: weebs@uw.edu

Course Description:

Philosophy of Science is the discipline that seeks to understand the goals, methodology and structure of scientific knowledge. In this course, we will explore questions regarding the unification of scientific knowledge, the problem of the boundary between science and pseudo-science, scientific methodology, scientific progress, the relation between theory and observation, the problem of relativism and questions pertaining to science and religion such as creationism or intelligent design vs. evolution.

Required Texts:

Readings in the Philosophy of Science, edited by Theodore Schick (Mayfield, 1999)
Electronic readings to supplement the weekly readings.

Course Requirements:

1. **Three Quizzes (55%).** These quizzes will test for knowledge of the material presented in readings and lectures. Format: multiple choice, true/false, and short answer.
2. **Critical Essay (10%).** This 5-page essay is an exercise in philosophical exposition and critique. You will be asked to clearly present an argument that has been defended in one of the articles that we have covered along with the single most damaging problem for the view.
3. **Participation (10%).** Throughout the term there will be various exercises and discussion questions, which you will be expected to complete in class. Other work might include peer-review of critical essays or term papers...etc.
4. **Final Exam: (25%)** The term paper is to be a critical examination of one or more of the arguments presented in the assigned readings. The assignment is intended to be primarily an independent piece of scholarship; some additional readings will probably be necessary, but comprehensive knowledge of the literature is neither expected nor desired. The point is to struggle through the issue you choose in a philosophically sophisticated way, making sense of the issues involved and the arguments that surround them, and defending a position that you find tenable on the basis of those arguments.

If you have any further questions about these class requirements please see me.

Scales and Criteria for Grading

When converting total points to decimal grades the following scale will be used. To determine your overall class grade, add up all of the points you earned for each assignment, **double that total**, and then use the following chart.

Total Class Points	Decimal Points
1000-930	1000-965 = 4.0, 964-930 = 3.9
929-900	929-920 = 3.8, 919-910 = 3.7, 909-900 = 3.6

899-870	899-890 = 3.4,	889-880 = 3.3,	879-870 = 3.2
869-830	869-860 = 3.1,	859-840 = 3.0,	839-830 = 2.9
829-800	829-820 = 2.8,	819-810 = 2.7,	809-800 = 2.6
799-770	799-790 = 2.4,	789-780 = 2.3,	779-770 = 2.2
769-730	769-760 = 2.1,	759-740 = 2.0,	739-730 = 1.9
729-700	729-720 = 1.8,	719-710 = 1.7,	709-700 = 1.6
699-670	699-690 = 1.4,	689-680 = 1.3,	679-670 = 1.2
669-630	669-660 = 1.1,	659-640 = 1.0,	639-630 = 0.9
629-600	629-615 = 0.8,	614-600 = 0.7	
599-0	599-0 = 0.0		

There will be no curves and no extra credit in this class. You will not be graded relative to your fellow students. What this means is that it is possible for *everyone* to get an A (4.0) or an E (0.0) or anything in-between. **In order to pass the course you must complete all assignments with an additive percentage of 60% or higher.**

Class Policies and Etiquette:

There are no shortcuts to learning philosophy. The subject demands that students learn in the old-fashioned manner of time-consuming and disciplined study. This means you must spend time reading the classic texts of philosophy (and secondary sources), devote your attention to lectures and involve yourself in critical discussion of the material covered.

1. Attendance is necessary to do well in the course. If you must miss class for any reason, you are responsible for making up any work missed. Find out before coming to class what you missed and make sure you are prepared for the session. Excessive absence will significantly lower your grade and normally results in failure.
2. Attendance alone is not sufficient for passing the class. Prepare for each class carefully and take an active role in discussions. As a general rule, you should spend two hours preparing for each hour spent in class.
3. You are required to sit the exams during the scheduled times. Do not schedule anything that conflicts with the exams. Do not assume that a make-up exam or quiz will be given if you miss class. There are no make-up quizzes or exams for unexcused absences. If an absence is excused, prior notification is required. Make-ups are rare and given only under extreme circumstances. Documentation such as a doctor's note or police report will be required for an excused absence.
4. Cell phones, pagers and any other electronic devices should be turned off prior to class sessions.
5. The instructor is committed to upholding the university's policy regarding academic dishonesty. Cheating and plagiarism will not be tolerated. See the university policies on Academic Dishonesty

Tentative Schedule of Topics

1. Introduction to the Philosophy and Philosophy of Science

Reading:

- Theodore Schick, "General Introduction," pp. 1-2
- Alex Rosenberg, "Philosophy of Science," pp. 1-19, 21-36
- Stephen Jay Gould, "The Panda's Thumb"
- Leon Lederman, Chapter One of "The God Particle"

2. Science and Non-Science: Defining the Boundary

Readings:

A. J. Ayer, "The Elimination of Metaphysics"
Karl R. Popper, "Science: Conjectures and Refutations"
Thomas S. Kuhn, "Logic of Discovery or Psychology of Research"
Imre Lakatos, "Falsification and the Methodology of Scientific Research Programs"
Larry Laudan, "Science at the Bar—Causes for Concern"
Micheal Ruse, "Pro Judice"

3. Induction and Confirmation: The Nature of Scientific Inference

Readings:

David Hume, "The Problem of Induction"
Carl Hempel, "The Role of Induction in Scientific Inquiry"
Karl Popper, "The Problem of Induction"
Pierre Duhem, "Physical Theory and Experiment"
Peter Lipton, "Contrastive Inference"

4. The Unity of Science: Are All Sciences Reducible to Physics?

Readings:

Paul Oppenheim and Hilary Putnam, "Unity of Science as a Working Hypothesis"
Jerry Fodor, "Special Sciences"
John Dupré, "The Disunity of Science"
George A. Reisch, "Pluralism, Logical Empiricism, and the Problem of Pseudoscience"

5. Theory and Observation: Is Seeing Believing?

Readings:

Rudolf Carnap, "The Methodological Character of Theoretical Concepts"
Mary Hesse, "Is There an Independent Observation Language?"
N. R. Hanson, "Observation"
Thomas Kuhn, "The Structure of Scientific Revolutions"
Larry Laudan, "A Problem-Solving Approach to Scientific Progress,"
Daisie Radner and Michael Radner, "Parapsychology: Pre-Paradigm Science"

6. Science and Objectivity: The Science Wars

Readings:

Bruno Latour and Steve Woolgar, "The Social Construction of Scientific Facts"
Stephen Cole, "Voodoo Sociology: Recent Developments in the Sociology of Science"
Ruth Hubbard, "Have Only Men Evolved?"
Helen Longino, "Can There Be a Feminist Science?"

7. Realism and Antirealism: Does Science Reveal Reality?

Readings:

Grover Maxwell, "The Ontological Status of Theoretical Entities"
Bas C. van Fraassen, "Constructive Empiricism"
Paul M. Churchland, "The Anti-Realist Epistemology of van Fraassen's *The Scientific Image*"
Ian Hacking, "Experimentation and Scientific Realism"

Arthur Fine, "Natural Ontological Attitude"
James Robert Brown, "Explaining the Success of Science"

8. Science and Religion: Reason versus Faith

Readings:

Paul Feyerabend, "Science and Myth"
Richard Dawkins, "Is Science a Religion?"
Alvin Plantinga, "When Faith and Reason Clash: Evolution and the Bible"
Ernan McMullan, "Evolution and Special Creation"
Peter Atkins, "Purposeless People"
Martin Gardner, "Science and the Unknowable"

9. Ethics of Science: Government, Business and Marketing

Readings:

Stephen Jay Gould, "Wide Hats and Narrow Minds" & "Women's Brains"
David Healy and Michael Thase, "Is Academic Psychiatry for Sale?"
Richard Horton, "The Dawn of McScience"
Leemon McHenry, "On the Origin of Great Ideas: Science in the Age of Big Pharma"