

Syllabus (rev. 3/20/12)
PHIL 415
Philosophy of Science
Spring 2013

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Office hours: TR: 11:00–12:15 (in BSC outside Au Bon Pain)
other meeting times available by appointment

1 Texts

Curd, Martin and J. A. Cover, eds. *Philosophy of Science: The Central Issues*,
Second Edition. New York: Norton, 2013.

Staley, Kent. *Introduction to Philosophy of Science*. Unpublished manuscript.

Additional readings posted in electronic form to the SLU Global site for this
course.

2 Overview of the course

In this course we will explore a few of the most prominent themes that have emerged in philosophical studies of the sciences, with a strong emphasis on the natural sciences. Readings will often involve discussion of particular scientific endeavors from a range of scientific disciplines. The course is designed for students of both the humanities and the sciences who have an interest in probing the foundations of scientific thought and broader questions about scientific inquiry.

3 Course objectives

During this course, students are expected to:

- become familiar with some of the central issues in contemporary philosophy of science
- come to understand how philosophical perspectives have both posed challenges to traditional views about scientific knowledge and developed resources for responding to those challenges

- develop their ability to understand and intelligently respond to (e.g., ask good questions about, identify argumentative shortcomings of) primary source readings
- write cogently reasoned essays on demanding philosophical topics
- develop a philosophical mindset for engaging with the sciences

4 Coursework

4.1 Course Blog

We will have a group blog for the course. You will need to sign up to write five substantial blog posts regarding the readings. These should be a few paragraphs in length, though depth of engagement is more important than length. You will also need to write at least ten substantive comments regarding other students' blog posts. You must complete your blog post on an assigned reading by 12:00 Noon on the day before the scheduled discussion of that reading. This will allow time for other students to comment on your post. The blog will also allow us to continue discussion at times when the instructor is away at conferences and unable to hold class meetings.

4.2 Exegetical paper

Students will write a an exegetical paper (about 1500 words) on an aspect of the dispute between Bayesian and Error-statistical approaches to scientific reasoning.

4.3 Papers/Tutorials

There will be two papers (2000 to 2500 words in length), which will be completed using the tutorial system. On this system, you will not only hand in your paper, but meet with me and another student to read your paper out loud and to discuss both your own paper and that of the other student present. Evaluation of tutorials comprises three categories: (1) content of the paper, (2) organization and quality of writing in the paper, and (3) quality of discussion (of both your own and your tutorial partner's papers) in the tutorial meeting. Papers are due in advance of the tutorial (see class schedule for due dates) and are to be submitted by e-mail by 5:00pm on the day they are due. Failure to submit your paper on time will result in a 10% reduction in your grade on the paper. A further 10% will be taken off for every additional day your paper is late. I encourage you to submit advance drafts, provided that you allow adequate time for me to read and respond to your draft and for you to revise your paper before the deadline.

5 Grades

Your grade for the course will be based on points accumulated in the following categories:

| | |
|-----------------|------|
| Course blog* | 300 |
| First tutorial | 225 |
| Second tutorial | 275 |
| Exegesis | 200 |
| Total | 1000 |

* up to 40 points for each blog post; up to 10 points for each comment

Course grades will be based on total accumulated points as follows:

| | | |
|----------|----|-------|
| 940–1000 | A | (4.0) |
| 900–939 | A- | (3.7) |
| 865–899 | B+ | (3.3) |
| 835–864 | B | (3.0) |
| 800–834 | B- | (2.7) |
| 765–799 | C+ | (2.3) |
| 735–764 | C | (2.0) |
| 700–734 | C- | (1.7) |
| 600–699 | D | (1.0) |
| <600 | F | (0.0) |

6 A Word on Academic Honesty

I will be vigilant in enforcing a strict code of ethical academic conduct. Here is a simple rule to follow to avoid any difficulties: *If you use the work of someone else in anything you write for this class you must make it clear that you are doing so, and indicate (through footnotes, quotation marks, etc. as appropriate) whose words or ideas you are using.* Violations of this rule will be treated as plagiarism.

Here is SLU's Academic Honesty Policy: "The University reserves the right to penalize any student whose academic conduct at any time is, in its judgment, detrimental to the University. Such Conduct shall include cases of plagiarism, collusion, cheating, giving or receiving or offering or soliciting information in examinations, or the use of previously prepared material in examinations or quizzes. Violations should be reported to your course instructor, who will investigate and adjudicate them according to the Policy on Academic Honesty of the College of Arts and Sciences. If the charges are found to be true, the student may be liable for academic or disciplinary probation, suspension, or expulsion by the University."

7 Attendance

I will take attendance for every class meeting after the first week. Students missing more than four classes will have their course grade reduced by one letter grade (e.g., an A becomes a B, an A- becomes a B-, etc.). Every three additional absences will bring a further grade reduction. Attendance will also be considered in deciding borderline grades. I will assume that all absences are for good reasons such as illness, so you do not need to provide excuses (unless you miss an assignment). Exceptions will be made only for extended illness or other circumstances that make these limits unreasonable.

8 Student Success Center

In recognition that people learn in a variety of ways and that learning is influenced by multiple factors (e.g., prior experience, study skills, learning disability), resources to support student success are available on campus. Students who think they might benefit from these resources can find out more about:

- Course-level support (e.g., faculty member, departmental resources, etc.) by asking your course instructor.
- University-level support (e.g., tutoring/writing services, Disability Services) by visiting the Student Success Center (BSC 331) or by going to www.slu.edu/success.

Students who believe that, due to a disability, they could benefit from academic accommodations are encouraged to contact Disability Services at 314-977-8885 or visit the Student Success Center. Confidentiality will be observed in all inquiries.

Course instructors support student accommodation requests when an approved letter from Disability Services has been received and when students discuss these accommodations with the instructor after receipt of the approved letter.

9 The Writing Center

I encourage you to take advantage of the Writing Center's services; getting feedback benefits writers at all skill levels. The Center helps with writing projects, multimedia projects, and oral presentations. They offer one-on-one consultations that address everything from brainstorming and developing ideas to crafting strong sentences and documenting sources. For more information, call 977-2930 or visit <http://www.slu.edu/x13305.xml>.

10 Life is Full of Surprises

Sometimes the need arises to change ones approach to doing things. Learning is no exception. Consequently, the information given in this syllabus is subject to change on short notice (but not without reason). Such changes, should they arise, will be announced in class. You are responsible for keeping track of any changes in course assignments or schedule.

11 Course Schedule

Class meets on Tuesday and Thursday, 12:45 – 2:00 pm in Ritter Hall 29.
Readings not listed as in Curd and Cover (CC) or in Staley will be posted to SLU Global.

| Schedule of Readings for Class Meetings | |
|---|---|
| Part I: The Scientific Method | |
| 1/15 | Introduction |
| 1/17 | Popper, “The Problem of Induction” (CC) Staley, chs. 1–3 |
| 1/22 | continued discussion |
| 1/24 | Salmon, “Rational Prediction” (CC) |
| 1/29 | continued discussion |
| Part II: Logical Empiricism and Its Aftermath | |
| 1/29 | Staley, ch. 4 |
| 1/31 | Kuhn, “The Nature and Necessity of Scientific Revolutions” (CC) Staley, ch. 5 |
| 2/5 | Kuhn, “Objectivity, Value Judgment, and Theory Choice” (CC) |
| 2/7 | Lakatos, “Science and Pseudoscience”; Staley, ch. 6 |
| 2/12 | Feyerabend, <i>Against Method</i> , introduction and chs. 1–3 Staley, ch. 7 |
| 2/14 | continued discussion |
| Part III: Probability and Scientific Reasoning | |
| 2/19 | Staley, ch. 8 |
| 2/21 | Salmon, “Rationality and Objectivity in Science” (CC) |
| 2/25 | first paper due |
| 2/26 | continued discussion |
| 2/28 | tutorial meetings |
| 3/5 | Howson and Urbach, “The Duhem Problem” (no class meeting; class discussion through SLU Global) |
| 3/7 | Staley, ch. 9 (no class meeting; class discussion through SLU Global) |
| 3/12–14 | Spring Break |
| 3/19 | Mayo, “A Critique of Salmon’s Bayesian Way” (CC) |
| 3/21 | continued discussion |
| Part IV: Values, Risk, and Policy | |
| 3/26 | Longino, “Values and Objectivity” (CC) (no class meeting; class discussion through SLU Global) |
| 3/28 | no class (Holy Thursday) |
| 4/1 | exegetical paper due: Bayesianism vs. Error-Statistics |
| 4/2 | Manson, “Formulating the Precautionary Principle” |
| 4/4 | Sandin, et al., “Five Charges against the Precautionary Principle” |
| 4/9 | continued discussion |
| Part V: Realism and Anti-Realism | |
| 4/11 | Psillos, “In Defence of Scientific Realism” Staley, ch. 10 (no class meeting; class discussion through SLU Global) |
| 4/16 | continued discussion |
| 4/18 | van Fraassen, “Arguments Concerning Scientific Realism” (CC) |
| 4/23 | Laudan, “A Confutation of Convergent Realism” (CC) |
| 4/25 | continued discussion |
| 4/30 | Hacking, “Experimentation and Scientific Realism” (CC) |
| 5/2 | continued discussion |
| 5/14 | second tutorial |