

PHILOSOPHY OF SCIENCE – PHILOSOPHY 225
JOHN DOUARD, J.D., Ph.D.

SYLLABUS – FALL 2018

Texts: Philosophy of Science: A New Introduction, by Barker and Kitcher, Oxford U. Press (2014)

Additional papers will be placed in "Resources" tab of Sakai.

Course description:

While it is not often acknowledged, philosophy of science is an applied discipline that examines the normative structure of scientific reasoning, with a focus on scientific practices. In this course, I propose to take the focus on scientific practices a step further than is usually the case. I believe many of the traditional issues in philosophy of science – e.g., how to demarcate science and non-science, philosophy of scientific inference, the role of the null hypothesis in increasing the likelihood of alternative hypotheses, the deductive structure of scientific explanations, the character of scientific models (or "as if" thinking), the distinction between correlation and causation; the role of epistemic and moral norms in scientific practice, etc. – can be framed in terms of the ways science is used in the courtroom. More generally, my own view of scientific reasoning is that it is a branch of decision theory

This course will be accessible to undergraduates and will address traditional and new issues in philosophy of science. It will focus on scientific practice and, further, focus in part on the use of real science in courtrooms.

Course objectives:

1. Students will develop the ability to identify scientific theories and explanations and differentiate them from other kinds of theories and explanations.
2. Students will develop a basic understanding of the methods, modes of inference, and structures of explanation implicit in scientific practices, including forensic practices.
3. Students will be able to demonstrate knowledge of the various points of view presented in the required readings.
4. Students are expected to be able to defend points of view in a logical fashion.
5. Students are expected to refer to the readings in their discussions.
6. Students are expected to be able to relate their own position to more general theories of scientific practices.

COURSE REQUIREMENTS:

PARTICIPATION

Students are expected to attend all classes; if you anticipate missing one or two classes, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me. Your attendance will contribute to your overall participation grade. Absences not reported officially will not be excused for any reason.

Material to be read for the subsequent class will be assigned in the previous class. The assigned reading will follow the Class Schedule (see below). Students are required to do all of the assigned reading before class. A prepared student will not only have read the material assigned but will have reflected upon the claims and arguments made therein. Students should plan on making notes while reading the material, since it may be difficult and may require more than one reading.

Students will be called upon to answer questions on the day's reading, and will be expected to spontaneously contribute to the class discussions. Students are expected to listen to their classmates and the professor carefully and respectfully. (Remember that the contributions of fellow classmates form part of their grade). This entails, of course, NOT web-surfing, e-mailing, texting, etc., during class. None of this is allowed during class. Laptop computers are also not allowed in class, and notes are to be taken by hand. Research shows that hand-written notes are more effectively remembered than notes taken on computers. (If you need excused from this requirement let me know why.) Phones are to be switched off or placed on silent mode.

Students may also discuss the readings, assignments, and paper topics with me outside of class by e-mailing me or by meeting with me after our Saturday class, but only by appointment. All participation in class discussion and outside-of-class discussion counts towards the participation grade.

WRITTEN ASSIGNMENTS

You will write three issues papers, 5-10 pages long, due dates indicated in the syllabus. You will take a final exam, on the designated finals date indicated in the syllabus.

Three issue papers: 25 points each.

Final exam: 25 points.

CURRENT ACADEMIC INTEGRITY POLICY:

Cheating and Plagiarism:

Short version: Don't cheat. Don't plagiarize.

Longer version: Cheating on tests or plagiarizing materials in your papers deprives you of the educational benefits of preparing these materials appropriately. It is personally dishonest to cheat on a test or to hand in a paper based on unacknowledged words or ideas that someone else originated. It is also unfair, since it gives you an undeserved advantage over your fellow students who are graded on the basis of their own work. In this class we will take cheating very seriously. All suspected cases of cheating and plagiarism will be automatically referred to the Office of Judicial Affairs, and we will recommend penalties appropriate to the gravity of the infraction. The university's policy on Academic Integrity is available at <http://academicintegrity.rutgers.edu/academic-integrity-policy> I strongly advise you to familiarize yourself with this document, both for this class and for your other classes and future work. To help protect you, and future students, from plagiarism, we require all papers to be submitted through Turnitin.com.

Since what counts as plagiarism is not always clear, I quote the definition given in Rutgers' policy:

Plagiarism: Plagiarism is the use of another person's words, ideas, or results without giving that person appropriate credit. To avoid plagiarism, every direct quotation must be identified by quotation marks or appropriate indentation and both direct quotation and paraphrasing must be cited properly according to the accepted format for the particular discipline or as required by the instructor in a course. Some common examples of plagiarism are:

- Copying word for word (i.e. quoting directly) from an oral, printed, or electronic source without proper attribution.
- Paraphrasing without proper attribution, i.e., presenting in one's own words another person's written words or ideas as if they were one's own.
- Submitting a purchased or downloaded term paper or other materials to satisfy a course requirement.
- Incorporating into one's work graphs, drawings, photographs, diagrams, tables, spreadsheets, computer programs, or other nontextual material from other sources without proper attribution.

A SPECIAL NOTE: Students often assume that because information is available on the Web it is public information, does not need to be formally referenced, and can be used without attribution. This is a mistake. All information and ideas that you derive from other sources, whether written, spoken, or electronic, must be attributed to their original source. Such sources include not just written or electronic materials, but people

with whom you may discuss your ideas, such as your roommate, friends, or family members. They deserve credit for their contributions too!

Judgments about plagiarism can be subtle. If you have any questions, please feel free to ask me for guidance.

STUDENT-WELLNESS SERVICES:

Just In Case Web App

<http://codu.co/cee05e>

Access helpful mental health information and resources **for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.**

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901 / rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

The Office of Disability Services works with students with a documented disability to determine the eligibility of reasonable accommodations, facilitates and coordinates those accommodations when applicable, and lastly engages with the Rutgers community at large to provide and connect students to appropriate resources.

Scarlet Listeners

(732) 247-5555 / <http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

The ad/drop policy can be found at this URL:
<https://webmail.rci.rutgers.edu/src/webmail.php>
READING AND WRITING ASSIGNMENTS

September

- 8 Philosophy of Science: What Is It? B & K: pp. 1-11;
Blachowicz: *How Science Textbooks Treat Scientific Method.*
- 15 The Analytic project B & K: pp. 12-49
Bayes Theorem and Forensic Science PPT: *Bayes, Likelihood*
ratios and the Prosecutor's fallacy.
- 22 View From the Sciences B&K: pp. 50-77

Paper # 1: Bayes and Scientific Practice

- 29 The Supreme Court's Phil. Of Science Susan Haack:
Federal Philosophy of Science: A Deconstruction, etc; Haack: *Trial and Error. Frye;*
Daubert.

October

- 6 Supreme Court's Philosophy of Science Cont. Same as above
- 13 Philosophy of Forensic Science: junk science Kaplan & Puracal:
It's not a Match; Jamieson: *Phil. Of Forensic Science Identification.*
- 20 DNA in the Courtroom
- 27 Science, History, and Society: Revolutions B&K: pp. 78-105

Paper # 2: Junk Science

November

- 3 Science, History, and Society Same as above.
- 10 Critical Voices and Antiscience B&K: 106-135
- 17 Intelligent Design Behe: *God of Science;*
Pennock: *Reply to Behe; Ruse Creationism.*

Thanksgiving recess: November 22-25

December

1 Science, Values, and Politics B&K: 136-163.

8 **Review and Paper No. 3: Science and Values** No reading

15 FINAL EXAM

HAVE A GREAT HOLIDAY