

PHIL 3372-06 (23982): PHILOSOPHY OF SCIENCE

Sam Houston State University, Spring 2018
SHSU Online

Instructor: Dr. Thomas J. Brommage
Email: brommage@shsu.edu
Website: <http://brommage.freeshell.org>

Office Hours: T/Th 11 AM – 12:30 PM
Office: CHSS 347
Phone: 936-294-2460 (office)
267-CALL-DR-B (Google Voice)

A survey of topics in philosophy of science including the logic of explanations in the physical and social sciences, the relations of science to the realm of values, and a look at the “mind-body problem.”

Learning Objectives:

1. **Learning fundamental principles, generalizations or theories:** Throughout this course, we will discuss the various approaches to scientific methodology, and the benefits and drawbacks of each.
2. **Learning to apply course material (to improve thinking, problem solving and decisions):** Throughout this course, we will be using the various theories to evaluate scientific discoveries within your chosen field of study.
3. **Learning to analyze and critically evaluate ideas, arguments, and points of view:** The papers are designed to understand and evaluate the various methods to understand and evaluate scientific discoveries.

Required Text: Steven Gimbel, *Exploring the Scientific Method: Cases and Questions* University of Chicago Press, 2011.

Schedule: *The dates and content listed are tentative and subject to change by the whim of the instructor!!*

Unit #0: Course Introduction (1/17-1/19)

Complete Orientation Activities

Unit Discussion (due 1/19)
Unit Blog (due 1/19)

Unit #1: Deductivism (1/20-2/2)

Read “Deductivism” (pp. 1-4)
Read Aristotle, from *Prior Analytics* and *Physics* (pp. 5-16)
Read Descartes’ from *Discourse on Method* (pp. 17-29)

Unit Blog (due 1/26)
Unit Discussion (due 2/2)
Response Paper #1 (due 2/2)

Unit #2: Inductivism (2/3-2/16)

Read “Inductivism” (pp. 43-45)
Read Bacon, selection from *Novum Organum* (pp. 46-52)
Read Newton selection from *Principia* (pp. 53-55)
Read Mill, from *A System of Logic* (pp. 56-69)

Unit Blog (due 2/9)
Unit Discussion (due 2/16)
Response Paper #2 (due 2/16)

Unit #3: Hypothetico-Deductivism (2/17-2/23)

Read "Hypothetico-Deductivism" (pp. 91-93)
Read Whewell, selection from *Novum Organum Renovatum* (pp. 94-104)
Read Carnap, "Theoretical Procedures in Science" (p. 105)
Read Braithwhite, selection from *Scientific Explanation* (pp. 106-111)

Unit Blog (due 2/23)
Unit Discussion (due 2/23)

Unit #4: Paradoxes of Confirmation (2/24-3/2)

Read "Paradoxes of Evidence" (pp. 112-115)
Read Hume, selection from *Enquiry Concerning Human Understanding* (pp. 116-126)
Goodman, from *Fact, Fiction and Forecast* (pp. 127-130)
Hempel, from "Studies in the Logic of Confirmation" (pp. 131-137)
Read, "Responses" (pp. 138-139)

Unit Blog (due 3/2)
Unit Discussion (due 3/2)

Unit #5: Falsificationism (3/2-3/9)

Read "Falsificationism" (pp. 141-144)
Popper, from *The Logic of Discovery* (pp. 145-154)

Unit Blog (due 3/9)
Unit Discussion (due 3/9)
Response Paper #3 (due 3/9)

Unit #6: Holism (3/17-3/30)

Read "Holistic View of Theories" (pp. 171-174)
Read Duhem, selection from *Aim and Structure of Physical Theory* (pp. 175-181)
Read Kuhn, selection from *The Structure of Scientific Revolutions* (pp. 182-197)
Lakatos, from *The Methodology of Research Programs* (pp. 198-213)

Unit Blog (due 3/23)
Unit Discussion (due 3/30)
Response Paper #4 (due 3/30)

Unit #7: Semantic Modeling (3/31-4/13)

Read "Semantic View of Theories" (pp. 231-234)
Read Spector, "Models and Theories" (pp. 235-255)
Read Black, "Models and Archetypes" (pp. 256-264)
Read Giere, from *Explaining Science* (pp. 265-269)

Unit Blog (due 4/6)
Unit Discussion (due 4/13)
Response Paper #5 (due 4/13)

Unit #8: Critical Views (4/14-4/27)

Read "Critical Views" (pp. 281-285)
Read, Feyerabend selection from *Against Method* (pp. 285-293)
Hubbard, "Science, Facts and Feminism" (pp. 294-306)
Latour, "The Science Wars" (pp. 307-314)

Unit Blog (due 4/20)
Unit Discussion (due 4/27)
Response Paper #6 (due 4/27)

Unit #9: Wrap Up (4/28-5/10)

Unit Blog (due 5/4)
Unit Discussion (due 5/9)
Final Exam (due 5/9)

Evaluation: Each Unit contains several parts: (1) a set of readings; (2) one general lecture on the method, as well as individual lectures explaining the readings; (3) A discussion forum on the method; (4) a blog post on an issue related to the method. Each of these should be completed every week. While it is a good idea to ask questions on the discussion forum and complete the blog for each Unit, only the best five grades of each type of assignment will be counted into your final grade for each.

In addition, there are six short (500-750 word) response papers due throughout the course, due on the Sunday following the relevant Unit. Each of the papers will be based on the case studies in the textbook, using the methodology from the texts discussed in that module to evaluate developments through the history of the science the student chooses. The papers are designed not only to understand the relation between the issues of scientific modeling to issues in the specific field, but also to get you to increasingly develop research skills in your chosen discipline as we progress. The two lowest grades on these papers will not be counted into your final grade. In addition to that, there will be a cumulative in-class final exam at the end of the course.

The following weighting will be used to calculate your grade:

Papers (best 4 of 6) x 15% ea. =	60%
Blog Entries (best 5 of 10) x 2% =	10%
Discussion Forum (best 5 of 10) x 2% =	10%
Final Exam	20%

Your rounded average of these assignments will determine your grade, based on the following scale: A = 100-89.5; B = 89-79.5; C = 79-69.5; D = 69-59.5; F = 59.4-0.

Academic Dishonesty: In accordance with the University's Academic Policy Statement 810213, all students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion, and the abuse of resource materials. The policy can be read here: <http://www.shsu.edu/dotAsset/728eec25-f780-4dcf-932c-03d68cade002.pdf>

Plagiarism: Clear-cut cases of plagiarism will be punished according to the following rule of thumb: first offense, you fail the paper; second offense, you fail the class. Any assignment which is failed for plagiarism will not be eligible to be "dropped" per the above grading policy.

Additional University policies are available here: <http://www.shsu.edu/syllabus>

Expectations, Suggestions and Mandates for an efficient class:

1. Especially true in philosophy more than most other subjects, diligence is important. Some of the reading will be difficult—since we are looking at excerpts from some of the most profound texts in the history of the world. The difficulty of the subject is indirectly proportional to the amount of work put into the course. Expect to have up to ten hours a week of reading and thinking about the material in order to get an "A" for the course. *If you do not regularly log in or keep up with the reading, do not expect to pass this class!*
2. Please be respectful of each other in the class. There will be times when students disagree about a topic discussed in class. This is a didactic process, not a combative one.
3. Please feel free to make mistakes. We all will from time to time, even your omniscient instructor.
4. Please feel free to make an appointment to discuss the material you do not understand. Waiting until the last moment in the semester to catch up is not advisable. I am excellent at fixing small problems, but horrendous at fixing large ones. The only difference between small and large problems is time.
5. Have fun! The material is only as dry as you make it out to be. Sharpening one's mind can be an exhilarating process.