

PHIL 3372-05 (83670): PHILOSOPHY OF SCIENCE
Sam Houston State University, Fall 2019
SHSU Online

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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" (3 credit hours).

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 (8/21-8/23)

Complete Orientation Activities

Unit Discussion (due 8/23)

Unit Blog (due 8/23)

Unit #1: Deductivism (8/24-9/6)

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 8/30)

Unit Discussion (due 8/30)

Response Paper #1 (due 9/6)

Unit #2: Inductivism (9/7-9/20)

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 9/13)
Unit Discussion (due 9/13)
Response Paper #2 (due 9/20)

Unit #3: Hypothetico-Deductivism (9/21-9/27)

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 9/27)
Unit Discussion (due 9/27)

Unit #4: Paradoxes of Confirmation (9/28-10/4)

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 10/4)
Unit Discussion (due 10/4)

Unit #5: Falsificationism (10/5-10/11)

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

Unit Blog (due 10/11)
Unit Discussion (due 10/11)
Response Paper #3 (due 10/11)

Unit #6: Holism (10/12-10/25)

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 10/18)
Unit Discussion (due 10/18)
Response Paper #4 (due 10/25)

Unit #7: Semantic Modeling (10/26-11/8)

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 11/1)
Unit Discussion (due 11/1)
Response Paper #5 (due 11/8)

Unit #8: Critical Views (11/9-11/22)

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 11/15)
Unit Discussion (due 11/15)
Response Paper #6 (due 11/22)

Unit #9: Wrap Up (11/23-12/6)

Unit Blog (due 11/30)
Unit Discussion (due 11/30)
Final Exam (due 12/9)

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 Forums (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.

Writing Enhanced: This is a "W" course, which means that at least 50 percent of your course grade will derive from writing activities designed to help you master course objectives. Writing in this course is one of the tools your instructor will use to help you learn course material. Some writing activities will require you to draft and revise your work, with or without instructor feedback. You should approach writing in this course as a tool to use as part of your learning as well as a tool your instructor will use to assess your level of learning.

Academic Dishonesty: Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. Please be aware that plagiarized work and any form of academic dishonesty will result in an "F" on the assignment. [SHSU Academic Policy Statement 810213](#) outlines the definition of academic honesty and the related disciplinary procedures:

You should also familiarize yourself of [Academic Policy Statement 900823](#), which outlines the procedures for students to file an academic grievance should you wish to appeal your grade for reasons other than academic dishonesty. Please read over these policies.

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.

Course Evaluations: In accordance with University policy every student will have an opportunity at a specified date and time near the end of the semester to complete a course evaluation form from the IDEA course evaluation system.

For University policies on **Student Absences on Religious Holy Days**, **Students with Disabilities**, and **Visitors in the Classroom** you may view the official statements on the SHSU Website, <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.