PHIL 3372-02: Philosophy of Science
Sam Houston State University
Spring 2023 | CRN: 22301
T/Th 2-3:15 PM | Smith Hudson 134

Instructor: Dr. Thomas Brommage
Office: CHSS 347
Office Hours: M/W 2-3:15 PM;
T/Th 1-1:50 PM & by appt.

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Course Description: Students survey topics in philosophy of science, which may include the logic of explanations in the physical and social sciences, the relationship between science and society, and metaphysical or sociological critiques of science. Course content includes attention to historically prominent examples from social and natural sciences that demonstrate the applicability of important concepts from the philosophy of science.

Course Narrative: This course will focus on understanding the scientific method through analysis of key texts in the history of physics and astronomy. Texts covered will include Aristotle, Galileo, Leibniz, Einstein, Kuhn and others. Issues to be discussed include the structure of the solar system, the motion of planets and of the heavenly bodies, the nature of space and time–and even the origins of the universe itself. Through reading primary texts, the student will use these key debates to better understand issues regarding scientific explanation, scientific reasoning, testing, and explanatory unification in science, as well as the various ways scientific claims are justified.

Prerequisites: N/A

Course Objectives and Learning Outcomes:

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 reasoning within the chosen field of study.

3. *Learning to analyze and critically evaluate ideas, arguments, and points of view:* The papers are designed to understand the various methods by which to understand and evaluate scientific discoveries.

4. *Developing skill in expressing oneself orally or in writing*: The assessments are designed to improve your writing and thinking through the basic terms and distinctions of forms of scientific reasoning, as well as the various forms of scientific explanation.

Required Textbooks:

1. Francis Bacon, *Selected Philosophical Works*, ed. Rose-Mary Sargent (Hackett, 1999). ISBN: 9780872204706, $17.
2. Albert Einstein, *Relativity: The Special and General Theory* (Dover, 2010). ISBN: 9780486417141, $10.
3. Galileo Galilei, *The Essential Galileo*, ed. Maurice Finocchiaro (Hackett, 2008). ISBN: 9780872209374, $15.
4. Thomas Kuhn, *The Structure of Scientific Revolutions*, 4th ed (University of Chicago, 2012). ISBN: 9780226458120, $15.
5. G. W. Leibniz and Samuel Clarke, *Correspondence*, ed. Roger Ariew (Hackett, 2000). ISBN: 9780872205246, $15.

Course Schedule: This schedule is tentative and subject to change. Please consult Blackboard for specific due dates on assignments.

January 17 – 20	Course Introduction; Plato, *Timaeus* 27a-47e
January 23 – 27	Aristotle, *Post. Analytics* I, 1-4; *Physics* II
Jan 30 – Feb 3	Aristotle, *Physics* IV 1-4, 10-14; VIII
February 6 – 10	Aristotle, *De Caelo*, I-II; **Exam #1**
February 13 – 17	Bacon, *The Great Insaturation*
February 20 – 24	Bacon, *New Organon*, Book I
Feb 27 – Mar 3	Bacon, *New Organon*, Book II 1-21
March 6 – 10	Galileo, *Sidereal Messenger* & "Letter to Castelli"
March 13 – 17	**Spring Break: No Class**
March 20 – 24	Galileo, *Dialogue On the Two Chief World Systems*; **Exam #2**
March 27 – 31	Leibniz & Clarke, *Correspondence*
April 3 – 7	Einstein, *Relativity*, Part I
April 10 – 14	Einstein, *Relativity*, Parts II-III; **Exam #3**
April 17 – 21	Kuhn, *Structure of Scientific Revolutions*, I-VIII
April 24 – 28	Kuhn, *Structure of Scientific Revolutions* IX-XIII
May 1 – 4	**Exam #4**; Review for Final
May 10 (12:45 – 2:45 PM)	**Exam #5 (Final Exam)**

Important Dates:

First Day of Classes	Tuesday, January 17th
Add/Drop Deadline	Wednesday, February 1st
Spring Break (no class)	Monday, March 13th – Friday March 17th
Q-Drop Deadline	Wednesday, March 29th
Good Friday (no class)	Friday, April 7th
Course Final	Wednesday, May 10th (12:45 – 2:45 PM)

Assessment: There will be five in-class exams given throughout the course, which includes the cumulative final exam. Each of the exams will contain a mix of objective questions (true/false, multiple choice) which deal with mastery of the basic terms and distinctions, as well as free-response short answer and short essay questions in which you will explain and/or evaluate some aspect of the course material for that module. The lowest score on these exams will be dropped from your final grade.

The following weighting will be used to calculate your course grade:

Exams (best 4 of 5) ..... 4 x 20% each = 80%
Attendance 10%
Participation 10%

Your rounded average of these assignments will determine your grade, based on the following scale:

A ..... 100% – 89.5%
B ..... 89.4% – 79.5%
C ..... 79.4% – 69.5%
D ..... 69.4% – 59.5%
F ..... 59.4% – 0%

Attendance and Participation: An attendance sheet will be distributed most class days. It is your responsibility to sign-in on the official roll sheet, otherwise you will be considered absent. Your attendance will be judged as a percentage of the number of days that you attend class. Everyone will have two (2) absences that will not count against his or her grade (should you not use these three absences, your grade will be adjusted up accordingly). For example, if I take attendance 22 times in the semester, and you have attended 18 of those meetings, your attendance grade would be a 91% (20/22). Aside from the absences automatically excused as per this policy, *no additional absences will be considered excused except when required by law or University policy.*

Your participation grade will be a qualitative measure based on your effective in-class participation. For this measure, "effective" participation is a function of the quality–not the quantity–of your in-class participation. In most cases, your participation grade will be no higher than your attendance grade–since, of course, if you're not in class, then you can't participate.

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. Others may not receive a grade but are designed to assist you in critical reflection of the course material. 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. Since the exams will be based largely on in-class writing, more than 50% of the course grade is based on your written work.

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 with 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 through these policies carefully.

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.

Classroom Conduct: Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Cell phones must be turned off before class begins. Students are prohibited from eating in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

For University policies on Student Absences on Religious Holy Days, Students with Disabilities, and Visitors in the Classroom you may view to the official statements on the SHSU Website, http://www.shsu.edu/syllabus/

Expectations, Suggestions and Mandates for an efficient class:

1. Please arrive to class on time and expect to stay the entire duration of the class. If this is an impossibility, please make every attempt to notify me in advance of tardiness or absence.

2. Especially true in philosophy more than most other subjects, diligence is important. This course will emphasize a close reading of primary texts. Some of the reading will be difficult since we are looking at 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.

3. Expect to have up to five hours a week of reading and thinking each week in order to earn an "A" for the course. Additionally, for these reasons, active participation in the course (which includes reading the assigned texts and participating in in-class discussion of the ideas) is of vital importance. *If you do not regularly attend class or keep up with the reading, do not expect to pass this class!*

4. Please come to class prepared (i.e., any reading assigned read, any questions concerning exercises or lectures prepared, etc.)

5. 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.

6. Due to the great excess of material and limited time in which we must over ground, please do not create a disruption for those people who are attempting to learn. Disruptions include blurting out answers, name calling, chiding each other, snoring, etc. Laughing at the Instructor's jokes is obviously exempted from this policy. In addition, personal audio devices (except those in use to record lectures) and loud crunching snack foods are prohibited from the classroom.

7. Please feel free to make mistakes. We all will from time to time–including your omniscient instructor.

8. 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.

9. Have fun! The material is only as dry as you make it out to be. Sharpening one's mind can be an exhilarating process.