

Philosophy of Science, 70.260 – Jan. term 2010
Brandon University

Lectures: Th 1:40-4:30, Clark hall 410

Instructor: Dr. Derek H. Brown

Contact information: brownd@brandonu.ca, 727-9765

Office hours: Tues 11:30-12:30 or by appointment, Clark Hall 331

This course presupposes no philosophical or scientific background, but does require that students be willing and able to learn some of each. We begin with a study of parts of the dawn of modern science, focusing on astronomical modeling, the underlying conceptions of space and time and the understanding of gravity that emerged. We follow this with a brief introduction to Einstein's conception of space and time and some less successful events in the chronicles of science. With a reasonable amount of scientific theory and history under our belts we proceed with the analysis of scientific theory and methods that developed in the early twentieth century, followed by a variety of reactions to this that have arisen over the last fifty years (e.g., sociology of science, explanation theory, confirmation theory).

Texts: Course Pack available in bookstore.

H. Collins & T. Pinch (1998). *The Golem*. Cambridge University Press.

R. Carnap (1995). *An Introduction to the Philosophy of Science*. Dover.

P. Godfrey-Smith (2003). *Theory and Reality*. Chicago University Press.

Course Pack Contents

- [1] Newton, I. (1999). *Principia Mathematica: Mathematical Principles of Natural Philosophy*. I. B. Cohen & A. Whitman, trs. University of California Press. LA, CA. The following excerpts:
 - Definitions, 403-415.
 - Axioms, or the Laws of Motion, 416-430.
 - Book 3: The System of the World, 791-819.
- [2] DiSalle, R. (2002). "Newton's philosophical analysis of space and time." From *The Cambridge Companion to Newton*, 33-56. Cambridge University Press.
- [3] Stein, H. (1991). "From the phenomena of motions to the forces of nature: Hypothesis or deduction." From *Philosophy of Science 1990, vol. 2*, 209-222.
- [4] Einstein, A. (1988). "What is the theory of relativity?" From his *Ideas and Opinions*, 227-247. Wings Press.
- [5] Kosso, P. (1997). *Appearance and Reality: An Introduction to the Philosophy of Physics*, 31-93. Oxford University Press.

Scheduled topics, subject to minor revisions:

<i>Time</i>	<i>Topics</i>	<i>Readings</i>
Week 1:	Introduction, Ptolemy and Copernicus	nil
Week 2:	Newton on space and time	Newton (Definitions & Axioms), Disalle
Week 3:	Newton on gravity	Newton (Book 3), Stein
Week 4:	Einstein on space and time	Einstein, Kosso
Weeks 5-6:	Some scientific setbacks; Test 1	Collins & Pinch
Week 7:	Guest speaker: Susan Hoffman, Math/Feminism	TBA
Week 8:	Theoretical foundations of science; Essay 1 due	Carnap
Week 9:	Foundations (cont), General Philosophy of Science	Carnap, Godfrey-Smith
Week 10:	General Philosophy of Science (cont)	Godfrey-Smith
Week 11:	Explanation; Test 2	TBA.
Week 12:	No class	
Week 13:	Presentations	TBA.

NOTE: There will be no class April 1, but students will be responsible for assigned material.

Grade:

Periodic reading assignments	worth 5% of final grade
Class participation	worth 10% of final grade
Test 1: Thursday, February 11	worth 15% of final grade
Paper 1: Thursday, March 4	worth 15% of final grade
Test 2: Thursday, March 25	worth 20% of final grade
Group presentations: April 8	worth 15% of final grade
Paper 2: Thursday, April 15	worth 20% of final grade

Much of the course content and exams are inherently cumulative. As a result each exam typically requires mastery of the material presented up to that point in the course. Instructions for essays and sample test questions will be provided in class. Group presentations can be argumentative, of a debating style, narrative, et cetera. Creativity most welcome. Students will have plenty of opportunity to contribute to class discussion. Please make sure that you do so (to earn participation points) and be sure you allow others to also (they need participation points too!). *Students are asked to turn off all cell phones during lectures.*

In the event that you miss a test/assignment/essay deadline you *must* present documentation establishing your whereabouts during the relevant class, and the reason for your absence must be deemed acceptable by the instructor. Conflicts with scheduled university events (e.g. athletic) in which you will participate must be brought to the instructor's attention during the first week of the term. *If a student misses a test/assignment/essay deadline and does not provide adequate documentation in a timely manner s/he will receive a grade of 0 on that exam.*

Individuals who have any disability, either permanent or temporary, which might affect their ability to perform in this Class, are encouraged to inform the instructor at the start of the semester. Adaptations may be made as required to provide for equitable participation.

Grade assignments will be *roughly* in accordance with the following:

95-100	A+	67-71	C+
89-95	A	63-67	C
84-89	A-	59-63	C-
79-84	B+	50-59	D
75-79	B	0-50	F
71-75	B-		

NOTE: Decimal grades from 0.0-0.49 will be rounded down, and from 0.5-0.99 will be rounded up.

Students are specifically referred to the policy on academic dishonesty and misconduct Section 4.2.2 of the General Calendar (pp. 22-3). Violations of this policy, including all forms of plagiarism, will not be tolerated.