

## PHIL 4XX/5XX SCIENTIFIC REALISM

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Office Hours: TBD

1. *Course Description:* Scientific theories have theoretical statements (such as statements about the wavefunction) and observational statements (such as a part of screen lit up). Are theoretical statements true (or truth-apt) in virtue of its literal meaning? Or are they merely encoding observed and expected patterns of observations? Scientific realism says yes to the first question. What are the considerations for and against such a position? Can we have better alternatives? In this course, we will examine historical as well as contemporary debates on these issues.

*Pre-requisite:* mainly the willingness to chew technical texts. Background in logic is preferred. Some familiarity with science (especially physical sciences) is also valuable.

### 2. (Tentative) Reading Schedule:

WEEK 1-6	HISTORICAL BACKGROUND
Week 1	LOGICAL EMPIRICISM Feigl (1943) "Logical empiricism" Carnap, Rudolf, 1950, "Empiricism, Semantics and Ontology", <i>Revue Internationale de Philosophie</i> , 4: 20–40.
Week 2	PARADOXES OF CONFIRMATION Hempel (1965) <i>Aspects of Scientific Explanation</i> : 20-40. Goodman (1955) <i>Fact, Fiction, Forecast</i> : Chapter 3. First paper is assigned.
Week 3	FALSIFICATION Popper (1935) <i>The Logic of Scientific Discovery</i> : 86-121.
Week 4	OBSERVATION Quine (1969) "Epistemology Naturalized" Fodor (1984) "Observation Reconsidered" First Paper is due.
Week 5	REALISM VS ANTI-REALISM Smart (1963) <i>Philosophy and Scientific Realism</i> : Chapter 2. Van Fraassen (1980) <i>The Scientific Image</i> : Chapter 2-3. Friedman, M. (1982) Review of The Scientific Image, <i>Journal of Philosophy</i> , 79: 274 – 283.
Week 6	<i>Catch up</i> (Supplementary readings) Second paper is assigned.

Week 7-13	CONTEMPORARY DEBATES
Week 7	Fine, Arthur, 1986, “Unnatural Attitudes: Realist and Antirealist Attachments to Science”, <i>Mind</i> , 95(378): 149–177. 1991, “Piecemeal Realism”, <i>Philosophical Studies</i> , 61(1): 79–96
Week 8	Chakravartty, Anjan, 1998, “Semirealism”, <i>Studies in History and Philosophy of Science Part A</i> , 29: 391 – 408. Ladymar, James, 1998, “What is Structural Realism?”, <i>Studies in History and Philosophy of Science</i> , 29: 409 – 424. Second paper is due.
Week 9	Kitcher, P. (2001). Real Realism: The Galilean Strategy. <i>The Philosophical Review</i> , 110(2), 151. Massimi, M. (2004). Non-defensible Middle Ground for Experimental Realism: Why We Are Justified to Believe in Colored Quarks*. <i>Philosophy of Science</i> , 71(1), 36 – 60.
Week 10	P. Kyle (Nov., 2003) Pyrrhic Victories for Scientific Realism <i>The Journal of Philosophy</i> , Vol. 100, No. 11, pp. 553-572 Third paper is assigned.
Week 11	Magnus, P.D. and Craig Callender, 2004, “Realist Ennui and the Base Rate Fallacy”, <i>Philosophy of Science</i> , 71(3): 320 – 338. doi:10.1086/421536 Menke, Cornelia, 2014, “Does the Miracle Argument Embody a Base Rate Fallacy?”, <i>Studies in History and Philosophy of Science</i> , 45: 103 – 108.
Week 12	Chakravartty, Anjan, 2007b, “Six Degrees of Speculation: Metaphysics in Empirical Contexts”, in Monton 2007: 183–208. Harker, D. (2012). How to Split a Theory: Defending Selective Realism and Convergence without Proximity. <i>The British Journal for the Philosophy of Science</i> , 64(1), 79 – 106. Third Paper is due.
Week 13	Beebe, J., and F. Dellsén, 2020, “Scientific Realism in the Wild: An Empirical Study of Seven Sciences and History and Philosophy of Science,” <i>Philosophy of Science</i> , 87 (April): 336 – 364. Williams, P., “Scientific Realism Made Effective” <i>British Journal for the Philosophy of Science</i> 70 (1):209-237 (2019)
Week 15	<b>Final Essay Exam</b>

### *3. Grade Components:*

20% Presentation + leading discussion.  
50% Three short papers (3-4 pages; double spacing)  
30% Final Essay exam

**ATTENDANCE AND PARTICIPATION:** Attendance, participation and reading before class are expected. Since this will be treated as a seminar, your participation is an important part of the class experience. There is no official grade component relegated to this part. However, if your participation is particularly good or noticeably bad over the semester, your final grade could be adjusted upwards or downwards by one grade level such as B → B+ (or in rare cases two grade levels such as C+ → B).

**ABOUT READINGS:** usually the amount is 20-30 pages for one class. Sometimes you might not be able to finish the reading either because life happens or that the reading is particularly hard for you. In that case just read as much as you can, and still try to come up with questions or comments with the part you read and the part you have difficulty reading.

**PRESENTATION.** You are required to present (about 15-20 minutes) on your reflection on part of an assigned reading and lead the following discussion (about 15 minutes). You should prepare a detailed handout to send to me at least 24 hours before your presentation that helps structure your presentation and the discussion (examples will be given). At the presentation, your handout should be available to everyone.

You are expected to (1) explain the essential components of the reading (please be focused and don't cover every single point); (2) give your comments, (3) support your claims, (4) prepare 1-3 discussion questions. All of these should be reflected on your handout. Ideally, presentations should be distributed evenly among Week 2-13. The order of presentation will be determined at the beginning of the semester. (Because the reading schedule is not completely fixed, your scheduled presentation is likely to be adjusted slightly as the date approaches, but you will know in advance.)

**SHORT ESSAYS.** During the semester, I will give you specific writing tasks.

**FINAL ESSAY EXAM.** The content of the exam will include an essay question (2.5-3.5 pages) and 2-3 shorter questions (1 page each). The logistics of the exam will be determined later. If you would like to replace the exam with a term paper, you can talk to me in private at any point of the semester before Week 13. The due date would be the same.

**LATENESS POLICY.** Each short paper will have two weeks' time to complete, which should be enough with good time management. Thus, at most short extensions (2-3 days) will be granted in normal situations. A long extension will only be given if you have a document showing that you are unavailable for a substantial period of time (exceptions are at my discretion). Unexcused late submissions will lead to grade deduction of one level per day (e.g., A→A-).