

# PHIL 0610: Philosophy & Science

**Lectures:** Tuesdays & Thursdays, 12-1pm—232 CL

**Lecturer:** Joshua Eisenthal

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Writing Recitations: Tuesdays & Thursdays, 3-4pm—325 Thackeray Hall

Office hours: Mondays, 2.30-4.30pm—1029G CL

**TAs:** Aaron Abma

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Recitations: Wednesdays, 9am—129 CL; 10am—2311 CL ; 11am—2322 CL

Office hours: Tuesdays, 11am-12pm & Wednesdays, 12pm-1pm—1009E CL

Sofia Berinstein

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Recitations: Mondays, 9am—317 CL; 10am—237 CL; 11am—241 Crawford Hall

Office hours: Tuesdays, 1-3pm

## COURSE DESCRIPTION

Philosophy and science have been deeply intertwined throughout the history of rational inquiry. In fact, not so long ago what we now call “science” was called “natural philosophy”. In this course we will be reflecting on questions such as the following. What distinguishes a “scientific” approach from other ways of engaging with the natural world? To what extent are we justified in believing our best scientific theories? What is the nature of progress in science? How do social, political, or cultural influences affect scientific practice? What, if anything, makes science objective?

## TEXTS

REQUIRED — “Theory and Reality: An Introduction to the Philosophy of Science”, Peter Godfrey-Smith, University of Chicago Press. (“T&R”)

REQUIRED — “Exploring the Scientific Method”, edited by Steven Gimbel, University of Chicago Press. (“ESM”)

OPTIONAL — “The Structure of Scientific Revolutions”, Thomas S. Kuhn, University of Chicago Press. (“SSR”)

## COURSE REQUIREMENTS AND GRADING

At the beginning of this course you will be asked to choose a particular scientific field. **\*\*No background knowledge is required.\*\*** Feel free to choose whichever option strikes you as most interesting—they will all be accessible regardless of whether you have studied them before. Please choose one from the following options:

<b>A. Atomic Physics</b>	<b>B. Evolutionary Biology</b>	<b>C. Psychology</b>
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The bulk of the assessments for this course will be in the form of **three case studies**, contained in *Exploring the Scientific Method* (henceforth, “ESM”). The details for each case study are contained on pages 155-169, 214-230, and 315-323 respectively.

Each case study centers on a particular philosophical view in the context of an important episode in the history of your chosen scientific field. You will be asked to produce short papers (approximately 4-6 pages) which do the following four things:

- (1) explain the scientific episode;
- (2) explain the relevant philosophical view;
- (3) explain how an advocate of that philosophical view would make sense of that scientific episode; and,
- (4) evaluate how successfully the philosophical view captures real-life science.

There will also be **two in-class exams** (one midterm and one final). The two exams will be worth 15% of your final grade, and the case studies will each be worth 20%. The final 10% of your grade will be for attendance and participation. In summary:

Case Study 1:	20%
Case Study 2:	20%
Case Study 3:	20%
Midterm:	15%
Final:	15%
Attendance and Participation:	10%

Substantial progress in this course will be rewarded in the following way: if it will help your grade, the midterm will be worth 10% and the final will be worth 20%, and/or the three case studies will be worth 10%, 20% and 30% respectively. In all cases, the final grading scale used will be the standard scale. (A: >92%, A-: 92-90%, B+: 89-87%, B: 86-83%, B-: 82-80%, C+: 79-77%, C: 76-73%, C-: 72-70%, D+: 69-67%, D: 66-63%, D-: 62-60%, F: <60%.)

**APPROXIMATE SCHEDULE (SUBJECT TO CHANGE)**

<b>Tuesday</b>	<b>Thursday</b>	<b>Topic / Reading</b>
Jan 8th	Jan 10th	Introduction; ESM pp.1-4 & 43-45 (Deductivism & Inductivism)
Jan 15th	Jan 17th	Logical Empiricism T&R §2; ESM pp.91-93 & 106-111 (Hypothetico-Deductivism & R. B. Braithwaite)
Jan 22nd	Jan 24th	Induction and Confirmation T&R §3; ESM pp.112-115 & 131-136 (Paradoxes of Evidence & Carl G. Hempel)
Jan 29th	Jan 31st	Falsificationism T&R §4; ESM pp.141-153 (Falsificationism & Karl Popper)
Feb 5th	Feb 7th	<b>*CASE STUDY 1* — due 4pm, February 14th</b>
Feb 12th	Feb 14th	Holistic accounts of science T&R §5; ESM pp.171-181 (Holistic Views of Science & Pierre Duhem)
Feb 19th	Feb 21st	Thomas Kuhn and “Scientific Revolutions” T&R §6; ESM pp.182-197 (Thomas Kuhn) <i>Optional: SSR, §§I-VIII</i>
Feb 26th	Feb 28th	Lakatos and Feyerabend T&R §7; ESM pp.198-211 (Imre Lakatos) <i>Optional: SSR, §§IX-XIII</i>
March 5th	March 7th	<b>*MIDTERM* — in class, March 7th</b>
<i>** Spring break **</i> March 10th-17th		<b>*CASE STUDY 2* — due 4pm, March 21st</b>
March 19th	March 21st	Sociology of Science T&R §8; ESM pp.281-284 & 307-314 (Critical Views of Scientific Theories & Bruno Latour)
March 26th	March 28th	Feminist Philosophy of Science T&R §9; ESM pp.294-306 (Ruth Hubbard) <b>On Courseweb:</b> Okruhlik (1994), “Gender and the Biological Sciences”
April 2nd	April 4th	Climate Science <b>On Courseweb:</b> Jamieson (2014), “Reason in a Dark Time”, §2 (excerpts)
April 9th	April 11th	Science and Public Policy <b>On Courseweb:</b> Brown and Havstad (2017), “The disconnect problem, scientific authority, and climate policy”
April 16th	April 18th	<b>*FINAL* — in class, April 18th</b>
		<b>*CASE STUDY 3* — due 4pm April 25th</b>

## WRITING RECITATIONS

Students registered for writing recitations will be required to submit an initial draft and a final revision for all three case studies. The grade for each case study will then be calculated as the average for the draft and the revision. There may also be other short writing-related assignments that will be explained during recitations.

## LAPTOPS AND PHONES

**Please refrain from using your laptop in class.** There is now substantial [evidence](#) showing that laptops have a detrimental impact on the grades of students who use them, and even on the grades of students *sitting near* others who use them. However—if you are confident that it is genuinely helpful for you to use a laptop in class, just let me know.

## OFFICE HOURS AND EMAIL

Office hours can be used to talk over assignments, reading, or class performance, or for more freewheeling discussion about the material in the course. Email should be used for short factual or logistical questions. Email may also be used to ask philosophical questions, but in general a proper discussion will require face time during office hours. **Please allow at least 24 hours for a reply before sending a follow-up email.**

## FOOD AND DRINK

Any drinks other than water must be in containers with lids, and except on very special occasions food is not generally permitted during lectures or recitations. So please arrive well fed and dispose of any food or put it in your bag or stomach beforehand.

## ACADEMIC INTEGRITY POLICY

Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, noted below, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, exam or paper will be imposed. (For the full Academic Integrity policy, go to [www.provost.pitt.edu/info/ai1.html](http://www.provost.pitt.edu/info/ai1.html).)

## **DISABILITY RESOURCE SERVICES**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union, 412-648-7890, as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course.

## **E-MAIL COMMUNICATION POLICY**

Each student is issued a University e-mail address (username@pitt.edu) upon admittance. This e-mail address may be used by the University for official communication with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g., Hotmail, AOL, Yahoo). Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address. To forward e-mail sent to your University account, go to <http://accounts.pitt.edu>, log into your account, click on **Edit Forwarding Addresses**, and follow the instructions on the page. Be sure to log out of your account when you have finished. (For the full E-mail Communication Policy, go to [www.bc.pitt.edu/policies/policy/09/09-10-01.html](http://www.bc.pitt.edu/policies/policy/09/09-10-01.html).)