

# Science and Rationality

PHIL 385 (49433R) Spring 2015

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Instructor: Dr. Tom Pashby  
Class Schedule: Mon/Weds 12:00–1:45pm, VKC 211  
Website: <http://tompashby.info/SR/>  
Contact: Email: [pashby@usc.edu](mailto:pashby@usc.edu) Office: STO 232  
Office hours are Mon 2–4pm, or by appointment

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## Course Description

How does science work? Does it tell us what the world is *really* like? What makes it different from other ways of understanding the universe? Philosophy of science aims to answer all these questions, and more. In this course you will undertake a grand tour of one hundred years of philosophical debate about science. We will take in logical positivism; the problems of induction and confirmation; Karl Popper's theory of science; Thomas Kuhn and 'scientific revolutions'; the views of Imre Lakatos, Larry Laudan, and Paul Feyerabend; and challenges to the field from sociology of science, feminism, and science studies. We will also look in more detail at some specific problems and theories of scientific rationality, including scientific realism, the theory-ladenness of observation, scientific explanation, and Bayesianism.

Our overall approach will be topic-oriented rather than historical. Occasionally, however, we will delve into pertinent episodes in the history of science or of the philosophy of science, or into a non-technical discussion of scientific theories.

## Course Goals

By taking this course you will gain an understanding of the central topics and controversies in the philosophy of science and you will learn how to write knowledgeably about these issues in a philosophical manner. The major goals of this class, then, are to get you to think about science and scientific knowledge, to be able to express these thoughts clearly, and to give cogent arguments in favor of your views and rebuttals to arguments against your views.

## Required Texts

There are two required texts, each of which are available from the USC Bookstore (and elsewhere).

[TR] Peter Godfrey-Smith, *Theory and Reality: An Introduction to the Philosophy of Science*, The University of Chicago Press, 2003.

[SR] Thomas Kuhn, *The Structure of Scientific Revolutions*, The University of Chicago Press, 2012 (1962).

Other readings will be made available online, or may be taken from the Stanford Encyclopedia of Philosophy ([SEP]).

## Evaluation

You will be assessed on the basis of homework assignments, in-class quizzes, term papers, and a final (take home) exam.

15%	homework assignments
15%	in-class quizzes
30%	two short essays
30%	final exam
10%	attendance and participation

Letter grades will be assigned according to the following percentage grade scale:

A	≥92.50%	C	72.50–76.49%
A-	89.50–92.49%	C-	69.50–72.49%
B+	86.50–89.49%	D+	66.50–69.49%
B	82.50–86.49%	D	62.50–66.49%
B-	79.50–82.49%	D-	59.50–62.49%
C+	76.50–79.49%	F	≤59.49%

Homework assignments are designed to help you think through the material we are covering in class and will be due (roughly) weekly. In calculating your homework grade, I will drop your lowest 3 scores. Instead of a midterm, there will be three short quizzes at regular intervals throughout the semester. The two short papers will be 2000 words or less and will each cover a different topic (to be assigned). Additional assignments may be set to help the preparation of your papers. Papers will be submitted online through Blackboard using Turnitin. The final will be a take home exam in which you will write several short essays on a selection of topics from the course. Since class discussions and lectures form an important component of your understanding of the material your attendance and participation will also be assessed. Missing more than three classes without advance warning (and legitimate justification) will adversely affect your grade.

## Academic Integrity

All students are expected to understand and abide by the principles laid out in SCampus, the Student Guidebook, which contains the Student Conduct Code in Section 11.00 and the recommended sanctions in Appendix A. (See <http://scampus.usc.edu/university-student-conduct-code/>). Should there be any suspicion of academic dishonesty, students will be referred to the Office of Student Judicial Affairs and Community Standards for further review. Details of the review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

## Email Policy

It is your responsibility to check your email account regularly. Failure to do so is not a valid excuse for failing to meet the requirements of the course. If you email me you can expect a response within 24 hours, except when circumstances intervene (in which case I will let you know). Please check the syllabus and course website for the answer to your question before emailing me—if the answer can be found there you can expect a very terse response! Also, please recognize that emails to your instructor should respect the formal nature of the relationship: over familiarity and poor grammar are unacceptable.

## Writing Center Services

This course is writing intensive but it is not a writing course. While you will be given guidance regarding the expectations for your written work I am not able to offer you help with your writing difficulties. For that purpose there is the Writing Center, located in the Taper Hall of Humanities, Room 216 (see <http://dornsife.usc.edu/writingcenter/> for further details). Call (213)-740-3691 to make an appointment. If you expect to need help with your writing you should visit them as soon as possible to form a plan. Do not leave it until the week your paper is due!

## Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered as early in the semester as possible. DSP is located in STU 301 and is open 8:30 am to 5:00 pm, Monday through Friday. The phone number for DSP is (213) 740- 0776.

## Course Readings and Tentative Schedule

You are expected to do the reading before coming to each class. The readings will mainly be taken from the two required texts with other readings made available online. A detailed and up to date schedule of lectures and readings is available from the course website (<http://tompashby.info/SR/>), linked to from Blackboard (<http://blackboard.usc.edu>). It is your responsibility to check both Blackboard and the course website regularly.

week	topic	coursework due	quiz
<b>Part 1: Intro. to Philosophy of Science</b>			
1	introduction [TR 1, Hempel 2]	-	-
2	logical empiricism [TR 2] (MLK Monday)	hw 1	-
3	explanation [TR 13, Hempel 5, Woodward]	hw 2	-
4	laws of nature [SEP, Beebee]	hw 3	-
5	induction and confirmation [TR 3, TR 4]	hw 4	-
<b>Part 2: Scientific Revolutions</b>			
6	normal science and paradigms [SR, TR 5]	paper 1	quiz 1
7	crisis and revolution [SR, TR 6]	hw 5	-
8	evaluation and responses [TR 7]	hw 6	-
<b>Part 3: The Mainstream and its Discontents</b>			
9	sociology of science [TR 8]	hw 7	
10	feminism and social studies [TR 9]	paper 2	quiz 2
11	scientific realism [TR 12]	hw 8	-
12	naturalism [TR 10]	hw 9	-
13	Bayesian approaches [TR 14]	hw 10	-
14	social structure of science [TR 11]	hw 11	quiz 3
15	FINAL	-	-