

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

**Philosophy 495: Advanced Philosophy of the Sciences
Spring 2017**

Scientific Realism

Class Time: Mondays and Wednesdays 11:00 am – 12:15 pm

Location: SH 224

Instructor: Sindhuja Bhakthavatsalam, Ph.D.

Office: Education Administration 100A

Phone: 818-677-7022

Email: sindhuja.bhakthavatsalam@csun.edu

Office Hours: Thursdays 10:00 am – 1:00 pm, and by appointment.

Prerequisites

6 units of Philosophy, including [PHIL 330](#), [PHIL 350](#), [PHIL 352](#) or [PHIL 355](#)

Course Description

This course is on scientific realism – a topic that is so central to philosophy of science that it is connected to almost every other topic in the area. Broadly speaking, scientific realism consists in either a) a positive epistemic attitude towards our best scientific theories: to believe that our best theories are (at least approximately) true, or b) the view that pursuit of truth is the most important goal for science, or both. Scientific antirealism then, broadly consists in the denial of a) or b) or both. In this course we will look at recent developments of the realism debates including epistemological, metaphysical, and semantic issues. In particular, we will look at:

- The historical development of the scientific realism debate in the twentieth century.
- The explanationist defense of realism and the various criticisms.
- The structuralist turns in the early and late twentieth century.
- Various forms of empiricism and their attitude towards scientific realism.
- The role of the history of science in the scientific realism debate.
- The atomism debate in the late nineteenth century.

Course Objectives

As a student of this course, you will:

1. Learn to think about science and its success from philosophical and historical perspectives.

2. Cultivate skills to closely and carefully read scholarly work in the philosophy (and some history) of science.
3. Practice reconstructing and critically engaging with philosophical arguments in the literature.
4. Learn to find and use research material.
5. Practice constructing original arguments and write an analytical paper.

Required Readings

Books we will use include

- *Scientific Realism: How Science Tracks Truth* (SRhSTT) by Stathis Psillos (required),
- *The Scientific Image* by Bas van Fraassen (available online through Oviatt Library), and
- *Exceeding Our Grasp: Science, History, and the Problem of Unconceived Alternatives* by Kyle Stanford (available online through Oviatt library).

All other readings will be posted on the Moodle site for this course. Students are expected to always have the readings for the week with them in class – preferably as paper copies.

Attendance

Students will be allowed *two* unexcused absences this semester. Students with more than two unexcused absences will have their final grade lowered half a letter grade. An unexcused absence is an absence without documentation and due to reasons other than a personal or family illness or emergency. There will be no penalty for absences due to legitimate reasons as long as there is documentation. Do talk to me if you are not able to produce documentation.

While there is a penalty for having more than one unexcused absences, there is no credit for attending class since it is a basic requirement.

Description of assignments/ activities

1. Online Reading Responses

Every Wednesday you will bring to class a tablet or laptop with access to Moodle. In the discussion forum set up there you should have already input – as homework – a comment on one or a few key points in one or more of the readings assigned for that week. Be sure to clearly state which parts of the reading(s) you're referring to by giving enough context from the readings, and also providing page nos.. In class, you will get a few minutes to revise your comment based on class discussion, following which you will respond to a peer's comment. You will then read your peer's comment and spend a few minutes discussing it with them. Back at home, you will respond to your peer's response on Moodle (no later than 9 pm). You are expected to be reflective and critical throughout this process.

If you cannot bring a tablet or laptop to class then bring a printed or handwritten copy of the following table. The first column should include quotes that stood out for you from

the assigned reading. (You don't have to type the whole quote if it's too long; you may just put in the page number, paragraph number and first few words of the quote(s).) The middle column (which should be the widest) is for your reflection/reaction to what you have written in the left column. Leave the third and fourth columns blank; a peer will respond in class to what you have written in the third, and you will fill in the fourth column at home. Remember to be reflective and/or critical. You will give the sheet to a peer for their response. Once you fill out your response on your peer's sheet, you will hand it back to them. You will then spend a few minutes discussing each other's responses. In the following class you will turn in the sheet to me with all columns filled in – both you and your peer should put your names down on the sheet. This will be the very first activity in class every week.

You will work with a different peer each week.

Quotes	My reflection	Peer response	My response to peer

2. Presentation

Each student will give at least one short presentation in class based on one or more of the assigned readings. On the first day of class we will collectively decide who will present when and on what. The presentation should

- Briefly and clearly summarize the arguments presented in the reading (2.5 pts.)
(You do not have to go into every minute detail in the reading.)
- Critically reflect on the authors' arguments (2 pts.)
- Include questions for discussion: *You* will primarily drive the class discussion the day you present. (2 pts.)
- Be accompanied either by a PowerPoint presentation and/or a handout that you will distribute to the class: These should have a clear outline and the main points of your presentation. (2.5 pts.)
- Be at least 15 minutes long (1 pt.)
- Be followed by a short (~2 pages) written response to the paper(s) you presented on: This is basically a written version of your presentation. You will begin with a brief summary of the author(s)' arguments and then present your views on them. You will turn this in the week *after* you present and incorporate any key points that came up in the class discussion when you presented.

I strongly encourage students to meet with me before presenting so we can go over ideas together.

3. Reading summaries

During the course of the semester you will turn in *two – three* concise reading summaries, of which I will consider your best two for calculating your course grade. It is up to you to pick the readings. *Each summary should involve at least two related readings.* These may *not* include the readings on which you do your presentation. The summary should be at least 2 pages long, double-spaced and typed in 12 pt. font with 1" margins all around. The summary should include the author(s)' main arguments and the overall take-home

lessons of the reading. You need not offer your original responses in these summaries: the focus is on comprehending the reading and reconstructing the arguments in your own words. *Whichever readings you pick, you will have to submit the summaries in class the week(s) we discuss those readings.* You may not submit a summary of a reading after we have discussed it in class. You will turn these in both as hard copies and on Moodle.

4. Original reflective paper

You will be given a list of prompts on which to write a reflective paper. You are expected to draw on the relevant authors' arguments and provide your own arguments in response. You are welcome to do additional research and bring in material not covered in class.

This assignment has three components:

- i) A rough outline – possibly in the form of bullet points – of your paper with bibliography, on which you will get feedback.
- ii) A working draft of the complete paper on which you will get feedback. (After this you have to schedule to meet with me individually.)
- iii) A final version of the paper.

The final version should be 8 – 10 pages long, double-spaced, typed in 12 pt. font with 1" margins all over. You will receive further details on this assignment after Spring break.

5. Class participation

Following the presentation(s) we will have an open discussion in which everyone is expected to participate. You are always expected to come to class having done the reading and prepared for discussion. You are expected to maintain a professional and constructive attitude and contribute positively to group and class dynamics. Good class participation involves offering relevant, insightful and constructive comments during class, but not dominating discussions. Writing thoughtful responses on a peer's comment in discussion forums on Moodle, and taking part in class group discussions (when assigned) will also count towards participation credit.

Coming late to class and not bringing the week's readings to class will negatively impact your participation grade. Inappropriate use of technology including but not limited to texting/ checking email/ browsing the web/ logging on to social networking sites is strictly prohibited. Any such activity I observe more than once will automatically result in a zero for participation for that class.

Course Grade Breakdown

Class participation: 10%

Moodle discussion forum/ Triple entry journal: 10%

Presentation: 10%

Written response following presentation: 5%

Reading summaries: 20% (10% each)

Outline of paper and bibliography: 10%

Draft of paper: 15%

Final paper: 20%

Late Assignments

For the written response following the presentation, 1% will be reduced each day it is late. Grade policy on late submissions for the three components of the paper will be announced along with details of the assignment after Spring break. Zero points for presentation if you're absent without good reason when you're due to give one. Presentations cannot be moved without legitimate reasons and supporting documentation. If you are unable to complete an assignment in time due to an emergency or other legitimate reasons and think you deserve an exception, talk to me as early as possible – what course of action needs to be taken will be decided on a case-by-case basis. The following section on accommodations also applies to late assignments.

Accommodations

Students with special needs who need reasonable modifications, special assistance, or accommodations in this course should direct their request to the instructor. The instructor can direct students to the appropriate office on campus for assistance. Please be sure to contact me if you need any assistance or accommodation as early as possible.

Email

I will frequently communicate important information to you via (CSUN) email. It is therefore important that you check your (CSUN) email regularly. If you want to email me, please do so from your CSUN email address only.

Fine Print

It is the responsibility of each student in this course to know and follow all written guidance given by the instructor.

Unforeseen circumstances during the semester might require changes to the syllabus. In this event, a revised syllabus will be posted to Moodle at least one week in advance of the implementation of the change. The original syllabus will remain and the revised syllabus will be identified by the date of the revision as part of the file name. Dates of assignments will never be moved forward.

Academic Honesty

California State University, Northridge expects honesty and integrity from all members of its community. All acts of dishonesty – cheating on assignments or examinations, plagiarism, forgery of signature or falsification of data, unauthorized access to University computer accounts or files, and removal, mutilation, or deliberate concealment of materials belonging to the University library will be dealt with appropriately.

All work assigned in this class must be completed individually unless specified as group work. I will refer all cases of academic dishonesty (including copying, allowing others to copy your work, plagiarism, failing to cite your source, copying/pasting text from the

internet even with modifications, misrepresentation of others' work as your own, violations of the collaboration policy below, etc.) to the VP of Student Affairs' office for arbitration and possible disciplinary action. The first offense will result in, *at minimum*, the reduction of your final grade by one partial letter grade (e.g., A- becomes B+), the second offense will result in an F for the class.

In addition, students enrolled in credential or licensing programs may be suspended, dismissed, or denied recommendation for the credential or license for any violation of the published code of ethics for the professional group.

For a detailed information on CSUN policy on academic dishonesty, please refer to catalog: <https://www.csun.edu/catalog/policies/academic-dishonesty/>

Grading

A rubric will be used in evaluating assignments submitted for this course. Final grade will be determined on a percentage basis according to the following scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
≥ 94	90-93	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<60

Course Calendar

Week	Date	Topic	Readings/ Assignments
1	01/23	Introductions, course syllabus, policies, scheduling presentations etc.	None
	01/25	What is Scientific Realism?	SRhSTT: Introduction Scientific Realism: The Stanford Encyclopedia for Philosophy – Sect
2	01/30		Atomism from the 17 th to the 20 th ce The Stanford Encyclopedia for Philo – Sections 1, 6, 7.

	02/01	Realism and the Atomism debate	Psillos, S. (2011) 'Moving Molecules Above the Scientific Horizon: On the Case for Realism' <i>Journal for General Philosophy of Science</i> , 42.1: 339–363.
3	02/06	Empiricism and Scientific Realism – I	SRhSTT, chapter 2
	02/08		Schlick M. (1960) Positivism and Realism in Alfred J. Ayer (Ed.) <i>Logical Positivism</i> Glencoe, NY: Free Press.
4	02/13	Empiricism and Scientific Realism – II Theory, Observation, Constructive Empiricism	Van Fraassen, B. (1980) <i>The Scientific Image</i> pp. 1 – 19
	02/15		Theory and Observation in Science: Stanford Encyclopedia for Philosophy Sections 4, 5, 6.
5	02/20	Empiricism and Scientific Realism – III	Cartwright, N. (2007) Why be hanged even a lamb? in <i>Images of Empiricism</i> Bradley Monton pp. 32 – 45
	02/22		Open discussion on topics covered so far
6	02/27	Inference to the Best Explanation and the No Miracles Argument – I	SRhSTT Chapter 4
	03/01		SRhSTT Chapter 4 – Contd.
7	03/06		Boyd, R (1983), 'On the Current Status of the Issue of Scientific Realism', <i>Erkenntnis</i> 19: 45–90.

		Inference to the Best Explanation and the No Miracles Argument – II	
	03/08		Boyd, R (1983), On the Current Status of the Issue of Scientific Realism, <i>Erkenntnis</i> 19: 45–90. – contd.
8	03/13	Inference to the Best Explanation and the No Miracles Argument – III	Musgrave, A. (2006-2007) The ‘Miracles Argument’ for Scientific Realism, <i>The Rutherford Journal</i>
	03/15		Massimi, M. (2016) Three tales of scientific success
	03/20 – 03/24	Spring Break	No Class
9	03/27	van Fraassen on Explanation and Realism	van Fraassen, B. (1980) <i>The Scientific Image</i> pp. 19 – 40
	03/29	‘Fine’s Natural Ontological Attitude’	Fine, Arthur (1996) The Natural Ontological Attitude in <i>The Shaky Game</i> pp.
10	04/03	Realism and the History of Science – I	SRhSTT – Chapter 5
	04/05		Laudan, L. (1981), A Confutation of Convergent Realism, <i>Philosophy of Science</i> , 48:19–48.
11	04/10		Stanford, K. P (2006) Exceeding our expectations Chapter 6
		Realism and the History of Science – II	Paper outline and annotated bibliography due

**05/18:
Final paper
due**

Note: This schedule is tentative and may be revised. Such revisions (if any) will be announced in advance and posted to Moodle. However, due dates assignments will never be advanced.

	04/12		Chang, H. (2003) Preservative Realism and Its Discontents: Revisiting Caloric <i>Philosophy of Science</i> 70, pp. 902-912
12	04/17	History of Science and Structural Realism	No Class
	04/19		SRhSTT Chapter 7
13	04/24	Structural Realism and Structural Empiricism	Ladyman, J. (1998) What is Structural Realism? <i>Studies in the History and Philosophy of Science Part A</i> 29:3: 409-424
	04/26		van Fraassen BC (2006) Structure: Is it a shadow and substance? <i>British Journal for the Philosophy of Science</i> 57: 275-307
14	05/01	Underdetermination and the Problem of Unconceived Alternatives	Stanford, K. <i>Exceeding our Grasp</i> Chapter 1 Draft of paper due
	05/03		Stanford, K. <i>Exceeding our Grasp</i> Chapter 2
15	05/08	Review and Synthesis	Open discussion on topics covered so far, paper drafts handed back
	05/10		Discussion of paper drafts, notes for final paper, review and synthesis