



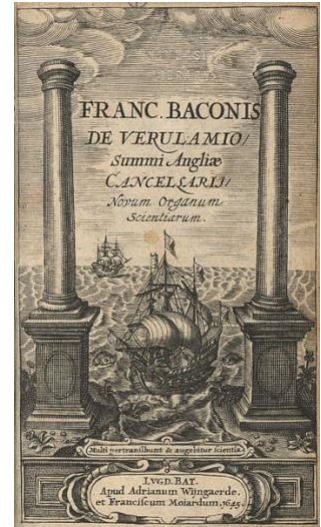
# Philosophy of Science

## Course information:

Course #:	PHIL 341
Term:	Fall 2023
Course pre-requisites:	None
Course schedule:	Mon/Wed 16:05-17:25
Course location:	Birks 203

## Instructor information:

Name:	Dr. Oran Magal
Email:	<a href="mailto:oran.magal@mcgill.ca">oran.magal@mcgill.ca</a>
Office hours:	Mon/Wed 15:00-15:45
Office location:	TBA



## Description:

Science is a major force in shaping modern life and our society, and it is therefore crucial to understand what science is and what its methods are, as well as to evaluate claims often made on its behalf for a special kind of objectivity and unique standing with respect to politics and policy. The emphasis in this course will be on the relation between scientific theories and practices on one side and 'reality', however that is to be understood, on the other. Along the way we will consider in detail the role of models and modelling, the challenge of acknowledging multiple viewpoints while maintaining a concept of objectivity, and how to incorporate scientific *practices* and not only theories into our philosophical understanding of science. A detailed list of topics and readings is provided below.

## Required Background:

There are no formal prerequisites. However, it is assumed that students have some previous experience writing essays in philosophy. Typically, this means having previously taken an introductory level philosophy course such as Introduction to Philosophy (PHIL 200, 201, 202), Intro to History and Philosophy of Science (PHIL 221), or some philosophy courses at the Cégep level.

## Required Course Materials:

All required readings for the course will be available as e-books through McGill's library or as PDF files on *MyCourses*. Optional readings will be provided on *MyCourses* for students who wish to explore further.

## Instructional Method:

The course will be based on lecture and there will be no tutorial conferences. To succeed in the course, students should read the assigned readings for each week *before* coming to class. Every topic will also have optional readings; these are recommended for deeper understanding, but not required for success in the course.

The classroom for this course does not include the possibility of lecture recording through McGill's system. Please make an effort to attend all classes.

## Schedule of Topics and Readings

The required readings for each week are listed below. Optional readings will be posted on *MyCourses* for each topic for students who are interested in learning more. The books referred to by their authors' last names, 'Massimi' and 'Chang', are the following (both available as e-books through the library):

Michela Massimi, *Perspectival Realism*, Oxford University Press, 2022

Hasok Chang, *Realism for Realistic People: A New Pragmatist Philosophy of Science*, Cambridge University Press, 2022

Week	Dates	Topic	Readings + assignments
0	W Aug 30 <sup>th</sup>	Introduction	Please read the syllabus. <b>Note:</b> Monday Sept 4 <sup>th</sup> is Labour Day.
1	W Sept 6 <sup>th</sup>	What do we mean by 'scientific realism'?	Massimi, Ch. 1, pp 3-21.
2	M Sept 11 <sup>th</sup> W Sept 13 <sup>th</sup>	Realism and Perspectives in Science	Massimi, Ch. 2, pp. 32-45. <b>Note:</b> add/drop deadline is Sept. 12 <sup>th</sup> .
3	M Sept 18 <sup>th</sup> W Sept 20 <sup>th</sup>	Perspectivism and Scientific Pluralism	Massimi, Ch. 3, pp. 49-72. <b>Note:</b> reading assignments begin this week.
4	M Sept 25 <sup>th</sup> W Sept 27 <sup>th</sup>	Perspectival modelling: a case study	Massimi Ch. 4, pp. 73-78 (read carefully) and 87-109 (skim – just the main idea).
5	M Oct 2 <sup>nd</sup> W Oct 4 <sup>th</sup>	Perspectival Realism as synthesis of approaches	Massimi, Ch. 6, pp. 183-190 and 202-218. <b>Note:</b> October 6 <sup>th</sup> -11 <sup>th</sup> is Reading Break.
6	M Oct 16 <sup>th</sup> W Oct 18 <sup>th</sup>	Perspectival realism and 'natural kinds'	Massimi, Ch. 7, pp. 219-236 and 242-248.
7	M Oct 23 <sup>rd</sup> W Oct 25 <sup>th</sup>	A pragmatist view of scientific realism	Chang, Intro pp. 1-11 and Ch. 1, pp. 12-27 <b>Note:</b> 1 <sup>st</sup> Essay due this week!
8	M Oct 30 <sup>th</sup> W Nov 1 <sup>st</sup>	A critique of 'Metaphysical Realism'	Chang, Ch. 2, pp. 70-77 and Ch. 3, pp. 119-131.

<b>9</b>	M Nov 6 <sup>th</sup> W Nov 8 <sup>th</sup>	A realism compatible with pluralism	Chang, Ch. 5, pp. 223-239 and ‘Closing Remarks’, pp. 252-255. <b>Note:</b> 2 <sup>nd</sup> Essay due this week!
<b>10</b>	M Nov 13 <sup>th</sup> W Nov 15 <sup>th</sup>	On the relation between mathematics and nature	Mark Wilson (2007), “The Unreasonable Uncooperativeness of Mathematics in The Natural Sciences”
<b>11</b>	M Nov 20 <sup>th</sup> W Nov 22 <sup>nd</sup>	The role of mathematics in scientific explanations	Mary Leng (2021), “Models, structures, and the explanatory role of mathematics in empirical science”
<b>12</b>	M Nov 27 <sup>th</sup> W Nov 29 <sup>th</sup> Thu Nov 30 <sup>th</sup>	Causal and non-causal explanations in science	Alisa Bokulich (2018), “Searching for non-causal explanations in a sea of causes” <b>Note:</b> Thursday, Nov 30 <sup>th</sup> is a make-up day and follows a Monday schedule.
<b>13</b>	M Dec 4 <sup>th</sup>	Concluding remarks	Final class of the course, no new readings. <b>Note:</b> 3 <sup>rd</sup> Essay due this week!

## Means of Evaluation

The final grade in the course comprises the following (explanation below):

Assignment	Due date	% of final grade
Reading assignments	Throughout (best 4 out of 6)	40
Essay: Perspectival Realism	October 23rd, end of day	20
Discussion of essay	By appointment	Pass/Fail
Revised essay	Nov. 13 <sup>th</sup> , end of day	Pass/Fail
Essay: Pragmatist Realism	Nov. 10 <sup>th</sup> , end of day	20
Discussion of essay	By appointment	Pass/Fail
Revised essay	Dec. 1 <sup>st</sup> , end of day	Pass/Fail
Essay: Scientific Explanation	Dec. 5 <sup>th</sup> , end of day	20

- **Reading assignments:** You will need to complete 4 out of 6 of the reading assignments that will be distributed on MyCourses throughout the term. (You are welcome to complete all six, in which case the best four will be used to calculate your final mark.) Each reading assignment will be available at least one week before it is due. Please note that because the answer to the reading assignment will be discussed in class immediately after the due-date, late reading assignments will not be accepted. If there are special circumstances (e.g., being sick for more than one day, etc.), the instructor will assign an alternative reading assignment.
- **Essays, discussion, and revision:** the prompt for each essay will be given at least one week before it is due. For the first two essays, after they are returned to you with feedback, there will be a sign-up sheet to meet with the instructor to discuss your essay (approximately a 10-minute meeting) via Zoom/MS-Teams, or in person if meeting online is not possible. This meeting is

mandatory. It will be a chance for you to ask questions about the feedback you received, and you will be asked to explain some of what you wrote. After this meeting, you will be asked to submit a revised version of your essay, reflecting the feedback you received. Full instructions for this will be posted on MyCourses. Note: you must meet the instructor and submit a revised version of the first two essays to get credit for those essays. However, for the last essay of the course, you will not need to meet the instructor, not to submit a revised version. (Of course, you still *can* meet the instructor if you have any questions.)

## Policy on extensions and late work

If you have a valid reason to ask for an extension, please **write to me** ([oran.magal@mcgill.ca](mailto:oran.magal@mcgill.ca)) **before the relevant work is due**. As a rule, extensions will be given only for medical reasons or serious personal/family issues. Since the public health system is already overloaded, I will not ask you to provide a medical note, but I do require that you take responsibility to communicate with me in a timely manner.

## How to Submit Your Work

**Submitting work through MyCourses:** reading assignments and essay instructions will be distributed through *MyCourses* (in the ‘assignments’ tab of the course page), and students should submit their work only through *MyCourses*. Do not send your work by email to the instructor unless you are specifically asked to do so.

**Important:** Reading assignments will be submitted through MyCourses as plain text (there will be an input box for you to copy/paste your work from a word processor). Essays and revised essays can only be submitted through MyCourses as a PDF file. It may help to know that Microsoft Word (for PC or Mac) is provided to you for free through McGill and can generate PDF files (an option under ‘save as’). If you are using any other software, simply use *export* or *save as* to save your work as a PDF prior to submitting it.

# McGill Policies and Statements

## Language of Submission

*In accord with McGill University’s Charter of Students’ Rights, students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.*

*Conformément à la Charte des droits de l’étudiant de l’Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l’un des objets est la maîtrise d’une langue).*

## Academic Integrity

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures. (see [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/) for more information)

## Varia

Mobile computing and communications devices are permitted in class insofar as their use does not disrupt the teaching and learning process. Please do not record the lectures without instructor's permission.

Instructor-generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Students with Disabilities, 514-398-6009.

McGill University is on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which peoples of the world now gather.