

# “Metaphysical Problems of Physics”

## Course Summary

Dr. Erik Curiel

email: [erik.curiel@lmu.de](mailto:erik.curiel@lmu.de)

office: Ludwigstr. 31, R130

office hours: by appointment (email me)

course webpage:

<http://strangebeautiful.com/lmu/2021-summer-metaphys-phys.html>

Summer, 2021

Tuesdays, 14:00–16:00 *C.T.*

ONLINE

(contact Dr. Curiel for Zoom coordinates; eventually perhaps in person  
at Geschw.-Scholl-Pl. 1 - C 022)

## Contents

<b>1</b>	<b><a href="#">Course Description</a></b>	<b>1</b>
<b>2</b>	<b><a href="#">Structure and Evaluation</a></b>	<b>2</b>
<b>3</b>	<b><a href="#">Readings</a></b>	<b>2</b>
<b>4</b>	<b><a href="#">Schedule</a></b>	<b>3</b>
	<b><a href="#">References</a></b>	<b>3</b>

## 1 Course Description

We will survey a number of traditional metaphysical problems in the foundations of physics, including kinds of modality and their roles in representation and reasoning, the definition and nature of physical quantities, natural kinds, and how physics may bear on ontology. One (among several) overarching themes will be the question: whether physics needs a deeper metaphysics for its cogency and, if so, in what sense such a thing is needed and what such a thing may be. One of the overarching themes of the course is that we'd all be better off as pragmatists.

---

## 2 Structure and Evaluation

The class period will consist of lectures by Dr. Curiel, based on the assigned reading, with at least one third of the class time dedicated to open discussion. There will also be opportunities for students to give presentations (20–30 minutes) on topics they are particularly interested in. The schedule of lectures and assigned and suggested readings can be found here:

<http://strangebeautiful.com/lmu/lectures-lmu-metaphys-phys.pdf>.

**The course is worth 9 ECTS, and 3 SWS.** The grade for the course will be determined by a term paper of approximately 6000 words for MA students (not counting bibliography), and of approximately 3000 words for BA students (not counting bibliography), due some time in the Fall of 2021, the exact date still to be determined. The paper will be on a subject of the student's choice, though I will provide suggested paper topics. I strongly urge students to consult with me before choosing a topic. I will be happy to read and comment on rough drafts of the final paper, so long as they are given to me at least three weeks before the due date. Please send me the paper by email, with your name and Matrikelnummer clearly given at the beginning. Please do not use a separate title page, as that is only a waste of paper. (Yes, I print papers out to read them—the carnal solidity of paper focuses my thoughts.)

For a grade in the range 1,0–1,3, you need to have a clearly articulated question and main claim, both of which have to be presented in the introduction. You have to develop an independent and original argument supporting your main claim; merely reconstructing arguments is not enough. Your argument has to take up more than 50% of the term paper. The argumentative structure of the term paper has to be made explicit (*e.g.*, by an overview in the introduction, by guiding the reader in each section, and so on). You have to anticipate and discuss possible objections to your own arguments. You must show that you are able to reconstruct arguments from the relevant literature in a concise and accurate way. You must show that you are familiar with the relevant literature, so you should refer to and at least briefly discuss at least 3 publications that are not part of the required reading in the schedule of lectures and readings, though they may be part of the suggested reading. Finally, the paper should be clearly written. Grades lower in the scale will be given in proportion to how many of these criteria the paper does and does not satisfy. My expectations are spelled out more thoroughly in my essay “Notes on Learning Philosophy” (Curiel 2011).

## 3 Readings

Some of the required and suggested readings are available online at the course's webpage, though they may not be listed as such in the bibliography:

<http://strangebeautiful.com/lmu/2021-summer-metaphys-phys.html>

Many of the required and suggested readings are available in the course's shared Dropbox folder. Contact Dr. Curiel to get access to it.

Journal articles that are available through LMU's online library system do not appear in either place. Many of the books are available through LMU's electronic resources, especially those made

---

available to us during the coronavirus pandemic, such as [ProQuest Ebook Central](#). As many of these latter won't be available for long, make sure to try to find all the relevant readings on them sooner rather than later. Some of the books are also available on the [Internet Archive](#).

## 4 Schedule

The following is the projected schedule, as planned before the course begins. To see what is actually happening as we go (because of changes of plan, or because I end up spending more time on a topic than originally planned, *etc.*) see the [Schedule of Lectures](#), which always contains the most up-to-date information, and most nearly reflects the facts on the ground at any given time.

**LECTURES 1–2 Introduction; Maxwell's *Matter and Motion* (13.–20. Apr)**

**LECTURES 3–7: Measurement, Quantities, Kinds (27. Apr – 1. Jun)**

**LECTURE 8: Interlude on Under-Determination *à la* the Hole Argument (8. Jun)**

**LECTURES 9–11: Modality (15.–29. Jun)**

**LECTURES 12–13: Ontology and Metaphysics (6.–13. Jul)**

**REGISTRATION FOR TERM PAPERS: 21. JUN – 02. Jul**

**FINAL PAPER DUE: 27. Sep**

**FINAL COURSE GRADES SUBMITTED: 15. Oct**

## References

Curiel, E. (2011). Notes on learning philosophy. Unpublished manuscript, latest version available at <http://strangebeautiful.com/papers/curiel-learning-philosophy.pdf>.