Course: Epistemology and Philosophy of Science
Master & PhD Degrees in Philosophy
7,5 / 12 ECTS
2023-2024 - 1st Semester
Instructors: Adriana Silva Graça and Davide Romano
Language of instruction: English

Syllabus & References

Module I: What is Knowledge? [Adriana Silva Graça]
In this module, the analysis of Knowledge will be dealt with. Topics such as the traditional analysis will be discussed as well as the standard responses and objections --known as internalist and externalist ones—to it. Finally, philosophical approaches as the virtue epistemology and "knowledge first" will be taken into consideration.

A. J. Ayer (1956): "Knowing as Having the Right to be Sure" in *The Problem of Knowledge*, London: Macmillan.

E. Gettier (1963) "Is Justified True Belief Knowledge?" in *Analysis*, Vol. 23, pp. 121-123.

Plato, *Theaetetus*.

R. Audi (2011), *Epistemology. A Contemporary Introduction to the Theory of Knowledge*. Routledge.

D. Pritchard (2018), *What Is This Thing Called Knowledge?* Routledge.

Module II: Quantum Mechanics [Davide Romano]
The metaphysics of the wave function in quantum mechanics

In quantum mechanics, all systems (electrons, atoms, molecules, etc.) are described by a mathematical function called the *wave-function*, solution of the Schrödinger equation. While, on the one hand, the wave-function is an abstract mathematical object, on the other hand, it fully characterizes the description of quantum systems. An open problem in the philosophy of quantum mechanics is thus to understand which sort of object the wave function represents in the physical world: is it a physical field as the classical electromagnetic field? Or a law-like entity as the Hamiltonian function in classical mechanics? Or is it just a new kind of physical entity?
These questions are currently addressed in the literature and, as to now, there is not a unique answer. This module will investigate the metaphysics of the wave function in quantum mechanics, presenting the different alternatives and discussing how they are related to the ontology of the microscopic and macroscopic world.

A. Ney & D. Albert (editors): *The Wave Function: Essays on the Metaphysics of Quantum Mechanics*. Oxford University Press, 2013.

M. Hubert & D. Romano (2018). The wave-function as a multi-field. *European Journal for Philosophy of Science*, *8*, 521-537.

D. Romano, *Lecture notes on quantum mechanics* (PDF available in the Phenix platform).

Grading & Assessment

Students are expected to write a final essay (around 4000 words) in one of the modules (40% of the final grade) and to make one written test (in class) for each module (60% of the final grade). Depending on the instructors' choice and on the number of students in class, oral presentations may be included.
1st written test: October 24
2nd written test: December 12