Academic Year 2020-2021
Syllabus
Logic and Philosophy of Science
CFU 6
Dott. Gabriele Pulcini

Course Description

Reasoning is the process of extracting useful consequences from some sort of preassigned background knowledge. Logic concerns itself with correct reasoning, and so, specularly, with detecting fallacious arguments. Needless to say, logic proves fundamental in any intellectual arena, including economics and politics. This course aims at producing well-trained critical thinkers able to put forward sound arguments as well as to rebut flawed ones.

The course is organized in two parts. The first will serve as an introduction to classical propositional logic. Students will learn how to 'extract' the logical structure of sentences expressed in natural language by means of the formalization process. They will be trained to analyze formalized sentences by computing truth-tables and applying the method of semantic *tableaux*. Special attention will be also given to the notions of valid and sound argument.

The second part of the course will be devoted to introducing some key topics in philosophy of science. In particular, we shall be dealing with the opposition between science and pseudo-science as well as with the distinction between deductive and inductive reasoning. Finally, we will also dwell on Karl Popper's falsificationisms, especially in the light of the criticism this theory has received from Thomas Kuhn.

Teaching Method

The instructor will deliver lectures (about 70% of the time) and also lead practicals (about 30% of the time). During practicals, students will have the opportunity to interact with each other, as well as with the teacher, in order to solve given exercises and face concrete situations.

Schedule of Topics

Topic 1	The language of propositional classical logic
Topic 2	Letting the logical structure of sentences emerge
Topic 3	Truth tables
Topic 4	Tautologies, contradictions, and truth-functional contingencies
Topic 5	Semantic *tableaux*
Topic 6	Valid and fallacious arguments
Topic 7	Deductive and inductive arguments
Topic 8	Science *vs* pseudo-science
Topic 9	Popper's falsificationism
Topic 10	Normal science and scientific revolutions

Textbooks

J. Nolt, A. Rohatyn, and A. Varzi, *Logic*, McGraw-Hill (Selected parts)

S. Okasha, Philosophy of Science, OUP (Selected parts)

D. Kahneman, *Thinking Fast and Slow*, Penguin.

Assessment

The final assessment consists of a written test (70% of the final grade) in which students will be asked to solve some exercises in propositional classical logic and briefly answer some questions in philosophy of science. Students will be also asked to read Daniel Kahneman's book *Thinking Fast and Slow,* choose a topic of interest, and then write a report, possibly including some personal reflections (30% of the final grade).

Office hours

Schedule a Zoom meeting by contacting me at the following address:

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