# Logic

## Prof. Alessandro Giordani

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

The course offers an introduction to the principles of philosophical logic and the analysis, from a logical point of view, of the fundamental philosophical problems. At the end of the course, students will have an essential grasp of making claims and arguments and be able to distinguish between correct and incorrect arguments, valid and invalid arguments and the concepts of logical truth and logical consequence. Students will also be able to analyse the discursive structure of a text based on basic logic systems, such as the logic of syllogism, classic propositional logic and the logic of first-order predicates.

***COURSE CONTENT***

1. *Introduction to logic*. The collocation of logic within the context of Aristotelian philosophy: logic as a philosophical discipline; the relationship between the principles of logic and the principles of metaphysics. The metaphysical foundations of Aristotelian logic: four-category ontology; the metaphysics of substance. The articulation of Aristotelian logic: the logic of concepts and the problem of universals; the logic of propositions and the notion of truth; the logic of inferences.

2 *Classical and modal logic*. The collocation of logic within the context of contemporary philosophy: the relationship between the principles of logic and the principles of knowledge. The metaphysical foundations of contemporary logic: two-category ontology; the metaphysics of the state of things. The articulation of contemporary logic: logic systems; the notion of logical consequence; fundamental syntactical concepts and relations of derivability; fundamental semantic concepts and relations of consequence. The principal systems of logic: classical propositional logic; modal propositional logic; classical first-order logic; modal first-order logic.

***READING LIST***

A. Giordani, *Introduzione alla Logica,* EDUCatt, Milan, 2016.

Introductions and insights:

G.S. Boolos-R.C. Jeffrey, *Computability and Logic,* Cambridge University Press, 1980.

J.P. Burgess, *Philosophical Logic,* Princeton University Press, 2009.

D. van Dalen, *Logic and Structure,* Fourth Edition, Springer, 2008.

***TEACHING METHOD***

Lectures in class.

***ASSESSMENT METHOD AND CRITERIA***

Students will be assessed on their acquired knowledge and skills by means of an oral exam. The exam is designed to assess knowledge of the formal bases of logic and the ability to: construct and analyse correct arguments; understand the relationship between logic, scientific argumentation and the philosophical principles of logic systems; and understand the demonstration of fundamental metalogical theorems.

***NOTES AND PREREQUISITES***

Prerequisites: there are no particular prerequisites. For those unfamiliar with abstract or formal thought, we recommend a basic introduction to logic, such as G. Priest, *Logic. A Very Short Introduction,* Oxford University Press, 2006, Italian translation *Logica*, Codice, 2012.

Notes.: law students can take the logic examination in the following two ways:

– 6 CFUs course: corresponding to the single semester course in logic for philosophers with no integration; the examination program and times are the same.

* 8 CFUs: in addition to the 6 CFUs course there will also be a supplementary part to be arranged with the lecturer, which usually consists of the first part of the logic course (second level degree) to be taken during the second semester.

The examination on the first module (covering the same programme as the 6 CFUs course) may also be taken separately, when the examinations for the six CFUs course are held, and will be officially recorded at a later examination session after taking the examination on the extra part.

Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG, or on the Faculty notice board.