

Logic II (A000483)

Course size *(nominal values; actual values may depend on programme)*

Credits 5.0 **Study time** 150 h

Course offerings and teaching methods in academic year 2023-2024

A (year) Dutch Gent seminar

Lecturers in academic year 2023-2024

Kolen, Filip	LW01	staff member
Meheus, Joke	LW01	lecturer-in-charge

Offered in the following programmes in 2023-2024

	crdts	offering
Bachelor of Arts in Philosophy	5	A

Teaching languages

Dutch

Keywords

Logic, metatheory, predicate logic, modal logic, limitative theorems, proof techniques

Position of the course

This advanced course aims to familiarize students with classical meta-theory (and some variants), with the main results from the philosophy of logic and mathematics and with the philosophical background to all of this.

Contents

The course builds on "Logic I" and consists of four modules:

- set theory, proofs, proof techniques
- meta theory for classical logic
- extensions of and alternatives to classical logic
- Gödel's theorems

Each module deals with both the technical aspects and the philosophical meaning.

Initial competences

To have successfully completed the course Logic 1 or to have acquired the necessary skills by other means.

Final competences

- 1 To be able to recognize and apply the main proof techniques (direct proofs, indirect proofs, reductio ad absurdum, mathematical and structural induction).
- 2 To be able to analyze logical problems in a structured way and to have an insight in one's own search process.
- 3 To be able to write down simple metaproofs in a fluent text in natural language.
- 4 To be able to deal fluently with the metatheory of classical logic and related logics.
- 5 To have a thorough insight in predicate logic, proof theory as well as semantics.
- 6 *To master the basic insights in modal logics.*
- 7 To have insight into the limitative theorems.
- 8 To recognise the philosophical consequences of all the theories seen in class (especially in the epistemological sphere).

Conditions for credit contract

Access to this course unit via a credit contract is unrestricted: the student takes into consideration the conditions mentioned in 'Starting Competences'

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, independent work

Extra information on the teaching methods

The classes are organised according to the flipped classroom format. Students prepare each week an assignment. Both the assignments and participation in the classes are mandatory.

Learning materials and price

Diderik Batens, *Logicaboek. Leuven/Apeldoorn*, Garant, 2017. (20 EUR)

Exercises available at alice.ugent.be.

Additional material available via Ufora.

References

Peter Smith, *An introduction to Gödel's Theorems*, Cambridge, 2013.

Course content-related study coaching

The starting point for the guided self-study are the assignments that guide the students step by step through the theory. For the module on proof techniques there are also some exercises in the "Logic program" on Alice. An assistant is available (online) at fixed times for questions. For whom this is not sufficient, there is the possibility of individual guidance. The individual guidance is intended to supplement the classes, not to replace them. Anyone who has not taken part in one or more classes or has not completed one or more assignments without a valid reason cannot count on individual supervision.

Evaluation methods

end-of-term and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Oral assessment

Examination methods in case of periodic evaluation during the second examination period

Oral assessment

Examination methods in case of permanent evaluation

Written assessment, participation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Extra information on the examination methods

NPE: participation:

- making all assignments (in a serious way) and submit them on time
- making the tests (in a serious way)
- active participation in the feedback for the assignments and tests
- the assignments and tests serve as preparation for the "progress tests" (NPE) and the exam (PE); maximum of points are awarded if all assignments and tests have been made in a serious way and if there was active participation during the feedback

NPE: exam:

- "progress tests" at the end of each module
- written, open book
- the questions assess insight (seeing connections between the different parts of the material, for example) and assume that one is capable of correctly applying the studied methods and techniques to new problems
- the "actual" points (obtained for the 4 progress tests) are awarded

PE:

- oral, open book, written preparation
- the questions assess insight and ability to apply the material to new problems

Calculation of the examination mark

First chance exam

NPE:

- weekly assignments and weekly tests: 10%
 - progress tests: 40%
- PE: 50%
- Second chance exam: 100% PE

Facilities for Working Students

Facilities:

- 1 Possible rescheduling of an oral examination to a different time in the same academic year
- 2 Feedback can be given by an appointment during or after office hours.

For more information concerning flexible learning: contact the monitoring service of the faculty of Arts and philosophy