

Logic (A005607)

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

Credits 9.0 **Study time 270 h**

Course offerings in academic year 2024-2025

A (Year) English Gent

Lecturers in academic year 2024-2025

Pawlowski, Pawel LW01 lecturer-in-charge

Offered in the following programmes in 2024-2025

	crdts	offering
Research Master of Arts in Philosophy	9	A

Teaching languages

English

Keywords

non-classical logic, theory of philosophical logics, many-valued logics, modal logics, paraconsistent logics.

Position of the course

This course is one of the eighteen research seminars that constitute the core of the master programme. Depending on initial qualifications, students enrol for three or five such research seminars.

Contents

The course consists of two parts. The first part comprises several lectures aimed at providing background knowledge. During this part, students are expected to familiarize themselves with LaTeX (i.e., a document preparation system for high-quality typesetting) through some video tutorials. The second part of the course takes the form of a seminar or a reading group. We will collaboratively explore a monograph dedicated to a specific logical theme, potentially augmented by supplementary texts. The potential list of texts is given in the reference section. During the second part of the course, students are expected to write short notes in LaTeX on particular chapters of the book. Subsequently, these notes will be transformed into flashcards using AnkiWeb. This in turn will help students memorize and understand the main notions and proofs used within the course. The course aims to achieve two main goals: firstly, to empower students to independently navigate the realm of logical discourse; and secondly, to enhance their skills in constructing their own proofs. Throughout the course, you will engage in varied assignments, including exercises and short presentations on specific topics. Surprise quizzes on previously covered materials will also occur. Instead of a final exam, your grade will be a blend of homework, quizzes, seminar participation (together accounting for 50%), and regular tests (50%).

Initial competences

This is an advance course in logic. The student is expected to have the basic understanding of set theoretical notation and corresponding notions (Cartesian product, function, image, relations) as well as understanding of propositional and first order-logic including some metatheoretical results (functional-completeness, normal forms, compactness theorem, completeness theorem). For a good introduction to this topic student can consult the open logic project (<https://openlogicproject.org/>), the first three chapters.

Final competences

- 1 Capable of reading advanced texts in logic.
 - 2 Capable of writing proofs in LaTeX.
 - 3 Capable of constructing new proofs.
 - 4 Capable of presenting proofs of the main theorems studied during the course.
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- 5 Capable of understanding proofs of main theorems studied during the course.
 - 6 Capable of understanding and explaining the main definitions studied during the course.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Seminar

Extra information on the teaching methods

Reading group, homework assignments, preparing notes.

Study material

None

References

- 1 Avron, Arnon, Ofer Arieli, and Anna Zamansky. (2018). *Theory of Effective Propositional Paraconsistent Logics*.
- 2 Rasiowa, Helena, and Roman Sikorski. (1963). *The Mathematics of Metamathematics*. Monografie Matematyczne, Vol. 41. Warsaw: Państwowe Wydawnictwo Naukowe.
- 3 Wójcicki, R. (1988). *Theory of Logical Calculi: Basic Theory of Consequence Operations*. Kluwer Academic Publishers.
- 4 Rasiowa, Helena. (1974). *An Algebraic Approach to Non-Classical Logics*. Studies in Logic and the Foundations of Mathematics, Vol. 78. Amsterdam; London: North-Holland Publishing Company; New York: American Elsevier Publishing Company, Inc.
- 5 Dunn, J. Michael, and Gary Hardegree. (2001). *Algebraic Methods in Philosophical Logic*. Oxford University Press.
- 6 Barnes, D.W., and Mack, J.M. (1975). *An Algebraic Introduction to Mathematical Logic*. Springer-Verlag.
- 7 Font, Josep Maria, and Jansana, Ramon. (2017). *A General Algebraic Semantics for Sentential Logics*. Cambridge University Press.

Course content-related study coaching

Individual help is offered by the lecturers.

Assessment moments

continuous assessment

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

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

Examination methods in case of permanent assessment

Skills test, Participation, Assignment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

Participation: constructive participation in the reading group, oral presentation of solutions to logic problems, critical examination of and feedback on solutions by others. Skills test: skills in solving logic problems similar to those encountered in the reading group.

Calculation of the examination mark

Active participation: 50%

Skills test, homework and other assignments: 50%

Facilities for Working Students

Presence in the reading groups is mandatory.