Mathematical Logic

2025 - 2026

Is part of the next programmes:

- M0012004 Master of Computer Science: Software Engineering
- M0012005 Master of Computer Science: Data Science and Artificial Intelligence
- M0012006 Master of Computer Science: Computer Networks
- M0032001 Master of Mathematics: Fundamental Mathematics
- M0090005 Master of Teaching in Science and Technology: Mathematics

Course Code:	2001WETMAL
Study Domain:	Mathematics
Semester:	2E SEM
Contact Hours:	60
Credits:	6
Study Load (hours):	168
Contract Restrictions:	Exam contract not possible

Language of Instructions:	NED
Lecturer(s):	T Els Laenens
Examperiod:	exam in the 2nd semester

1. Prerequisites *

reading and comprehending of:

- English

specific prerequisites for this course

You have studied propositional calculus and predicate calculus with success. Students should be fluent in Dutch for many of the teaching methods in this course. Therefore the course is only open to (erasmus) students who speak and write Dutch.

2. Learning outcomes *

- You can explain and apply mathematical models.
- You can understand and apply mathematical definitions. You can formulate definitions correctly and formally.
- You can understand and apply theorems in mathematical logic.
- You can study scientific texts on logic in textbooks, proceedings, and journals.
- You can prepare timely and thoroughly for class sessions.
- You can meet deadlines with yourself and others.
- You can reflect on your own learning process and adjust it where necessary.
- You can present your work neatly and well structured in a portfolio and in presentations.

- transferable skills: you can formulate positive feedback, be open to feedback from peers, integrate and apply positive criticism.

3. Course contents *

Scientists present their scientific work at conferences (presentation and paper) and in scientific journals. In this course, we simulate a conference in which you get the opportunity to study your favourite topic(s) in mathematical logic. Examples of possible topics are formal number theory, axiomatic set theory, modal logic, logic programming, natural language processing, temporal logic, reasoning with incomplete information, multi-agent systems, fuzzy logic, knowledge representation, intuitionistic logic, ...

4. International dimension *

- This course stimulates international and intercultural competences.
- Students use course materials in a foreign language.
- Other

5. Teaching method and planned learning activities

5.1 Used teaching methods *

Class contact teaching

- Seminars/Tutorials

Personal work

Assignments

- Individually
- In group

- **Directed self-study**
- **Portfolio**

Project

- Individually
- In group

5.2 Planned learning activities and teaching methods

CALL FOR PAPERS
18th International Conference on
Mathematical Logic
June, 2025
Purpose
The conference will act as an international forum for researchers and practitioners interested in advances in, and applications of, mathematical logic. It will be an opportunity to present and observe the latest research, results, and ideas in these areas. All papers submitted to this conference will be peer evaluated by at least two reviewers. Acceptance will be based primarily on scientific quality and clarity.
Instructions for authors
http://www.dice.ucl.ac.be/esann
Sponsors
University of Antwerp
Conference chair
els.laenens@uantwerpen.be
This course consists of the simulation of a conference.
You select 3 topics of interest in mathematical logic. In consultation with the conference chair (the course supervisor), you choose 1 or 2 of these topics to study within the framework of this course.

In order to find topics, you can go to the library and have a browse through books (e.g. Introduction to Mathematical logic, Mendelson; Logica voor informatica, Van Benthem), scientific journals (e.g Journal of Logic and Computation), and the internet. Some topics of the previous years are: formal number theory, axiomatic set theory, modal logic, logic programming, natural language processing, temporal

logic, reasoning with incomplete information, multi-agent systems, fuzzy logic, knowledge representation, intuitionistic logic, ...

For each selected topic, you will write a conference paper in 3 steps: first a draft paper, then an initial paper and eventually a final paper. For the draft paper you are completely free. It can vary between just a title and some keywords and an initial paper.The initial and final papers should be written following the instructions for authors of a real conference (see call for papers below). It is obvious that they need not contain any original scientific research results (i.e. as yet unpublished result) as is required for a real conference.
Each final paper is the result of your work for this course and should be well readable for your peers. If you study 2 topics, your final paper should be 6 to 10 pages, if you study 1 topic, it should be 12 to 20 pages.

You will also give 3 presentations for each topic: in the first presentation (5'), you give an impression of what you intend to study, the second presentation (15') will be in the context of a workshop in which you give and receive feedback, and the final presentation (= improved second presentation - 15') is your conference talk for invited students.

Finally, you will act as a conference reviewer for (some of) your peers.

5.3 Facilities for working students *

Classroom activities

- no specific facilities

Directed self-study (possibly with response lecture)

- Blended learning with limited amount of classroom activities in the evening

6. Assessment method and criteria *

6.1 Used assessment methods *

Continuous assessment

- Assignments (no second assessment period)
- Process Evaluation (no second assessment period)
- Participation in classroom activities (no second assessment period)

Self-directed assessment

- Self-assessment (no second assessment period)
- Peer-assessment (no second assessment period)

Other assessment methods

- Written assignment (no second assessment period)
- Project (no second assessment period)
- Portfolio (no second assessment period)
- Presentation (no second assessment period)

6.2 Assessment criteria *

We will apply peer- and self-evaluation as well as permanent evaluation by the 'conference chair' (this is the course supervisor) to all your work within the framework of this course.
At the day of the final presentation you hand in a portfolio, containing draft paper(s), initial paper(s), all feedback (given as well as received), final paper(s), review(s), reflections on received feedback, bibliography, and presentations.
The portfolio may be electronic (a zip-file) or on paper.

7. Study material

7.1 Required reading *

In this course, you choose your own favourite topics and appropriate study material.

7.2 Optional reading

The following study material can be studied voluntarily :

Introduction to mathematical logic, fifth edition, E. Mendelson, 2009, Chapman & Hall.
Books and journals in the library.
The internet.

8. Contact information *

Course supervisor: els.laenens@uantwerpen.be

9. Tutoring

Problems and questions can be emailed to els.laenens@uantwerpen.be