GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Teaching Methodology: Mathematics I (HO02226)

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

Credits 6.0 **Study time 180 h**

Course offerings and teaching methods in academic year 2025-2026

A (Year)	Dutch	Gent	seminar
			group work
			work placement
			independent work
			peer teaching

Lecturers in academic year 2025-2026

Van Maldeghem, Hendrik	WE02	lecturer-in-charge

Offered in the following programmes in 2025-2026	crdts	offering
Master of Science in Teaching in Science and Technology(main subject Bioengineering)	6	A
Master of Science in Teaching in Economics(main subject Business Economics)	6	A
Master of Science in Teaching in Science and Technology(main subject Computer Science)	6	A
Master of Science in Teaching in Economics(main subject Economics)	6	A
Master of Science in Teaching in Science and Technology(main subject Engineering and Technology)	6	A
Master of Science in Teaching in Science and Technology(main subject Mathematics)	6	A
Master of Science in Teaching in Science and Technology(main subject Physics and Astronomy)	6	A
Master of Science in Teaching in Science and Technology (abridged programme)(main subject Bioengineering)	6	A
Master of Science in Teaching in Economics (abridged programme)(main subject Business Economics)	6	A
Master of Science in Teaching in Science and Technology (abridged programme)(main subject Computer Science)	6	A
Master of Science in Teaching in Economics (abridged programme)(main subject Economics)	6	A
Master of Science in Teaching in Science and Technology (abridged programme)(main subject Engineering and Technology)	6	A
Master of Science in Teaching in Science and Technology (abridged programme)(main subject Mathematics)	6	A
Master of Science in Teaching in Science and Technology (abridged programme)(main subject Physics and Astronomy)	6	A

Teaching languages

Dutch

Keywords

Knowledge acquisition, skills, views on mathematics education.

Position of the course

Dit opleidingsonderdeel draagt bij tot de realisering van de basiscompetenties voor leraren en de opleidingscompetenties van de educatieve masteropleiding UGent, zoals opgenomen in de opleidingsfiche en geconcretiseerd in de competentiematrix, te consulteren op www.ugent.be/educatievemaster.

Contents

The learning contents are in line with the professional knowledge that the students have acquired either in their bachelor's or master's degree, or through (additional)

self-study. The following topics are covered in this course:
• Peer teaching: micro teaching analysis; discrete mathematics and algebra; geometry.
• Didactic and substantive tips (pitfalls) analysis; discrete mathematics and algebra, geometry.
• Reasoning, abstracting and structuring.
• Evaluating the learning process: valid and reliable grading for mathematics, preparing and improving mathematics tests and exams, evaluating subject-related attitudes and skills.
• Didactic and activating teaching methods, differentiation.
• Learn to use GeoGebra and use it didactically.
• How do you motivate students for mathematics
• Examination of the curricula of the different networks.
• The language of mathematics and mathematics as a language.
• Problem-solving way of thinking.
• Research-based learning.

Initial competences

Students are expected to have acquired sufficient domain-specific knowledge (mathematics secundary schools) before starting the course. The entry requirements to the subject didactics are regulated. More information about this can be found at www.ugent.be/onderwijsvemaster.

Final competences

1 To have knowledge of the content and to be able to correctly interpret the learning outcomes and of the different mathematics curricula in secondary education.
2 Finding out the initial situation of the students and the student group.
3 Formulate the appropriate objectives for a lesson activity.
4 Selecting the learning contents and learning experiences for a lesson activity.
5 Translating learning content and learning experiences into learning activities.
6 Determining adapted didactic and activating teaching methods, taking into account the target group and the classroom context.
7 Observing the educational process of students.
8 Preparing an evaluation for students and evaluating a test.
9 Demonstrate the necessary sense of responsibility to make the right decisions in a given educational context.
10 Handling GeoGebra efficiently and smoothly.
11 The attitudes of the students can help to develop, evaluate and adjust.
12 Being able to respond quickly to questions from students based on domain knowledge and to be able to give/provide appropriate remedial or challenging answers/learning material.
13 Be able to represent a problem in an appropriate mathematical representation or model, taking into account the target audience. To be able to justify the choice for a certain representation or solution technique didactically.

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, Independent work, Work placement, Peer teaching

Extra information on the teaching methods

Interactive lectures and tutorials
* Work seminars
* Task-oriented working methods
* Peer teaching
LIO guidelines can be found in the LIO manual.

Study material

Type: Handouts

Name: Handouts Didactics Mathematics 1
Indicative price: Free or paid by faculty
Optional: no
Language : Dutch
Number of Pages : 200
Oldest Usable Edition : up to date
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No
Usability and Lifetime within the Course Unit : intensive
Usability and Lifetime within the Study Programme : regularly
Usability and Lifetime after the Study Programme : occasionally

References

"Wiskunde en Onderwijs", magazine of the Flemish Association of Mathematics Teachers
"Euclides", magazine of the Dutch Association of Mathematics Teachers
J. Bishop, Mathematical Enculturation. A Cultural Perspective on Mathematics Education. Kluwer Academic Publishers, Dordrecht, 1991.
Thomas A. Romberg (editor), Mathematics Assessment and Evaluation. Imperatives for Mathematics Educators. State University of New York Press, Albany, 1992.
Mathematics didactics manual, eds. Paul Drijvers, Anne Van Streun and Bert Zwaneveld. Epsilon Editions, Amsterdam.
How to Solve It, G. Polya, Princeton Science Library.

Course content-related study coaching

Interactive support via Ufora.
By appointment.

Assessment moments

end-of-term and continuous assessment

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

Oral assessment, Written assessment with open-ended questions

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

Oral assessment, Written assessment with open-ended questions

Examination methods in case of permanent assessment

Participation, Presentation

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

Written and oral exam: evaluating the achievement of the final competences.
Precise guidelines for the exam will be posted on Ufora during the first semester.
Explanation of non-periodical evaluation:
• Form: Permanent evaluation based on assignments, cooperation and attitudes,
• micro teaching (peer teaching).
• Frequency: compulsory attendance in class.
• Description of second exam chance: a second exam chance is possible. It should be taken into account that some parts cannot be compensated by a replacement order
• Feedback: by appointment. Permanent evaluation is provided for student-teachers in a LIO job via alternative assignments that they elaborate in the portfolio trajectory.

Calculation of the examination mark

Non-periodical evaluation ranks 6 out of 20 and includes micro-teaching, partitipation and the creation of a geogebra book. The oral and written exam together score 14 out of 20 points.
If one does not participate in one or more parts of the evaluation, one can no longer pass the entire course. If the final score would be a number of 8 or more

out of twenty, this is reduced to the highest non-deliberate number (7/20).

Facilities for Working Students

To be determined in consultation with the responsible teacher.
LIOs discuss their trajectory with the responsible teacher.