



LT2032 Teaching and Assessment in Mathematics and Technology or Science 9.0 credits

Undervisning och bedömning i matematik och teknik eller naturvetenskap

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

On 2024-10-05, the Head of the ITM School has decided to establish this official course syllabus to apply from autumn semester 2023 (registration number M-2023-0690):
M-2023-0881

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Technology and Learning

Specific prerequisites

Mathematical didactics with Placement for the Upper Secondary School, 7.5 ECTS (UMK213), Learning as a Professional Task, 8.5 ECTS (DIK200), Young People's Development and Learning in the Natural Sciences and Technology, 6 ECTS (UMK310), VFU2: Experiments and Informal Learning Environments, 11 ECTS (LT1035)

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

All students take mathematical didactics. On completion of this course, students should be able to:

The didactics of mathematics, 5 ECTS:

1. plan and evaluate teaching of mathematics with focus on communication and pupils' learning, based on current policy documents
2. discuss and problematise subject-specific didactic theories of mathematics teaching and assessment, and discuss how knowledge of these can influence the teaching
3. analyse and design different ways to evaluate the teaching and reveal pupils' learning and development in relation to the aim of the teaching and to subject-specific didactic theories.
4. design and explain assessment and execution of labs, demonstrations and/or equivalent teaching activities in mathematics

Students taking the didactics of technology should, on completion of the course, also be able to:

The didactics of technology, 4 ECTS:

5. plan and evaluate technology teaching with focus on communication and pupils' learning, based on current policy documents
6. discuss and problematise subject-specific didactic theories of technology teaching and assessment, and discuss how knowledge of these can influence the teaching
7. analyse and design different ways to evaluate the teaching and reveal pupils' learning and development in relation to the aims of the teaching and to subject-specific didactic theories
8. design and explain assessment and execution of the engineering design process, inquiry-based work, and and/or equivalent teaching activities in technology (this includes e.g. technology labs and simulations)

Students who take the didactics of the natural sciences should, on completion of the course, in addition to intended learning outcomes 1-4, also be able to:

The didactics of the natural sciences, 4 ECTS:

9. plan and evaluate teaching of natural sciences with focus on communication and pupils' learning, based on current policy documents
10. discuss and problematise subject-specific didactic theories of teaching and assessment in the natural sciences, and discuss how knowledge of these can influence the teaching
11. analyse and design different ways to evaluate the teaching and reveal pupils' learning and development in relation to the aims of the teaching and to subject-specific didactic theories
12. design and explain assessment and implementation of labs, demonstrations and/or equivalent teaching activities in natural sciences (includes e.g. simulations)

Course contents

The course consists of compulsory seminars in two parts: mathematical didactics, as well as the didactics of technology or the didactics of the natural sciences. The student takes the didactics of technology or the didactics of the natural sciences depending on their specialisation in the programme.

The course deals with different forms of assessment, e.g. formative, summative, and peer assessment, and how these assessment forms relate to learning, teaching frameworks, the course requirements of the school, and grading. The course deals with communication and interaction in and outside the classroom as a part of the continuous formative assessment. Digital aids such as learning management systems, AI, simulations and response systems are covered.

3 (3)

Examples are taken from the learning of young people and adults.

The course consists of the following parts:

The didactics of mathematics, 5 ECTS

One of the following parts depending on the combination of subjects:

The didactics of technology, 4 ECTS

or

The didactics of the natural sciences, 4 ECTS

Examination

- INL1 - Mathematic didactics, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- INL2 - Teaching and learning in technology, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- INL3 - Teaching and learning in the natural sciences, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM1 - Seminars mathematic didactics, 2.0 credits, grading scale: P, F

- SEM2 - Seminars teaching and learning in technology, 2.0 credits, grading scale: P, F
- SEM3 - Seminars teaching and learning in the natural sciences, 2.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Participation in compulsory group tasks and seminars

- In group projects, all members are responsible for the group's work.
- In examinations, each student should honestly report any help that has been received and sources that have been used.
- In oral examinations, each student should be able to give an account of the whole assignment and the whole solution.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.