



## Course syllabus

Faculty Board of Science and Engineering  
School of Computer Science, Physics and Mathematics

GU7111 Matematikdidaktisk breddning för verksamhet i  
grundskolans tidiga år, 30 högskolepoäng

Didactics of mathematics intended for the Lower Level of the  
Compulsory School, 30 credits

### **Main field of study**

Mathematics

### **Subject Group**

Mathematics

### **Level of classification**

First Level

### **Progression**

GIN

### **Date of Ratification**

Approved by the Board of the School of Computer Science, Physics and Mathematics  
2009-12-15

Revised 2010-11-26. Revision made for literature list, prerequisites and course  
evaluation.

The course syllabus is valid from autumn semester 2011

### **Prerequisites**

General entry requirements.

## Expected learning outcomes

Having completed the course the student is expected to be able to:

- analyse observed situations based on the curriculum, course syllabus, grade criteria, and national tests, as well as draw conclusions based on their own actions as teachers
- present the pupils' concept development and demonstrate an ability to utilise this knowledge in didactical contexts
- master basic calculation element in the fields arithmetic, algebra and geometry
- demonstrate an ability to analyse and critically deal with mathematical contents in a teaching material
- demonstrate an ability to deal with important elements in mathematics based on the pupils' general understanding
- present some historical contexts in which the concept mathematics has been developed and utilised
- examine and analyse mathematical textbooks and teaching aids that are used as

- educational tools in the school subject mathematics
- examine and analyse software programmes used as educational tools in the school subject mathematics.

## Content

The specialisation comprises four sub courses. For more information see each course syllabus.

### ***Module 1 IMD301 7.5 credits***

Pupils' learning and concept development in mathematics

The course consists of:

- pupils' concept development in mathematics
- mathematics as a language: conversations – interviews – reasoning
- interpretations of pupil solutions
- strategies for the choice of and orientation in work methods
- promotion of pupils' interests for mathematics
- pupils' understanding – from the concrete to the abstract
- knowledge assessment: curriculum, course syllabus, grade criteria, and national tests
- the concept of numbers from a historical perspective
- analysis of calculation skills: tables, algorithms, mental arithmetic and the calculator
- social and cultural aspects on learning and teaching mathematics.

### ***Module 2 IMD303 7.5 credits***

Mathematics and teaching

The course consists of:

- mathematical- and didactical approaches to numbers and the four rules of arithmetic, geometry and algebra
- the logical structure and construction of mathematical theory.

### ***Module 3 IMD311 7.5 credits***

Mathematical didactic – mathematics from the start

The course consists of:

- young children's understanding of numbers and rooms
- work methods in nursery schools and preschools
- starting school with a focus on mathematics
- didactical approach to important elements in mathematics for the primary years
- analyses of teaching aids and computers in teaching
- learning mathematics from a gender perspective.

### ***Module 4 Field studies 7.5 credits***

Field studies – analysis and reflection

The course consists of:

- planning and evaluation of mathematical elements
- observation and analysis of mathematical situations
- diagnoses of mathematical elements.

## Type of Instruction

Teaching consists of lectures, seminars and methodology sessions. The student's active participation is an important part of the teaching, individually and in groups, which requires attendance at seminars, methodology sessions and presentations. This course is also offered as a distance tuition course.

## Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

The course is examined through active participation at seminars, methodology sessions and presentations, as well as through a written exam and written and verbal presentations of individual tasks and group assignments.

## Course Evaluation

A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

## Other

Having completed the training the student will receive a degree certificate upon request from the Graduation Office at the Division of Student Affairs.

Students who successfully complete the course may download a course certificate through the Student Portal. Otherwise they may request a course certificate from the school secretary.

## Required Reading and Additional Study Material

### Sub course 1

Emanuelsson, G m fl (red), *Matematik –ett kommunikationsämne*. Nämnaren Tema, NCM. Göteborgs universitet, 1996. Pages 150 (selection).

Emanuelsson, G m fl (red), *Tidskriften Nämnaren* NCM. Göteborgs universitet. current year.

Kilborn W & Löwing L, *Baskunskaper i matematik*. Studentlitteratur, 2002. Pages 250 (selection).

PRIM-gruppen, *Analysschema i matematik för tidiga skolår*, Skolverket, 2003. Pages 62.

PRIM-gruppen, *Bedömning av kunskap-för lärande och undervisning i matematik*, ISBN:978-91-7656-670-1. 104 pages.

Undervisningen i matematik – utbildningens innehåll och ändamålsenlighet, Skolinspektionen rapport 2009:5, 2009, [www.skolinspektionen.se](http://www.skolinspektionen.se) 27 pages.

*Kompendiums*, DFM, Linnæus University, current year. Pages app. 300.

### Sub course 2

DFM, *Stencils*, Linnæus University, current year. Pages app. 300.

Sollervall, H, *Tal och de fyra räknesätten*, Studentlitteratur, 2007. Pages 172.

Emanuelsson, G. m.fl. (red.), *Algebra för alla*, Nämnaren Tema, NCM, Göteborgs universitet, 1997. Pages 150(164).

### Sub course 3

Emanuelsson, G m fl (red), *Matematik –ett kommunikationsämne*, Nämnaren Tema, NCM. Göteborgs universitet, 1996. Pages 50 (211).

Emanuelsson, G m fl (red), *Matematik från början*, Nämnaren Tema, NCM. Göteborgs universitet, 2000. Pages 247.

Emanuelsson, G m fl (red), *Tidskriften Nämnaren* NCM. Göteborgs universitet. current year.

Kilborn W & Löving M, *Baskunskaper i matematik*, Studentlitteratur, 2002. Pages 130

(372).

PRIM-gruppen, *Analysschema i matematik för tidiga skolår*, Skolverket 2003. Pages 62.

*Compendiums*, from DFM, Linnæus University, current year. Pages app. 100.