Linnæus University

Course syllabus

Faculty Board of Science and Engineering

School of Computer Science, Physics and Mathematics

2MD71U Matematik för lärare i årskurs F-3, 1-30 högskolepoäng, 30 högskolepoäng

2MD71U Mathematics for teachers in grades F-3, 1-30 credits, 30 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
First Level

Progression
G2F

Date of Ratification
Approved by School of Computer Science, Physics and Mathematics 2011-04-18
The course syllabus is valid from autumn semester 2011

Prerequisites
Teacher training certificate

Objectives

Having completed the course the student should 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 1MD301 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 1MD303 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 1MD311 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 practical assignments. The student's active participation is an important part of the teaching, individually and in groups, which requires mandatory attendance at seminars, assignments, and presentations.

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 the 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 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.