



Course syllabus

Board of Education Science

School of Computer Science, Physics and Mathematics

1MD318 Matematik och lärande i förskoleklass och de tidiga skolåren, 15 högskolepoäng

1MD318 Mathematics teaching and learning in preschool class and compulsory school years 1-3, 15 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

First Level

Progression

G2F

Date of Ratification

Approved 2010-02-15

Revised 2012-06-08 by School of Computer Science, Physics and Mathematics.

Objectives, content, type of instruction, examination and literature list are revised.

The course syllabus is valid from autumn semester 2012

Prerequisites

Teacher's certificate or equivalent.

Objectives

After the course, students should:

- demonstrate an ability to analyze the mathematics content and methods
- be able to choose appropriate methods to perform calculations
- be able to describe the subject of mathematics not only as a stereotypical thinking with rules, but that imagination and creativity are key ingredients to see the structure, development and problem solving methods
- demonstrate good subject knowledge on the material covered in mathematics education in the preschool class and the school's early years
- demonstrate knowledge of current theories of how children's early math skills are developed
- demonstrate familiarity with the theories of mathematics as a language
- be able to show how both their own and their students' problem solving skills are

developed

- be able to construct mathematical problems that are taken from the students' immediate environment
- be able to deal with mathematical elements which are included in the preschool class and the school's early years with regard to children's varying requirements from a didactic point of view
- demonstrate an ability to work with the students' understanding of various mathematical concepts
- demonstrate the ability to analyze and evaluate the mathematical content and forms of teaching.

Content

Knowledge of the basic mathematics of the early school years deepened and inserted into the educational context. Mathematical concepts are concretized and their historical development are highlighted.

- Arithmetic: The natural numbers. Positioning System. The four operations of arithmetic. Basic fraction.
- Geometry: Space and time perception. Basic geometric concepts.
- Prealgebra. Pattern.
- Statistics and Probability

Child's encounter with mathematics: The role of language. Social and cultural aspects of learning and teaching of mathematics. Children's development related to learning of mathematics. Attitudes towards mathematics and mathematics teaching. Problem solving Analyzing evolutionary strategies.

Pedagogical and methodological tools in mathematics education for preschool and compulsory school years: Policy document. Analysis of teaching materials. Methods and procedures. Calculators and computers in mathematics teaching. Diagnosis, evaluation and assessment skills.

Type of Instruction

The teaching is carried out in the form of lectures, group discussions, seminars, individual and/or group assignment and field studies. Course work requires participation and commitment.

The students will document and present their own reading and learning orally and in writing. The student must also demonstrate their ability to summarize, see and relate to the context and from a scientific approach reflects on the course content.

Compulsory attendance is required or occurs during all or part of the course and this is apparent from the respective schedules or study guide.

Examination

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

Assessment varies according to course content. Oral and written presentations, individually and in groups as well as seminar occur.

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.

Required Reading and Additional Study Material

Required Reading

Bergius, B., Emanuelsson, G. & Emanuelsson, L. (red) Matematik ett grundämne. Nämnaren Tema, NCM. Göteborgs universitet, 2011. Pages 304

Kilborn, W. & Löving, M. (2003). Huvudräkning. En inkörsport till matematiken. Lund: Studentlitteratur. Pages 165

Skolinspektionen, Kvalitetsgranskning Rapport 2009:5 . Undervisningen i matematik – utbildningens innehåll och ändamålsenlighet

Skolverket, 2011, Läroplan för grundskolan, förskoleklassen och fritidshemmet, Lgr 11

- Current curricula in mathematics from the National Agency for Education
- Scientific articles
- Practice Materials