



Course syllabus

Faculty of Technology

Department of Mathematics

1MD162 Matematik och matematikdidaktik för grundskolan II, 15
högskolepoäng

Mathematics and Mathematics Education for Primary School II, 15
credits

Main field of study

Mathematics Education

Subject Group

Mathematics

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved by Faculty of Technology 2017-04-10

The course syllabus is valid from spring semester 2018

Prerequisites

1MD161 Mathematics and Mathematics Education for Primary School I

Objectives

After completing the course the students will be able to

- evaluate and assess children's mathematical knowledge and connect the outcome to different curriculums, criteria and teaching decisions
- give an account for various factors on students' desire and ability to learn mathematics including cultural, gender and social aspects
- apply problem solving in mathematics in primary school classrooms.
- critically analyze and construct mathematics tasks
- use programming as a tool for investigations, calculations and to present and interpret data
- analyze mathematics teaching material (e.g. laboratory material, mathematics books, digital tools) as teaching aids
- give an account of the notions special educational needs in mathematics from both a high and low achieving perspective and be able to reason about how to meet diversity in an inclusive mathematics classroom
- give an overall description of mathematics education research relevant to primary school mathematics and primary students' learning of mathematics and connect this research to different curriculums, criteria and teaching decisions

Content

The main focus of the course is problem solving and programming, analysis of tasks and teaching material, evaluation and assessment, and the notions special educational needs in mathematics from both a high and low achieving perspective. These areas are integrated and an international perspective permeates all parts of the course. Furthermore, mathematics education research relevant to primary school mathematics and primary students' learning of mathematics are focused on.

Type of Instruction

The course is conducted through lectures, seminars, group assignments and field studies

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The course is assessed through active participation in seminars, and presentations, written and oral presentations of individual and group assignments, and written examination.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 1GN039, 1GN218, and 1MD133/1MD143 together with 1MD134/1MD144.

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Tim Rowland et al., *Developing Primary Mathematics Teaching*, SAGE, latest edition
J O Boaler, *Mathematical Mindsets*, Jossey-Bass, latest edition.

John Mason et al., *Designing and Using Mathematical Tasks*, tarquin, latest edition.

Frederickson, Norah. & Cline, Tony. (2009). *Special educational needs, inclusion and diversity*, Maidenhead: Open University Press, latest edition.

Cai, J. (2003). What research tells us about teaching mathematics through problem solving. In F. Lester (Ed.), *Research and issues in teaching mathematics through problem solving*, pp. 241-254.

Schoenfeld, A.H. (2016). Learning to think mathematically: Problem solving, metacognition, and sense making. *Journal of Education*, 196(2). pp. 1-38.

Additional articles and other material, 200 pages