



Course syllabus

Faculty of Technology
Department of Mathematics

1MD372 Stöd och utveckling av matematisk förmåga, 7,5
högskolepoäng

Gifted Education in Mathematics, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2009-08-11

Revised 2016-11-02 by Faculty of Technology. Literature list is revised.

The course syllabus is valid from spring semester 2017

Prerequisites

30 credits in mathematics including 15 credits in mathematical didactics or the equivalent.

Objectives

After completing the course students will:

- be able to explain what is meant by mathematical ability and how it can be reflected in pupils
- be able to explain the organization of education and the social context relevant to students' development of mathematical ability.
- be able to account for some of the mathematics didactics research in the area of students with an aptitude for mathematics
- be able to analyze and construct problem solving activities that challenge and stimulate students
- have received a deeper understanding of mathematics and its structure and nature.

Content

Theme 1. Talent and mathematical abilities

Discussed in the theme are the concept of talent in general and what mathematics is and what the subject has to offer. We analyze the characteristics of mathematical ability and how such skills may be encouraged and developed.

Theme 2. Educational organization and the importance of social context

The theme deals with grouping and differentiation issues. Furthermore, we discuss how to teach students with diverse abilities in a coherent class, and the kind of education that can encourage and support students' development of mathematical ability.

Theme 3. Problem solving and its importance to mathematics and to stimulate and develop students' mathematical abilities. We work with problem solving activities and mathematical problems that allows reflection on different abstraction levels.

Type of Instruction

Teaching consists of lectures, seminars and tutorials.

Students are required to have access to field study class when carrying out certain assignments.

Examination

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

Assessment of student performance is made through oral presentation and/or written assignments. The main form of examination is determined at the start of the course. Students who do not pass the regular examination will be offered retrials close to the regular examination.

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.

Course Evaluation

A course evaluation will be carried out and compiled after the course is completed. The compilation will be presented to the current board as well as to the students and filed by the coordinating department.

Required Reading and Additional Study Material

Required reading

Hagland, K., Hedrén, R. & Taflin, E. (2005). Rika matematiska problem – inspiration till variation. Stockholm: Liber. Pages 230

Mattsson, L. (2012) Tracking mathematical giftedness in an egalitarian context. Doktorsavhandling Göteborg: Göteborgs universitet. Tillgänglig på webben: https://gupea.ub.gu.se/bitstream/2077/34120/1/gupea_2077_34120_1.pdf. Approx. 50 pages.

Pettersson, E. (2011). Studiesituationen för elever med särskilda matematiska förmågor. Doktorsavhandling. Växjö: Linnéuniversitetet. Tillgänglig på webben: www.diva-portal.org/smash/get/diva2:414912/FULLTEXT01.pdf. Approx. 60 pages.

Pettersson, E. & Wistedt, I. (2013). Barns matematiska förmågor – och hur de kan utvecklas. Lund: Studentlitteratur. Pages 119.

Skolverket (2015). Att arbeta med särskilt begåvade elever. Skolverkets stödmaterial. Tillgängligt på webben: www.skolverket.se/skolutveckling/larande/sarskilt-begavade-elever-1.230661 Approx. 80 pages.

Wallby, K., Carlsson, S. & Nyström, P. (2001). Elevgrupperingar. Stockholm: Skolverket. Approx. 60 pages.

Web based material approx. 200 pages

Reference literature

Pettersson, E. (2017). Elever med särskild begåvning. Stockholm: Natur och Kultur.

Pólya, G. (2005). Problemlösning. En handbok i rationellt tänkande av G. Pólya. Stockholm: Norstedts Akademiska Förlag.

Silverman, K. L. (2016). Särskilt begåvade barn. Stockholm: Natur och kultur.

Wallström, C. (2012). Se mig som jag är – om särbegåvade barn i skolan. Lund: Studentlitteratur.

Ziegler, A. (2010). Högt begåvade barn. München: Norstedts