Linnæus University

Dnr: 2014/537–3.1.3

Course syllabus

Faculty of Technology

Department of Mathematics

2MD55U Matematik och matematikdidaktik, för undervisning i årskurs 7-9, (31-45 hp). Ingår i Lärarlyftet II., 15 högskolepoäng

2MD55U Mathematics and Mathematics Education, teaching in grades 7-9 (31-45), 15 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
First Level

Progression
G2F

Date of Ratification
Approved by Faculty of Technology 2014-03-04
The course syllabus is valid from spring semester 2015

Objectives

Module: To analyse learning in mathematics in the classrooms, 7.5 credits

After completing the course the student should be able to:

- know the underlying ideas and principles of variation theory to develop students' learning
- have knowledge of the main features of variation theory, and how these can be used as guiding principles for designing and analyzing teaching
- in their own activities to implement and document the teaching of mathematics and student learning
- apply the theory of variation in the planning, implementation and analysis of their own teaching
- to demonstrate how the principles of discernment, variation and critical aspects can serve as guiding principles to design and analyze teaching.

Module: Teaching children in Difficulties in Mathematics, 7.5 credits
Having completed the course the student is expected to:

- identify, with the help of a diagnosis, difficulties in mathematics.
- be able, after diagnosing ability in mathematics, to plan, carry out and evaluate teaching in mathematics from a special needs perspective.
- be able to analyse as well as present both in speech and writing the content of current research into mathematical difficulties.

Content

Module: To analyse learning in mathematics in the classrooms
The course will address the variation theory of the development work directly in the classroom, its traits, and how teaching and student learning can be implemented and documented. Experience with the use of variation theory in Sweden and internationally is reported. It also looks at some of the principles of the underlying theoretical basis (variation theory). Key concepts here are: discernment, variation and critical aspects.

Module: Teaching children in Difficulties in Mathematics
The course covers the following areas:

- the influence of the ways and means of working on the learning situation in mathematics
- educational aids in teaching mathematics
- the connection between reading and writing difficulties and learning mathematics
- orientation in the current research into difficulties in mathematics
- identifying and evaluating knowledge in mathematics
- fieldstudieproject

Type of Instruction

The course is conducted through lectures, seminars, methodology sessions and practical sessions. Field study days may be included. The teaching always requires mandatory attendance.

Distance teaching is possible. When given as a distance course special forms of distribution are used appropriate for the method of teaching.

To attend this course you need a field study class or group of pupils.

Examination

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

Examination is continuous throughout the course through discussion, group work, individual assignments, oral presentations and exams.
To receive a passing grade (G) the objectives has to be achieved.

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
Module: To analyse learning in mathematics in the classrooms
Holmqvist, M. (2006). Lärande i skolan. Learning study som skolutvecklingsmodell. Lund: Studentlitteratur. 224 pages

Marton, F., & Tsui, A. B. M. (Eds.). (2004). Classroom discourse and the space of learning. Mahwah: N.J.: Lawrence Erlbaum. Chapter 1. 40 pages

Marton, Ference., & Booth, Shirley. (2000). Om lärande. Lund: Studentlitteratur. app. 280 pages.

Olteanu, C. (2007). “Vad skulle x kunna vara?” Andragradsekvation och andragradsfunktion som objekt för lärande (Dissertations in Educational Work, 19). Umeå, Sweden: Umeå University. 41-89 pages

Additionally,
Current curricula in mathematics from the National Agency.
Current document from the National Agency regarding objectives, analysis of pupils’ knowledge and diagnosis of Mathematics.

Module: Teaching children in Difficulties in Mathematics
Boaler, Jo, Elefanten i klassrummetLIber, 2011. 169 pages (228p)

Butterworth, Brian & Yeo, Dorian, Dyskalkyli - att hjälpa elever med specifika matematiksvårigheter, Natur och kultur, 2009. 124 pages

McIntosh, Alistair, Förstå och använda tal - en handbok, NCM, Göteborgs universitet, 2008, 100 pages (200p).

Malmer, Gudrun, Bra matematik för alla, nödvändig för elever med inlärningssvårigheter, Studentlitteratur, 1999. 240 pages.

Sterner, Görel & Lundberg, Ingvar, Dyskalkyli - finns det?, NCM, Göteborgs universitet, 2009 96 pages.

Sterner, Görel & Lundberg, Ingvar, Läs- och skrivsvårigheter och lärande i matematik, NCM-rapport 2002:2. 201 pages.

MAD, Compendium, Linnæus University, current year. 50 pages.

Reference Literature
Module: To analyse learning in mathematics in the classrooms
Lo, M.L., Pong, W. Y.,& Chik, P. (2005). For each and everyone. Catering for individual differences through Learning studies. Hong Kong: Hong Kong University Press. 149 pages

Olteanu, C & Olteanu, L. (2011). Improvement of effective communication– the case of subtraction. International Journal of Science and Mathematics Education. (18 March 2011), pages 1-24. doi:10.1007/s10763-011-9294-z