Linnæus University

Course syllabus

Faculty Board of Science and Engineering

School of Computer Science, Physics and Mathematics

2MD37U Matematik för lärare i årskurs 7-9, 31-45 högskolepoäng, 15 högskolepoäng

2MD37U Mathematics for teachers in grades 7-9, 31-45 credits, 15 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 or equivalent.

Objectives

Having completed the course the students should:

- be able to perceive the different dimensions and forms of proficiency in mathematics
- be able to use basic theories of proficiency evaluation to examine and reflect upon questions concerning the work of teachers when making evaluations in mathematics
- be able to plan and conduct independently the evaluation of pupils' competence in mathematics as well as defend and motivate the evaluations
- be able to use adequate subject language to analyse and appraise proficiency evaluation in mathematics
- be able to identify and counteract factors that influence an impartial and equitable evaluation
- be able to use pupils' self assessment to develop their mathematical competence.
- identify, with the help of a diagnosis, a pupil's difficulties in mathematics.

- be able, after diagnosing a pupil's ability in mathematics, to plan, carry out and evaluate teaching for a pupil experiencing difficulties in mathematics.
- be able to analyse as well as present both in speech and writing the content of current research into mathematical difficulties.

Content

See each module for more information.

Module 1 To Evaluate Proficiency in Mathematics 7.5 credits

The course focuses on the evaluation of proficiency in mathematics. During the course the role of the school in the pupils' learning of mathematics is discussed. Furthermore the question of which mathematical proficiency it is possible to measure as well as how that may achieved is considered. The course covers the following items:

- proficiency and learning in mathematics
- basic theories concerning measuring and evaluating both generally and in mathematics
- the construction of tasks
- different evaluation strategies
- feedback from evaluations and evaluation as an aid in developing pupils' mathematical abilities.

Module 2 Advanced Didactics of mathematics-Children in Difficulties 7.5 credits

The course covers the following areas:

- field studies in the form of identifying, teaching and evaluating pupils experiencing difficulties in mathematics
- the influence of the ways and means of working on the pupils' learning situation.
- pupils experiencing difficulties in mathematics
- reading and writing difficulties and learning mathematics.
- educational aids in teaching mathematics.
- orientation in the current research into difficulties in mathematics.

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.

Assessment of student performance is made through written test and/or oral examinations and/or presentation of mandatory assignments.
Students who do not pass the regular examination will be offered retrials close to the regular examination.

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

List of references Module 1 - To Evaluate Proficiency in Mathematics 7.5 credits

Required Reading

Andersson, Andreas, *Begreppskartor - ett verktyg för bättre förståelse*, Nämnaren 2/2002, www.ncm.gu.se – sök under Artikelregister. Pages 3.

Asplund, Maria, *Att tala och skriva matematik -Redskap för bedömning*, NCM, Nämnaren 4/2008. www.ncm.gu.se - Pages 5.

Black, Paul och Williams, Dylan, *Inside the Black Box*, ngfl.northumberland.gov.uk/keystage3ictstrategy/Assessment/blackbox.pdf - Pages 14.

Engström, Arne; Engvall, Margareta; Samuelsson, Joakim, *Att leda den tidiga matematikundervisningen*. Skapande vetande, Linköpings universitet (2007). Pages 125.

Grevholm, Barbro, *Kognitiva verktyg för lärande i matematik- tankekartor och begreppskartor*, (Tangenten 1/2005). www.caspar.no/tangenten/innhald051.html - Pages 8.

McIntosh, Alistair, *Förstå och använda tal- en handbok*. NCM, Göteborgs universitet (2008). Pages 240.

PRIM-gruppen, *Bedömning av kunskap- för lärande och undervisning i matematik*, ISBN:978-91-7656-670-1. 104 pages.

Selghed, Bengt, *Betygen i skolan - kunskapssyn, bedömningsprinciper och lärarpraxis*. Stockholm: Liber, (2006). Pages 224.

Selghed, Bengt, *Ännu icke godkänd*. Malmö högskola, senaste upplaga. Pages 230

Skolverket, *Analysschema i matematik för relevant åldersgrupp*, www.skolverket.se/sb/d/260/a/14694 - Pages 45/60.

Skolverket, *Att bedöma eller döma*. Malmö: Liber distribution (2002). Pages 162.

Skolverket, *Att visa vad man kan - en samling artiklar om ämnesproven i år 5*, www.skolverket.se – sök under ”Publikationer”. Pages 212.

Skolverket, *Läroplaner och kursplaner för aktuell åldersgrupp*. www.skolverket.se

Articles and stencils DFM, Linnæus University. Pages app. 100.

Reference Literature

Boesen, Jesper, *Bedömarreliabilitet.: Med fokus på aspektbedömningen i det nationella B-kursprovet i matematik våren 2002*(Umeå universitet Pm nr 195). www8.umu.se/edmeas/publikationer/pdf/Pm%20nr%20195.pdf - Pages 63.

Helenius, Ola, *Kompetenser och matematik*(om danska KOM - rapporten), Nämnaren 3/2006, ncm.gu.se/pdf/namnaren/1115_06_3.pdf - Pages 5.

Löwing, Madeleine, *Matematikundervisningens dilemma –hur lärare kan hantera lärandets komplexitet*. Lund: Studentlitteratur (2006). Pages 246.

Myndigheten för skolutveckling, *Baskunnande i matematik*,(2003). www.skolverket.se – sök under ”Publikationer - Pages 110.

Nyström, P, *Rätt mätt på prov. Om validering av bedömningar i skolan*. Umeå: Pedagogiska institutionen, Umeå universitet, (2004). Pages 54.

Palm, Torulf; Bergqvist, Ewa; Eriksson, Ingela; Hellström, Timo; Häggström, Carl-Magnus, *En tolkning av målen med den svenska gymnasiematematiken och tolkningens konsekvenser för uppgiftskonstruktion*. Umeå universitet Pm nr 199,(2004). www8.umu.se/edmeas/publikationer/pdf/Pm%20nr%20199.pdf - Pages 55.

List of references Module 2 - Advanced Didactics of mathematics-Children in Difficulties 7.5 credits

Required Reading

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

McIntosh, A, Förstå och använda tal - en handbok, NCM, Göteborgs universitet, 2008, 200 pages.

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

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

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

DFM, Compendium, Linnæus University, current year. 100 pages.