Linnæus University

Course syllabus

Faculty Board of Science and Engineering
School of Computer Science, Physics and Mathematics

1MD123 Matematikdidaktik för åk. 7-9 och gymnasiet III, 7,5 högskolepoäng

Mathematics Education for lower secondary and upper secondary school III, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved by the Board of the School of Computer Science, Physics and Mathematics 2012-12-10

The course syllabus is valid from autumn semester 2013

Prerequisites
1MD121 Mathematics Education for lower secondary and upper secondary school I, 7.5 credits or equivalent.

Objectives

After completion of the course, students should be able to:

- demonstrate knowledge of the relationship between skills, mathematics content and working arrangements in lower secondary and upper secondary school mathematics teaching and apply this knowledge to meet and develop students' mathematical abilities
- demonstrate advanced knowledge to interpret goals and grading criteria in lower secondary and upper secondary school mathematics and their implications for teaching and assessment of student performance
- demonstrate the ability to plan, implement and evaluate mathematics teaching
- demonstrate knowledge of the role of language in mathematics, for conceptualization, communication and classroom norms
- analyze student solutions, teaching materials and tests, especially the national tests
- apply formative and summative assessment, grading, documenting students' skills for different purposes.

Content
The course starts with an in-depth review of the policy documents, especially goals and grading criteria for lower secondary and upper secondary school mathematics, as a starting point for understanding the organization-specific conditions and practice.
Advancement on working methods and working arrangements, including digital tools, is given to helping students mathematical concepts development by adapting the language, content and working arrangements in education to meet and challenge their abilities.
Mathematics teaching as a phenomenon addressed from different classroom perspectives (eg. pupil, teacher, communication, democracy, motivation, gender) and deepened through the study of scientific articles.
In-depth studies of their own mathematics and especially math includes analysis of student solutions, teaching materials analysis, analysis of national tests and construction of own samples.
Grading and assessment discussed in the in-depth understanding of the relationship between skills and mathematics content and in relation to current objectives and grading criteria.
Formative and summative assessment embodied in teaching as well as in the development plans, assessment and as a basis for the documentation of the student's knowledge.

- An in-depth review of the policy documents in mathematics, focusing on the objectives, content and grading criteria.
- Advancement of mathematical abilities/skills and deeper understanding of the relationship between abilities, different contents and working arrangements in lower secondary and upper secondary school mathematics
- Grading and assessment
- Analysis of student solutions.
- Teaching materials analysis.
- Analysis of test, including national tests, construction of test.
- Grading and documentation of students' knowledge.

Type of Instruction
Teaching consists of lectures, group exercises and mandatory seminars. Part of the course may be online.

Examination
The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
The course is examined through active participation in seminars, methodology sessions, and presentations, as well as through oral and written presentations of individual and group assignments, and or through written 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 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
Reading list
Hansen, Hans Christian, Skott, Jeppe & Jess, Kristine. (2009). Matematik för lärare Ypsilon band 1 och band 2, Gleerups förlag. ISBN13: 9789140668134 och ISBN13:9789140667861

Kilborn, Wiggo & Löving, Madeleine. Baskunskaper i matematik. Lund, Studentlitteratur.ISBN13: 9789144022178

National Research Council (2001). Adding it up: Helping Children learn mathematics. In

Jeremy Kilpatrick, Jane Swafford, & Bradford Findell (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press. (app. 100 pages), ISBN13: 9780309069953

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

Skolverket. Kursplan och betygskriterier för ämnet matematik. Stockholm: Skolverket. www.skolverket.se

Skolverket. (2011) Gymnasieskola 2011. Stockholm: Skolverket. ISBN: 978-91-38325-80-3. (www.skolverket.se/publikationer?id=2597)

Skolverket. (2011) Kunskapsbedömning i skolan - praxis, begrepp, problem och möjligheter. Stockholm: Skolverket. ISBN: 978-91-86529-54-3. (www.skolverket.se/publikationer?id=2660)

Björklund Boistrup, L. (2010). Assessment Discourses in Mathematics Classrooms

Nyström, P. (2004). Rätt mätt på prov. Om validering av bedömningar i skolan

Emanuelsson, G m fl (red), Matematik –ett kommunikationsämne. Nämnaren Tema, NCM. Göteborgs universitet, 1996. Pages 150 (selected pages).

Material provided by the department, app. 200 pages.