Linnæus University

Course syllabus

Faculty of Technology
Department of Mathematical Education

4MD101 Introduktion i matematikdidaktisk forskning, 7,5 högskolepoäng

Introduction to Research in Mathematics Education, 7.5 credits

Main field of study
Mathematics Education

Subject Group
Educational Sciences/Theoretical Subjects

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by Faculty of Technology 2013-12-16
The course syllabus is valid from autumn semester 2014

Prerequisites
Basic eligibility for second level studies and English course B/English 6, teachers certificate with specialization mathematics or equivalent.

Objectives

After completing the course, the student should both in speech and writing be able to:

- summarize research in educational sciences, especially mathematics education
- explain how the area of knowledge has emerged
- argue for research and development in mathematics education
- identify and work on issues in mathematics education
- describe the possibilities and limitations, its role in society and the responsibility for its use
- evaluate the importance of research as a basis for position in mathematics education issues
- produce opportunities, constraints and difficulties with different theoretical traditions that are relevant to mathematics education research.

Content

The course content is divided into five parts:

- orientation in mathematics education research field and how the field of knowledge has emerged
- research/development in mathematics education, question formulation, methods and results, and how these relate and lead to relevant and appropriate conclusions

- scientific excellence applied to the mathematics education research field
- analysis of others' empirical studies
- formulation and evaluation of plans for their own empirical studies

Type of Instruction

The teaching consists of lectures, classroom observations, seminars and presentations. The teaching is based to a significant extent on the students' active participation, individually and in groups, which requires mandatory attendance at seminars and presentations.
The course is offered as a distance learning.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
The examinations consist of written and oral presentations of the reading material and completed assignments and active participation in group discussions. 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.

Required Reading and Additional Study Material

Cobb, P. (2007). Putting Philosophy to Work: Coping with Multiple Theoretical Perspectives. Second Handbook of Research on Mathematics Teaching and Learning. Editor F. Lester.
Gjone, G. (2013). NOMAD - Nordic Studies in Mathematics Eudcation. The First Eight Years, In Nordic research in didactics of mathematics: Past, present and future. Cappelen Damm Akademisk. ISBN 978-82-02-39348-9. Kap. p 182 - 198
Grønmo, Liv Sissel (2013). What Characterizes Mathematics Education in the Nordic Countries?, In Nordic research in didactics of mathematics: Past, present and future. Cappelen Damm Akademisk. ISBN 978-82-02-39348-9. Kap. p 226 - 249
Miyakawa, T. & Winsløw, C. (2009). Didactical designs for students' proportional reasoning. Educational Studies in Mathematics, 72, p. 199-218.
Niss, M. (2007). Reflections on the State and Trends in Research on Mathematics Teaching and Learning. Second Handbook of Research on Mathematics Teaching and Learning. Editor F. Lester.
Passolunghi, C. et al. (2007). The precursors of mathematics learning: Working memory, phonological ability and numerical competence. Cognitive Development 22.
Stigler, J. W., Hiebert, J. (1999). The teaching gap. The Free Press.
Österholm, M. (2006). Characterizing reading comprehension of mathematical texts. Educational Studies in Mathematics, 63.

Other literature may be selected in consultation with the lecturer with the objective to:

- It requires extensive knowledge in terms of theory or terminology.
- It has a distinct character of mathematics education.
- Articles with individual research studies describe concrete and well-defined projects with the objective/research question, methodology and results.
- Review articles are directly related to the course's overall goals.
- Items should be primarily from publications and of high quality.