Linnæus University

Course syllabus

Faculty Board of Science and Engineering

School of Computer Science, Physics and Mathematics

4MD339 Internationella perspektiv på matematikundervisning, 7,5 högskolepoäng

4MD339 International Perspective on Teaching Mathematics, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by School of Computer Science, Physics and Mathematics 2011-08-17
The course syllabus is valid from spring semester 2012

Prerequisites
Degree of at least 180 credits, whereof 60 credits concern courses in mathematics or mathematics education.

Objectives

Having completed the course the students should be able to:

- identify different factors and forces that influence the mathematics curriculum change and education in mathematics
- identify and describe important mathematical concepts, methods, and competency that are central to school mathematics and understand how those ideas are developed in standards in different countries
- analyze mathematics textbooks in terms of content and pedagogical goals and characterize mathematics textbooks in different countries
- reflect on different countries' educational materials and use of new technologies
- understand cultural variation in mathematics teaching practice in different countries and identify factors influencing teachers’ teaching
- understand student performance on different levels assessment in different educational systems.

Content

The course aims to provide an understanding of mathematics education from an international perspective.
The course covers the following items:

- The historical development of mathematics curriculum and education in mathematics(key events of mathematics curriculum reform in different historical periods)
- The intended mathematics curriculum in different countries (national or state mathematics standards)
- The mathematics textbook curriculum in different countries (curriculum materials provided to teachers and students by schools)
- The implemented mathematics curriculum in different countries (mathematics teaching)
- The learned mathematics curriculum in different countries (mathematics assessment, Which maththematics has the students learned?).

Type of Instruction

Seminar, self-tution and exchange of experiences. Discussions and seminars can occur on a web-based learning plattform.

Examination

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

Assessment of student performance is made through written test and/or oral examinations and/or presentation of mandatory assignments. The assessment method is decided 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 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.

Other

After the course the students will receive a course certificate upon request from the secretary of the School of Computer, Physics and Mathematics.

Upon request, a Swedish University degree will be issued upon successful completion of the full demands for that degree.

Required Reading and Additional Study Material

Required Reading

Stanic, G. M. A., & Kilpatrick, J. *A history of school mathematics.* Reston, VA: National Council of Teachers of Mathematics, 2003. 736 pages

Stigler, J., & Hielbert, J. *The teaching gap: Best ideas from the world's teachers for improving education in the classroom.* New York: Free Press, 1999. 224 pages

National Council of Teachers of Mathematics, *Principles and Standards for School Mathematics.* New York: National Council of Teachers of Mathematics, 2000. 402 pages

Ministry of Education in China, *Mathematics curriculum standards for compulsory education and high school.* Beijing: The Peoples' Education Publishing, 2004. 122 pages

Skolverket, Kursplan i Matematik. 2000. 5 pages

Givvin, K., *Are there national patterns of teaching? Evidence from the TIMSS 1999 Video Study.* Comparative Education Review, 3(49), 2005. 33 pages

Scientific articles in research of mathematics education.

Reference Literature

Patton, M. Q., *On the shoulders of giants: New approaches to numeracy.* Washington, DC: National Academy Press, 1990, 240 pages

Stevenson, H., & Stigler, J., The learning gap: Why our schools are failing and what we can learn from Japanese and Chinese education. New York: Simon & Schuster, 1994. 236 pages

Mathematics Learning Study Committee, *Adding it up: Helping children learn mathematics.* National Research Council, 2001. 480 pages

Ma, L., *Knowing and teaching elementary mathematics: Teachers' understanding of fundamental Mathematics in China and the United States.* Hillsdale, NJ: Erlbaum.1999. 192 pages