Faculty Board of Science

MMA620  High Performance Computing

7.5 credits

Second Cycle

This syllabus is the binding document.

1. Confirmation

The syllabus was confirmed by the Department of Mathematical Sciences on June 15, 2007 to be valid from July 1, 2007. The syllabus was revised on November 23, 2010 to be valid from July 1, 2011. Field of education: Science. Responsible department: Mathematical Sciences.

2. Position in the educational system

The course High Performance Computing, 7.5 credits, is one of several single subject courses included in the two-year Masters Program in Mathematical Sciences. The course is also open for eligible students outside the program.

3. Entrance qualifications

The prerequisite for the course High Performance Computing is the equivalent of 90 credits, including the courses MMG300 Multivariable Analysis, MMG410 Numerical Analysis, and some basic course in programming.

4. Course content


5. Learning outcomes

After completing the course the student will be able to

- describe the basic features of a modern CPU and analyze how these affect the performance of a code
- optimize code written in Fortran or C
- optimize Matlab code
use basic unix tools such as make, gprof and ld
mix Fortran, C and Matlab (mixed language programming)
write simple parallel programs using MPI and OpenMP.

6. Required reading
List of required reading enclosed.

7. Assessment
The examination consists of computer based assignments, a short presentation and a take-home exam. A student who has failed a test twice has the right to change examiner, unless weighty arguments can be invoked. For this, the student must send a written request to the board of the department.

8. Grading scale
The grades are Fail (U), Pass (G), and High Pass (VG).
Students who are contractually entitled to ECTS grades should inform the examiner about this no later than one week after the start of the course.
Students without such entitlement will not be awarded ECTS grades. Grades will be converted into ECTS terminology according to a standard model approved by the University President.

9. Course evaluation
Oral and/or written course evaluation will be performed. The results of the evaluation will be communicated to the students and will serve as a guide for the development of the course.

10. Additional information
The language of instruction is English unless all involved are Swedish speakers.