MMG640 Scientific Visualization

7.5 higher education credits

First 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 December 4, 2009 to be valid from July 1, 2010. Field of education: Science. Responsible department: Mathematical Sciences.

2. Position in the educational system

The course Scientific Visualization, 7.5 higher education credits, is one of several single subject courses included in the Bachelor Program in Mathematics. It is also open for eligible students outside the program. The course is considered advanced according to the requirements for the Degree of Bachelor in Mathematics.

3. Entrance qualifications

The prerequisite for the course Scientific Visualization is the equivalent of 60 higher education credits, including the courses MMG300 Multivariable Analysis, MMG410 Numerical Analysis, and a basic course in programming.

4. Course content

Different techniques for visualizing surfaces, volumes and other common mathematical objects. Animation. Interaction. An orientation about the construction of user interfaces. OpenGL, ParaView and advanced Matlab graphics. Computer graphics concepts, such as transformations and shading models, necessary to use and understand the graphics software. A sufficient amount of C to finish the computer assignments.

5. Learning outcomes

After completing the course, the student will be able to

- think in visualization terms
- produce insightful graphics in a number of common and important cases
- use advanced Matlab graphics
- construct graphical user interfaces in Matlab
- use OpenGL and ParaView to some extent

6. Required reading

List of required reading enclosed.

7. Assessment

The examination consists of computer based assignments 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 Pass with Distinction (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.