MMG800 Partial Differential Equations

7.5 higher education credits

First Cycle

This syllabus is a translation of the binding document in Swedish.

1. Confirmation

The syllabus was confirmed by the Department of Mathematical Sciences on July 1, 2007 to be valid from July 1, 2007. The syllabus was revised on December 12, 2009 to be valid from July 1, 2010. Field of education: Science. Responsible department: Mathematical Sciences.

2. Position in the educational system

The course Partial Differential Equations, 7.5 higher education credits, is one of several single subject courses included in the Bachelor Program in Mathematics. The course 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 prerequisites for the course Partial Differential Equations are the equivalent of 60 higher education credits in Mathematics, and the course MMG710 Fourier Analysis.

4. Course content

5. Learning outcomes

After completing the course, the student will be able to

- make theoretical stability studies for initial boundary value problems
- perform stability and convergence analysis for FE solutions of PDEs
- make polynomial interpolation and quadrature error estimates
- derive weak formulations and specify all involved base function spaces
- derive stiffness, mass, and convection matrices
- implement numerical solutions
- compare analytic, approximate and implemented results.

6. Required reading

List of required reading enclosed.

7. Assessment

The examination consists of two bonus generating assignments, consisting of both theoretical as well as numerical and implementation aspects, and a written exam at the end of the course. For more detailed information see the course’s home page.

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.