



DEPARTMENT OF MATHEMATICAL SCIENCES

MMA500 Project course in Partial Differential Equations, 7.5 credits

Projektkurs i partiella differentialekvationer, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Mathematical Sciences on 2018-02-12 to be valid from 2018-07-01, autumn semester of 2018.

Field of education: Science 100%

Department: Department of Mathematical Sciences

Position in the educational system

The course can be part of the following programme: 1) Mathematical Sciences, Master's Programme (N2MAT)

Main field of studies

Mathematics

Specialization

A1N, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

General entry requirements and the equivalent of the course *MMG800 Partial Differential Equations*.

Learning outcomes

On successful completion of the course the student will be able to:

- use and (to some extent) develop software for solving numerically a choice of ODE and PDE,
- in a written report document the model description, the mathematical theory, the numerical models/algorithms, error analysis and numerical examples,
- make an oral presentation of a theoretical and computational investigation.

Course content

Duality and adjoint operators. Stability and duality based a posteriori error analysis for ODE. Stability and duality based a posteriori error analysis for PDE. Adaptivity. Computational methods for various types of PDE such as diffusion, convection-diffusion, reaction-diffusion, wave propagation, fluid flow, electromagnetics, and fluid-structure interaction.

Form of teaching

Language of instruction: English

Assessment

The examination consists of oral and written presentations of two projects. During the course, there may be optional assignments that give bonus points on the exam. Examples of such assignments are small written tests, labs, and oral or written presentations. Information about this is found on the course home page.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Course evaluation

The course is evaluated with an anonymous questionnaire and/or a discussion with the student representatives. The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

Additional information

For a list of course literature, see:

<https://www.chalmers.se/sv/institutioner/math/utbildning/grundutbildning-goteborgs-universitet/kurslitteratur/Sidor/Kurslitteratur-i-matematik.aspx>

The syllabus for MMA500 was originally established to take effect from 2007-07-01, when it replaced MAN680.