



DEPARTMENT OF MATHEMATICAL SCIENCES

MMG410 Numerical analysis, 7.5 credits

Numerisk analys, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Mathematical Sciences on 2017-06-26 and was last revised on 2022-03-02 to be valid from 2022-03-21, spring semester of 2022.

Field of education: Science 100%

Department: Department of Mathematical Sciences

Position in the educational system

The course can be part of the following programmes: 1) Bachelor of Science in Physics (N1FYS), 2) Bachelor's Programme in Mathematics (N1MAT), 3) Computer Science, Bachelor's Programme (N1COS) and 4) Medical Physicist Programme (N1SJU)

Main field of studies

Mathematics

Specialization

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Entry requirements

In addition to general entry requirements, the course requires knowledge equivalent to the courses MMG200 Mathematics 1 and MVG301 Programming with Python and 7.5 credits in multivariable analysis.

Learning outcomes

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

- give an account of basic properties of floating point arithmetic
- assess the reliability of calculated results
- set up some basic numerical problems in the standard way,

- derive basic methods for some computing problems
- solve simple applied problems by means of mathematical software.

The four final items concern only the problem areas listed under "Contents".

Course content

Basic concepts, error analysis and computer arithmetic. Some common numerical methods for interpolation, derivation and integration. Some common numerical methods for the solution of linear and non-linear equations, systems of linear and non-linear equations, linear and non-linear least squares problems and ordinary differential equations (ODE) and systems of ODE:s.

Form of teaching

Language of instruction: Swedish

Assessment

The course is assessed through compulsory computer lab assignments and a written examination at the end of the course. 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 for the current course instance is given via the course homepage.

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 result and any changes to the course will be communicated to the students who carried out the evaluation and to the students who are to start the course.

Additional information

For literature list, see:

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

The course syllabus of MMG410 was originally established to apply from 01/07/2007, when it replaced MAM240.