



Course syllabus

Faculty Board of Science and Engineering

School of Computer Science, Physics and Mathematics

1DV019 Grundläggande numeriska metoder, 7,5 högskolepoäng

1DV019 Basic Numerical Methods, 7.5 credits

Main field of study

Computer Science

Subject Group

Informatics/Computer and Systems Sciences

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved by Organisational Committee 2009-12-15

The course syllabus is valid from autumn semester 2010

Prerequisites

Basic Mathematics 1 7.5 hp (1MA101)

Analysis 1 7.5 hp (1MA102) or the equivalent.

Objectives

After the course the student should be able to:

- understand the foundations of using numerical methods for solving scientific and technical problems and accomplish elementary analyses of such types of methods
- understand the difference between the numerical and the analytical solution of a problem
- perform correct error estimations when using basic numerical methods
- make use of numerical software to solve numerical problems

Content

The course contains:

- number representation and important foundations for numerical methods
- elementary error analysis
- equations

- equation systems
- interpolation and approximation of functions
- integrals
- differential equations
- introduction to Matlab

Type of Instruction

Lectures, assignments and practical work. The practicals are carried out individually.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

Assessment of the student's performance is made through written tests and presentation of compulsory practical assignments.

Students who do not pass the regular examination are given the opportunity to do a resit examination shortly after the regular examination.

Course Evaluation

A written course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The course evaluation will be filed at the department.

Other

Upon request, a Swedish University course certificate will be issued upon successful completion of the course.

Upon request, a Swedish University degree will be issued upon successful completion of the full demand for that degree.

Required Reading and Additional Study Material

Required reading

Pohl, P, *Grundkurs i Numeriska metoder*, Liber, 2005. 260(260) pages.

or

Eldén, L, Wittmeyer-Koch, L, Bruun Nielsen, H, *Introduction to Numerical Computation - analys and MATLAB illustrations*, Studentlitteratur, 2004. 250(360) pages.

DFM, *Distributed material*. 100 pages.