Linnæus University

Jnr: 2019/939-3.1.2.2

Course syllabus

Faculty of Technology
Department of Computer Science and Media Technology

1DV519 Grundläggande numeriska metoder, 7,5 högskolepoäng
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 2014-10-03
Revised 2019-03-13 by Faculty of Technology. Assessment methods are revised.
The course syllabus is valid from autumn semester 2019

Prerequisites
Basic Mathematics 1 7.5 hp (1MA401)
Analysis 1 7.5 hp (1MA402) 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 A, B, C, D, E, Fx or F.
The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

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.

Credit Overlap
The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 1DV019 Basic Numerical Methods, 7.5 credits

Other
Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

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.