ML1602 Computer Programming, Basic Course 7.5 credits

Grundläggande programmering, grundkurs

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for ML1602 valid from Autumn 2018

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completing the course, the student should be able to:

- Formulate simple algorithms for given problems and transfer them to program code
- Use a development environment to write, execute, and troubleshoot an application.
- Insert and use data types and variables (simple and combined) for data storage
- Be able to perform simple program design ie. break down problems in subproblems, implement functionally and test step by step, selecting appropriate test data
- Use external files for data storage
- Use programs or application libraries to solve numerical problems
- Interpret, compare and discuss results with respect to step length, truncation errors, etc.
- In program code, solve systems of equations and implement algorithms for numerical integration and solution of equations and ordinary differential equations.
- Write and execute program code in C to solve simple tasks
- Able to solve simple tasks using microcomputer programming

Course contents

Programming:

- Background and introduction to programming languages
- Data types, variables, references
- Operators
- Sequence, selection, repetition
- One- and multidimensional variables
- Functions, modular programming
- Problem analysis, structuring, troubleshooting and testing
- Text Management
- File Management
- Effectiveness of different implementations
- Programming in Matlab and C
- Micro Computer Programming
- Orientation around programmable logic controllers (PLC)

Numerical tools:

- Representation of real numbers and truncation errors
- Numerical integration
- Numerical solution of equations
- Numerical solution of ordinary differential equations
- Solution of equation system

Course literature

Litteratur meddelas senast fyra veckor innan kursstart.

Examination

- TEN1 - Written examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

- LAB3 - Laborations, 1.5 credits, grading scale: P, F
- LAB2 - Laborations, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- LABA - Laborations, 1.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

Partial exam 1
Partial exam 2
Laboratory work

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.