



DD1362 Programming Paradigms 6.0 credits

Programmeringsparadigm

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

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

Establishment

The official course syllabus is valid from the autumn semester 2022 in accordance with Head of School decision: J-2021-2302. Decision date: 14/10/2021

Decision to discontinue this course

The course will be discontinued at the end of the Spring semester 2024 according to the Head of School decision: J-2021-2302. Decision date: 14/10/2021. The course is given for the last time Spring semester 2022. The last opportunity for examination in the course is given in the Spring semester 2024. The examination is conducted during the transition period within the framework of the course DD1360. The course module MAS1 (formerly TEN1) in DD1362 is replaced by the course module MAS1 in DD1360. The laboratory work in LAB1 can be reported during the regular course offering of DD1362 and in the lab week in June.

Grading scale

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

Education cycle

First cycle

Main field of study

Specific prerequisites

Knowledge and skills in programming, 6 higher education credits, equivalent to completed course

DD1337/DD1310/DD1311/DD1312/DD1314/DD1315/DD1316/DD1318/DD1321/DD1331/DD100N/ID1001

Knowledge in basic computer science, 6 higher education credits, equivalent to completed course DD1338/DD1320/DD1321/DD1325/DD1327/DD2325/ID1020/ID1021.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course.

Registering for a course is counted as active participation.

The term 'final examination' encompasses both the regular examination and the first re-examination.

Language of instruction

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

Intended learning outcomes

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

- apply and explain general concepts in programming, in particular flow of control, recursion, interpretation, paradigms and models of computation
- apply and explain basic concepts in functional programming particularly clean functions, referential transparency, higher order functions, immutability, data types
- apply and explain basic concepts in formal languages and syntax analysis, in particular automata, regular expression, grammars, lexical analysis and recursive descent
- write own client-server programs as well as use protocols and be able to explain how they are interpreted and written

in order to

- obtain a broader perspective on programming
- be able to assess which paradigm and which programming language that is appropriate to solve a certain assignment
- be able to use adequate programming style in a chosen programming paradigm
- be able to participate in discussions about programming paradigms, history of programming languages, language definition, properties of type systems, principles of language design, language translation, programming principles and programming concepts actively

Course contents

Functional programming: the function concept, higher order functions, currying, evaluation strategies, streams, pattern matching, overloading, polymorphism, interpretation, lazy evaluation, types and classes.

Formal languages and syntax analysis: automata, regular expressions, grammars, lexical analysis, recursive descent, classes of languages

Internet programming.

Language translation: interpretation, compilation and linking.

Examination

- LAB1 - Laboratory work, 3.5 credits, grading scale: A, B, C, D, E, FX, F
- MAS1 - Mastery tests, 2.5 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.

Transitional regulations

The written examination TEN1 is replaced by written and oral mastery tests MAS1.

Examination can be carried out during the academic years 2022/2023 and 2023/2024 within the framework of courses DD1360. The course module MAS1 in DD1362 is replaced by the course module MAS1 in DD1360. The laboratory work in LAB1 can be reported during the regular course offering of DD1360 and in the lab week in June.

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.