

Syllabus

for course at advanced level

Optimization
Optimering

7.5 Higher Education
Credits
7.5 ECTS credits

Course code:	MM7028
Valid from:	Autumn 2021
Date of approval:	2020-01-13
Changed:	2021-04-29
Department	Department of Mathematics (incl. Math. Statistics)
Main field:	Mathematics/Applied Mathematics
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

This syllabus was approved by the Board of the Faculty of Science at Stockholm University on 13 January 2020 and revised on 29 April 2021.

Prerequisites and special admittance requirements

Admission to the course requires knowledge equivalent to 60 credits in mathematics, mathematical statistics, or computer science, where Mathematics II - Analysis, part A, 7,5 credits (MM5010), and Mathematics II - Linear algebra, 7.5 credits (MM5012), or equivalent, are included. Also required is knowledge equivalent to Swedish upper secondary course English 6.

Course structure

Examination code	Name	Higher Education Credits
HELA	Optimization	7.5

Course content

The course covers: convex sets, linear programming, the simplex method, duality and matrix game theory, introduction to interior point methods, basic methods in nonlinear programming with and without constraints, Lagrange relaxation and duality, introduction to integer programming and dynamic programming. The contents of the course can be applied in modelling in a number of fields, for example in economics.

Learning outcomes

After the course the student should be able to

- * formulate central definitions and theorems within the topic of the course,
- * apply and generalize theorems and methods within the topic of the course,
- * describe, analyze and formulate basic proofs within the topic of the course.

Education

Instruction consists of lectures and exercises.

The course is offered in English

Forms of examination

a. The course is examined as follows: Assessment takes place through a written exam.

The examiner can decide on adapted or alternative examination formats for students with disabilities.

The examination will be conducted in English.

b. The course has no compulsory instruction.

c. Grading: The course's final grade is set according to a seven-point criterion-referenced scale:

A = Excellent

B = Very good

C = Good

D = Satisfactory

E = Adequate

Fx = Failed, some additional work is required

F = Failed, much additional work is required

d. The course's grading criteria are handed out at the start of the course.

e. Students who receive a failing grade on a regular examination are allowed to retake the examination as long as the course is still provided. The number of examination opportunities is not limited. Other mandatory course elements are equated with examinations. A student who has received a passing grade on an examination may not retake the examination to attain a higher grade. A student who has failed the same examination twice is entitled to have another examiner appointed, unless there are special reasons to the contrary. Such requests should be made to the department board. Under normal circumstances, the course includes at least three examination opportunities per academic year the course is offered. For the academic years that the course is not offered, at least one examination opportunity is offered.

f. There is no possibility to improve the grade Fx to a pass grade in this course.

Interim

Students may request that the examination be conducted in accordance with this course plan even after it has ceased to be valid. However, this may not take place more than three times over a two-year period after the course was discontinued. Requests must be made to the departmental board. The provision also applies in the case of revisions of the course syllabus and revisions of the required reading.

Limitations

This course may not be included in a degree together with the course Optimization (MM7006) or equivalent.

Misc

The course may be included in the Master's programme in Mathematics, but may also be taken as a separate course.

Required reading

The required reading is decided by the departmental board and published on the course's page in the the digital course catalogue at least 2 months before the start of the course.