

# Syllabus

for course at first level

**Mathematics, science and society**  
**Matematik, vetenskap och samhälle**

**7.5 Higher Education**  
**Credits**  
**7.5 ECTS credits**

<b>Course code:</b>	MM5015
<b>Valid from:</b>	Spring 2021
<b>Date of approval:</b>	2020-01-13
<b>Changed:</b>	2020-09-01
<b>Department</b>	Department of Mathematics (incl. Math. Statistics)
<b>Main field:</b>	Mathematics/Applied Mathematics
<b>Specialisation:</b>	G2F - First cycle, has at least 60 credits in first-cycle course/s as entry requirements

## Decision

This syllabus was approved by the Board of Science at Stockholm University on 1/9/2020.

## Prerequisites and special admittance requirements

For admission to the course, knowledge is required equivalent to 60 credits in mathematics, alternatively 45 credits in mathematics and 15 credits in mathematical statistics or computer science.

## Course structure

Examination code	Name	Higher Education Credits
HELA	Mathematics, science and society	7.5

## Course content

Course content: Written and oral communication. Basic typesetting. LaTeX. Scientific explanations and laws. Causality, probability and statistics. The structure of scientific theories. Strengths and limitations of the axiomatic-deductive method. Mathematical models and the role of mathematics in science. Theories on the nature of mathematics and probability. Concepts and concept development in mathematics. Ethics and the role of mathematical sciences in society.

## Learning outcomes

Upon completing the course the student is expected to be able to

- show insight into the concept scientificity
- write scientific texts of different types within the disciplines at the department
- use practical skills in oral communication, also using presentation programs
- explain the meaning of induction and deduction in the context of philosophy of science
- account for perspectives from philosophy of science causality, laws and mathematical models
- account for the use of mathematics, statistics and computer science in science
- reflect on the strengths and limitations of the axiomatic-deductive method
- account for some different theories on the nature of mathematics and probability
- account for the development of essential mathematical concepts
- reflect on ethical problems and dilemmas that mathematicians, statisticians and computer scientists may encounter in working life

## **Education**

Instruction consists of lectures, seminars, exercises and project work.

### **Forms of examination**

a. The course is examined in the following manner: Assessment takes place through written and oral presentations and opposition on other's work.

Late submission of the written presentations has consequences for the final grade of the course. These consequences are described in detail in the grading criteria of the course.

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

b. A passing final grade requires participation in seminars. If special reasons exist, following consultation with the teacher involved, the examiner may grant the student exemption from the obligation to participate in certain 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. Students awarded the grade Fx are given the opportunity to improve their grade to E. The examiner decides on the supplementary assignments to be performed and the pass mark criteria. The supplementary assignments will take place before the next examination opportunity.

### **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 course instruction has ended. 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.

### **Misc**

The course is part of the Bachelor's programmes in Mathematics, Mathematics and Computer Science and Mathematics and Economics but may also be taken as a separate course.

### **Required reading**

The required reading is decided by the departmental board and published on the Department of Mathematics' website at least 2 months before the start of the course.