

Syllabus

for course at advanced level

Function Theory of Several Complex Variables
Funktionsteori i flera komplexa variabler

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	MM8040
Valid from:	Spring 2018
Date of approval:	2017-11-20
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 November 20, 2017.

Prerequisites and special admittance requirements

Admission to the course requires knowledge equivalent to at least 90 credits in mathematics, including the courses Mathematics III Foundations of Analysis 7.5 credits (MM5021) and Mathematics III - Complex analysis 7.5 credits (MM5022). English B/English 6 or equivalent.

Course structure

Examination code	Name	Higher Education Credits
HELA	Function Theory of Several Complex Variables	7.5

Course content

The course covers

- Cauchy's integral formula and power series in several variables.
- Domains of holomorphy, pseudoconvexity and plurisubharmonic functions.
- Hypersurfaces, CR-functions and extension problems.
- Weierstrass's preparation and division theorem and germs of analytic functions.
- Something about complex analytic varieties.

Learning outcomes

After the course, students are expected to be able to

- Define and account for basic concepts in several complex variables, for instance domains of holomorphy, pseudoconvexity and plurisubharmonic functions.
- Prove central theorems, especially about connections between geometric properties of certain domains and properties of analytic functions defined on them.
- Use techniques and theorems from the course to solve problems emanating from analytic functions in several variables and their zeros.

Education

Instruction consists of lectures and exercises.

Forms of examination

a. The course is examined as follows: Knowledge assessment takes the form of written assignments as well as a written and oral exam.

b. Grades are assigned according to a seven-point goal-related grading scale:

A = Excellent

B = Very Good

C = Good

D = Satisfactory

E = Sufficient

Fx = Fail (more work required before credit can be awarded)

F = Total fail

c. The grading criteria will be distributed at the beginning of the course.

d. To be awarded a pass, a minimum of grade E is required and the assignments must be satisfactorily completed.

e. Students who fail an ordinary examination are entitled to sit additional examinations as long as the course is offered. There is no restriction on the number of examinations. Examinations also include other obligatory elements of the course. Students who have passed an examination may not resit it in order to achieve a higher grade. Students who have failed on two occasions are entitled to request the appointment of a different examiner for the next examination. Any such request must be made to the departmental board. The course has at least two examinations for each academic year in the years in which instruction is provided. Intervening years include at least one examination.

f. There is no facility to improve grade Fx up 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 course instruction has ended. Requests must be made to the departmental board. The provision also applies in the case of revisions to the course plan.

Limitations

This course can be included in a degree alongside at most one of the courses Integration Theory 7.5 credits (MM8001) and Functional Analysis 7.5 credits (MM8009).

Misc

This course is offered as part of the Master's Programme in Mathematics and as a separate course.

Required reading

Course literature is decided by the departmental board and described thereafter in an appendix to the course plan.