

# Syllabus

for course at advanced level

**Reductive Algebraic Groups**

**Reduktiva algebraiska grupper**

**7.5 Higher Education**

**Credits**

**7.5 ECTS credits**

<b>Course code:</b>	MM8043
<b>Valid from:</b>	Autumn 2019
<b>Date of approval:</b>	2019-01-14
<b>Department</b>	Department of Mathematics (incl. Math. Statistics)
<b>Main field:</b>	Mathematics/Applied Mathematics
<b>Specialisation:</b>	A1F - Second cycle, has second-cycle course/s as entry requirements

## Decision

This syllabus was approved by the Board of the Faculty of Science at Stockholm University January 14, 2019.

## Prerequisites and special admittance requirements

Admission to the course requires knowledge equivalent to Mathematics III - Abstract Algebra, 7.5 credits (MM5020), and Topology, 7.5 credits (MM8002). English 6 or equivalent.

## Course structure

Examination code	Name	Higher Education Credits
HELA	Reductive algebraic groups	7.5

## Course content

The course covers:

- \* Classification of reductive groups over algebraically closed fields using root data.
- \* Geometric construction of representations by the Borel-weil theorem.

## Learning outcomes

Having passed this course, the student is expected to be able to

- carry out computations on certain examples of reductive algebraic groups, in particular  $GL(n)$ .
- show basic theorems on reductive algebraic groups.

## Education

Instruction consists of lectures and exercises.

## Forms of examination

- The course is examined as follows: Knowledge assessment takes the form of written assignments.
- 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.

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. Students awarded the grade Fx are given the opportunity to improve their grade to E. The examiner decides the supplementary assignments to be performed and the pass mark criteria. The supplementary assignments will take place before the next examination session.

### **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.

### **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.