# FSF3675 Cohomology in Dynamics 7.5 credits

## Kohomologi inom dynamiska system

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

Course syllabus for FSF3675 valid from Spring 2018

## Grading scale

## Education cycle

Third cycle

## Specific prerequisites

Sufficiently good knowledge in areas: General real and Functional analysis, Harmonic analysis, Algebraic topology, Riemannian geometry.

## Language of instruction

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

## Intended learning outcomes

After the completed course the students will be able to:

- Compute cohomology over some dynamical systems
- Apply the concept of trivial cohomology to obtain qualitative information about the dynamical system
- Obtain classification of some classes of dynamical systems by using the concept of cohomology

## Course contents

In this course the focus will be on the analysis and application of cohomology in various areas in dynamical systems. Some of the topics will be: classification of Lie group extensions of Anosov systems via group valued cohomology, classification of time changes via real valued cohomology, Schrödinger cocycle reducibility and applications, cohomological stability for some homogeneous actions, the rigidity conjecture of Greenfield and Wallach on vector fields with almost trivial cohomology, the extension of Weil's result that trivial cohomology implies local rigidity to general isometric higher rank lattice actions, Livsic theorem for matrix cocycles.

## Disposition

The students enrolled in the course will give presentations on their chosen topics in weekly meetings. Students will prepare notes for their classmates and 2-3 problems for their classmates in the topic they presented.

## Course literature

The literature will consist of articles which will be announced before the course starts.

## Examination

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.

The assessment will be based on: presentation (SEM1).

## Other requirements for final grade

Presentation completed (SEM1)

## 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.