UNIVERSITY OF GOTHENBURG

DEPARTMENT OF MATHEMATICAL SCIENCES

MMA211 Advanced Differential Calculus, 7.5 credits

Högre differentialkalkyl, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Mathematical Sciences on 2018-03-28 to be valid from 2018-03-28, spring semester of 2018.

Field of education: Science 100%
Department: Department of Mathematical Sciences

Position in the educational system

The course can be part of the following programme: 1) Mathematical Sciences, Master's Programme (N2MAT)

Main field of studies	*Specialization*
Mathematics	A1F, Second cycle, has second-cycle course/s as entry requirements

Entry requirements

General entry requirements and the equivalent of 90 credits in mathematics, including at least 7.5 credits from the second cycle.

Learning outcomes

On successful completion of the course the student will be able to:

- explain the various formulations of the concept of manifolds,
- define and use elementary algebraic and geometric properties of vector fields and differential forms,
- explain the notion of cohomology of chain complexes and the Mayer-Vietoris sequence,
- define de Rham cohomology and compute it for simple manifolds,

- state, prove and apply Stokes' theorem on manifolds.

Course content

Manifolds. Vector fields and differential forms. Integration of differential forms. Cohomology of chain complexes. de Rham cohomology. The Mayer-Vietoris sequence. Stokes' theorem.

Form of teaching

Language of instruction: English

Assessment

There will be a written or oral examination at the end of the course. Obligatory written assignments and optional assignments that give bonus points on the exam may also occur; see the course home page for more information.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Course evaluation

The course is evaluated with an anonymous questionnaire and/or a discussion with the student representatives. The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

Additional information

For a list of course literature, see:
https://www.chalmers.se/sv/institutioner/math/utbildning/grundutbildning-goteborgs-universitet/kurslitteratur/Sidor/Kurslitteratur-i-matematik.aspx