MATM18, Mathematics: Fourier Analysis, 7.5 credits

Matematik: Fourieranalys, 7,5 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2012-01-16 to be valid from 2012-01-16, spring semester 2012.

General Information

The course is an elective course for second-cycle studies for a Degree of Master of Science (120 credits) in mathematics. The course is also given as a free-standing course.

Language of instruction: English and Swedish
The course can be given in English when necessary.

Main field of studies	Depth of study relative to the degree requirements
Mathematics	A1F, Second cycle, has second-cycle course/s as entry requirements

Learning outcomes

The aim of the course is to enable students to acquire the following knowledge and skills on completion of the course.

Knowledge and understanding

On completion of the course, the student should:

- be familiar with the theory and applications of Fourier series and Fourier transforms,
- have acquired basic knowledge for continued studies in mathematics.

Skills and abilities

On completion of the course, the student should:

- have developed his or her ability to communicate mathematics in speech and writing.

Course content

Fourier series, convergence, convolution kernels, harmonic functions, Fourier transforms, the Fourier inversion theorem, the heat equation, the Poisson summation formula, the Heisenberg inequality, the Paley-Wiener theorem, applications of Fourier series in analysis and number theory.

Course design

The teaching consists of lectures and seminars. An essential feature of the seminars is practice in problem solving. Compulsory assignments may occur during the course.

Assessment

The examination consists of a written examination followed by an oral examination. The oral examination may only be taken by those students who passed the written examination.

Students who fail the ordinary written examination are offered a resit examination shortly thereafter.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

Entry requirements

For admission to the course, at least 90 credits are required, of which 75 credits in mathematics including the courses MATB15 Multivariable analysis, 15 credits, MATB16 Linear analysis, 7.5 credits as well as MATC11/MATM12 Analytical functions, 15 credits, or the equivalent.

Further information

The course may not be included in a degree together with MAT242 Fourier analysis, 5 credits, or with MATB12 Fourier analysis, 7.5 credits.

Subcourses in MATM18, Mathematics: Fourier Analysis

Applies from V12

1201   Examination, 7,5 hp
       Grading scale: Fail, Pass, Pass with distinction