



## Course syllabus

Faculty of Technology

Department of Mathematics

1MA454 Fourieranalys, 7,5 högskolepoäng

Fourier analysis, 7.5 credits

### Main field of study

Mathematics

### Subject Group

Mathematics

### Level of classification

First Level

### Progression

G1F

### Date of Ratification

Approved by Faculty of Technology 2015-05-22

The course syllabus is valid from spring semester 2016

### Prerequisites

Linear algebra and Fourier series 7,5 credits (1MA151) and Analysis of several variables 7,5 credits (1MA152) or the equivalent.

## Objectives

After completing the course, the student should be able to

- solve problems, perform calculations, and conduct lines of reasoning within the part of mathematics that is covered by the course, and to communicate these solutions, calculations, and reasonings in writing
- describe definitions, formulate and prove theorems that are central to the course.

## Content

The course comprises:

- real and complex Fourier series including the cosine and sine series
- wave equation, diffusion equation and Laplace's equation with applications from physics
- d'Alembert's method for the wave equation
- Fourier's method for boundary value problems
- Introduction to Fourier integral.

## Type of Instruction

Lectures and seminars. Compulsory assignments may be given during the course.

## Examination

The course is assessed with the grades A, B, C, D, E, F, G, H, I.

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The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The student's knowledge is assessed in the form of a written exam.

### Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

### Credit Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 1MA154 Fourier analysis, 7.5 credits

### Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

### Required Reading and Additional Study Material

Brown, J. W. & Churchill, R. V. *Fourier series and Boundary Value Problems*, 7th ed. McGraw-Hill, 2006.  
200 (350) pages.