



Course syllabus

Faculty of Technology

Department of Mathematics

4MA412 Distributionsteori, 7.5 credits

Distribution Theory

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

Second Level

Progression

A1F

Date of Ratification

Approved 2014-10-03

Revised 2022-06-13 by Faculty of Technology. Prerequisites, content, type of instruction, examination and literature list are revised.

The course syllabus is valid from spring semester 2023

Prerequisites

4MA415 Functional analysis 7.5 credits or equivalent.

Objectives

The student should be able to:

- operate with various spaces of distributions
- apply distributions to solve problems
- operate with definitions and central notions of the course in coupling with study of various problems
- operate, communicate and present argumentation using mathematical forms of representation
- present applications of differential equations
- give different examples of distributions.

Content

The course content is:

- various spaces of distributions
- examples of singular distributions, Sokhotsky's formula
- operations with distributions: differentiation, multiplication, convolution, direct product, Fourier transform
- applications of the theory of distributions: fundamental solutions of differential equations with constant coefficients, Cauchy problems in spaces of distributions

Type of Instruction

Lectures and seminars.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

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 examination.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University. If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation

During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

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: 4MA112 Distribution Theory, 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

Required reading

Vladimirov, Vasili: *Generalized Functions in Mathematical Physics*, Mir, latest edition. 300 pages.

Supplementary reading

Fomin, Sergey and Kolmogorov Andrei: *Introductory Real Analysis*, Dover Publication INC, New York, latest edition

