Linnæus University

Course syllabus

Faculty Board of Science and Engineering

School of Computer Science, Physics and Mathematics

4MA102 Transformteori, 7,5 högskolepoäng
4MA102 Transform theory, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
Second Level

Progression
A1F

Date of Ratification
Approved by Organisational Committee 2009-12-01
The course syllabus is valid from autumn semester 2010

Prerequisites
Analytical Functions, 7,5 higher education credits (4MA101) or the equivalent.

Objectives

The student should be able to:

- compute Fourier and Laplace transforms and their inverses using residue theorems
- compute Fourier, Laplace and Z-transforms and their inverses using their properties and tables of known transforms
- apply Fourier and Laplace transforms to solve ordinary differential equations, partial differential equations, and systems of differential equations
- apply Z-transforms to solve difference equations
- describe basic definitions, prove some basic theorems, and apply them in computations
- interpret, communicate and argue using mathematic notions.

Content

Fourier transform, Laplace transform, Z-transform, inverse transforms, L^2-theory for transforms, differential equations, tempered distributions, Fourier transform of tempered distributions or Wavelet transform.

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

Examination
The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

The student's knowledge is assessed in the form of written and/or oral examinations. Furthermore, continuous assessment by written and/or oral representation can be used during the course. The principal assessment method for the course is determined at the beginning of the course.

Course Evaluation
After the course a written evaluation of the course will take place according to the University guidelines.

Required Reading and Additional Study Material
Required reading
Anders Vretbland *Fourier Analysis and its Applications,* Springer, 2005. 104 (269) pages.

E. B. Salt, A. D. Snider *Fundamentals of Complex Analysis with Applications to Engineering and Science,* Prentice Hall, 2003. 72 (559) pages.