Linnæus University

Course syllabus

Faculty of Technology
Department of Physics and Electrical Engineering

4ED344 Signalbehandling, 7,5 högskolepoäng
Signal Processing, 7.5 credits

Main field of study
Electrical Engineering

Subject Group
Electrical Engineering

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved 2014-10-03
Revised 2020-09-03 by Faculty of Technology. Prerequisites are revised.
The course syllabus is valid from autumn semester 2021

Prerequisites
General entry requirements for second-cycle studies and specific entry requirements:

- Signals and Systems or equivalent
- Multivariable Calculus and Vector Calculus or equivalent
- English B/6 or equivalent.

Objectives

After completion of the course, the student should be able to:

- combine knowledge within mathematics and signal theory to get acquainted with modern methods within the area of adaptive and statistical signal processing.
- independently solve several different types of programming tasks using a numerical/mathematical tool such as MATLAB.
- comprehend the mathematical formulation as well as its technical significance.
- present and discuss the solution and application areas of these programming tasks.

Content
The course will give the students deeper knowledge in signal theory and stochastic processes with applications in adaptive and statistical signal processing. The course comprises the following items:

- Adaptive and statistical signal processing
- Basic signal theory
- Complex stochastic processes
- Spectrum estimation
- Optimum and adaptive filters
- The digital radio receiver
- Digital down-conversion
- Under sampling

Type of Instruction
Lectures

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).

Written assignments/written exam.

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 courses of which the content fully, or partly, corresponds to the content of this course: 4ED044 Signal Processing, 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
J. G. Proakis, D. G. Manolakis, Digital Signal Processing, Principles, Algorithms, and Applications. Pearson Prentice Hall, Fourth Edition, 2007.