CM2018 Statistics for Medical Engineering 7.5 credits

Statistik för medicintekniska tillämpningar

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for CM2018 valid from Autumn 2023

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Medical Engineering

Specific prerequisites

Bachelor's degree in engineering or in sciences including 15 credits in mathematics and 6 credits programming, English B/6.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course students will be able to:

-Handle and analyse, in a computationally efficient way, large data sets

-List and describe the most common statistical tools (specified in the course PM) used in medical engineering

-Given a problem to solve or a situation requiring statistical analysis, identify the most suitable statistical tools for the task and deploy the chosen methods in the given context.

-Identify and discuss the limits of validity of the statistical tools presented in the course

For grade A students must also show to be able to adapt with slight modifications or combine different tools in order to attack problems that cannot be solved by straightforward application of the methods presented in the course.

Course contents

The course main goal is training medical engineering students in making sound quantitative statistical analysis in their field of study. The course will focus on statistical modelling, hypothesis testing and statistics of agreement. Application of statistical theory to medical engineering (e.g. imaging, signal processing, clinical validations) will have a prominent role.

Students will be trained in selecting the most appropriate statistical method for a given situation, and in using optimization methods, statistical inference and regression beyond least-square methods.

Examination

- TEN1 - Written exam, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Homework, 2.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.

- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.