



# FSH3212 Photon Counting Systems in Medicine 12.0 credits

Fotonräknande system inom medicin

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

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

## Establishment

Course syllabus for FSH3212 valid from Spring 2019

## Grading scale

P, F

## Education cycle

Third cycle

## Language of instruction

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

## Intended learning outcomes

After completing the course the student should be proficient in terms of properties of imaging systems in medicine using photon-counting detectors. In particular one must be able to explain, theoretically and in practice, the limitations and possibilities of these systems when using different radiation sources and contrast liquids, and how to utilize the energy information to improve the specificity of the images.

## Course contents

The course content is chosen together with the examiner from the following, or related fields, based on the book "Semiconductor Detector Systems" by Helmuth Spieler, and scientific publications. Among the contents may be especially mentioned

- Integrated electronics for photon-counting
- Detectors for photon-counting
- Photon counting for contrast imaging
- Energy weighing methods to maximize information content
- Definition of quantum efficiency for photon-counting system

## Specific prerequisites

MSc in Engineering Physics, or similar.

## Course literature

"Semiconductor Detector Systems" by Helmuth Spieler combined with scientific publications.

## Examination

- INL1 - Assignment, 4.5 credits, grading scale: P, F
- PRO1 - Project, 4.5 credits, grading scale: P, F
- SEM1 - Seminars, 3.0 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.

## Other requirements for final grade

Written report combined with an oral presentation.

## 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.