



**Karolinska  
Institutet**

Course syllabus for

## **Radiographic methodology 2, 7.5 credits**

Radiografisk metodik 2, 7.5 hp

This course syllabus is valid from autumn 2013.

Please note that the course syllabus is available in the following versions:

[Autumn2007](#) , [Autumn2008](#) , [Autumn2009](#) , [Autumn2011](#) , Autumn2013 , [Autumn2016](#) , [Autumn2017](#) , [Autumn2022](#) , [Autumn2023](#)

Course code	1RS012
Course name	Radiographic methodology 2
Credits	7.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Radiography
Level	G2 - First cycle 2
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Clinical Science, Intervention and Technology
Decided by	Programnämnden för röntgensjuksköterskprogrammet
Decision date	2007-06-20
Revised by	Programnämnd 6 (biomedicinska analytikerprogrammet och röntgensjuksköterskeprogrammet)
Last revision	2013-04-18
Course syllabus valid from	Autumn 2013

## **Specific entry requirements**

To be qualified to a higher semester, it is required that the student has taken at least 15 ECT credits from last semester, and all credits from previous semesters.

## **Objectives**

- \* Account for the technical and physical principles of computer tomography, magnetic resonance imaging, nuclear medical techniques (PET and SPECT the gamma camera) and ultrasound equipment and relate these to patient protection, image quality and artifacts.
- \* Explain and discuss factors in the image process that influences the image quality at a radiography.
- \* Explain the connection between exposure parameters and type of examination or patient size.
- \* Explain how and why different factors influence the amount of scattered radiation and discuss effect on image quality and radiation doses.
- \* Describe how digital images are constructed

and explain the connection between the histograms and detector dose of an image.

- \* Relate setting parameters in the X-ray and computer tomography to a specific examination and patient size.
- \* Explain central concepts within basic nuclear physics such as radioactive decay, radioactivity, half-life and the interaction of charged particles.
- \* Comparing the various modalities for diagnostic possibilities based on the latest scientific literature

## Content

The course comprises the technical imaging equipment that is on a modern x-ray laboratory. The course deals with physical factors affecting image quality and radiation doses, to patients and staff, in X-ray examinations. The course also comprises the technical and physical principles of other common modality within image and functional medicine such as computed tomography, magnetic resonance imaging, mammography, analysis, nuclear medical technologies and ultrasound equipment as well as a review of recent methodological developments described in the literature.

## Teaching methods

The course is carried out with a number of lectures. The course also includes compulsory laboratory sessions.

## Examination

The course is examined through a written examination. Furthermore, submitted and approved laboratory reports are required.

The student is entitled to a total of six test occasions to get passed.

In connection to the course three occasions will be given. One within the course, two occasions at future re-examinations. In some cases, it is required that the student submits an exemption application before he/she has the results of his/her latest completed examination. Three more opportunities are provided according to the same set-up when the course is given next time.

## Transitional provisions

The student may be examined under a previous syllabus within a year after the date when a close-down or major changes of the course was decided.

## Other directives

Course evaluation will be carried out in accordance with the guidelines established by the Board of Education at Karolinska Institutet.

## Literature and other teaching aids

*Berglund, Eva; Jönsson, Bo-Anders*

### Medicinsk fysik

1. uppl. : Lund : Studentlitteratur, 2007 - 288 s.

ISBN:978-91-44-03796-7 LIBRIS-ID:10517253

URL: <http://www.studentlitteratur.se/omslagsbild/artnr/31919-01/height/320/width/320/bild.jpg>

[Library search](#)

*Fosbinder, Robert.; Orth, Denise.*

**Essentials of radiologic science**

Philadelphia : Wolters Kluwer Health/Lippincott Williams & Wilkins, c2010.

ISBN:978-0-7817-7554-0 LIBRIS-ID:12148840

[Library search](#)

*Isaksson, Mats*

**Grundläggande strålningsfysik**

*Lund, Annika*

Lund : Studentlitteratur, 2002 - 310 s.

ISBN:91-44-01528-3 LIBRIS-ID:8427844

[Library search](#)