



**Karolinska  
Institutet**

Course syllabus for

## **Radiographic methodology 1, 7.5 credits**

Radiografisk metodik 1, 7.5 hp

This course syllabus is valid from autumn 2016.

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

[Autumn2007](#) , [Autumn2008](#) , [Autumn2009](#) , [Autumn2011](#) , [Autumn2013](#) , [Autumn2015](#) , Autumn2016 ,  
[Autumn2017](#) , [Autumn2022](#) , [Autumn2023](#)

Course code	1RS004
Course name	Radiographic methodology 1
Credits	7.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Radiography
Level	G1 - First cycle 1
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	Education committee Clintec
Last revision	2016-05-24
Course syllabus valid from	Autumn 2016

## **Specific entry requirements**

Standardised admission requirements F.1.1.

## **Objectives**

Part 1: Radiation physics, 4.5 HE credits

- account for the basic radiation biophysics within diagnostic image and functional medicine from concept such as energy, mass, charge and interaction
- describe the physical and technical processes in the image for a X-ray image from X-ray tubes to screen
- describe in what way photons be attenuated in a material and how the activity of a radioactive substance decreases with the time
- explain how setting parameters that tube voltage and tube current influence the radiation quality at radiography
- account for the radiation concepts absorbed dose, effective dose and equivalent dose
- describe the properties and structure of digital images

- give examples of appropriate measures to minimise radiation doses to patients and staff and optimise the diagnostic quality of the image at the same time within X-ray and nuclear medicine.

## Part 2: Radiographic techniques, 3 HE credits

- describe at a general level the structure and use for different radiographic modality such as the computer tomograph, the magnetic resonance imaging, the ultrasound equipment, analysis, mammography device and the gamma camera
- explain how information to patients, referrals and radiographic images are managed and archived in the computer systems RIS and PACS.

## Content

The course is divided in two parts:

**Radiation physics, 4.5 hp** The part deals with the sources of ionising and non-ionising radiation, interaction and detection. Furthermore, basic understanding of the risks that may occur in the use of ionising radiation is provided, and through practical exercises knowledge of practical radiation protection is provided.

During this part basic understanding of the technical equipment used in conventional X-ray examinations such as X-ray tubes and image plates and exposure indications on these, is provided. The part also gives an overview of the filing systems used for images and as well as text materials (PACS and RIS).

**Radiographic technologies, 3 hp** During this part is made an overview of developments of different modality within image and functional medicine. In this teaching, study visits concerning the different examination methods are included.

## Teaching methods

### Module1

This part is carried out with a number of lectures. The part also includes a compulsory laboratory session where the student measures scattered radiation in a radiography.

### Module 2

This part is carried out with lectures and field studies on different modality. The students are divided into groups, and each group is assigned a modality. Each group independently produces a poster on their modality that is then presented orally in a poster exhibition at the end of the part.

In case of absence from compulsory course elements, the student is responsible to contact the course coordinator for complementary assignments. The course coordinator decides whether, and if so how, absence from compulsory course elements can be made up. Study results cannot be reported until the student has participated in compulsory course elements or compensated for any absence in accordance with instructions from the course coordinator. Absence from a compulsory course element could mean that the student cannot retake the element until the next time the course is offered.

## Examination

Part 1 is examined through a written examination with the grading scale Fail/Pass/Pass with distinction. Furthermore, submitted and approved laboratory reports are required.

Part 2 has the grading scale Failed/Passed/Pass with distinction and be examined through active a written examination

A Pass with distinction in the course requires a Pass with distinction in part 1 and laboratory reports that have been submitted on time, and a Pass with distinction grade in part 2.

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

In Connections 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.

If the course is examined by a extern exam, or other assignments with deadlines, a latest submission date is given at the introduction of the course. In cases where a completion is required a new date for latest submission is set. If the requirements for submission are not fulfilled the student is given the opportunity to submit the exam or the assignment at the next time course is given. Reasons for not meeting deadlines may be taken under consideration by examiner.

## 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](#)