Course syllabus for

Radiographic methodology 1, 7.5 credits

Radiografisk metodik 1, 7.5 hp
This course syllabus is valid from autumn 2008.
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	Programnämnden för Röntgensjuksköterskeprogrammet
Last revision	2008-11-28
Course syllabus valid from	Autumn 2008

Specific entry requirements

Standardised admission requirements F.1.1.

Objectives

Part 1: Radiation physics, 4.5 HE credits Account for Rutherford's atomic model and describe ionisation and excitation. Account for various types of radiation on the basis of concepts such as mass, energy and charge and be able to discuss around similarities and differences in their interaction with matter. In detail describe the structure of an X-ray tube and explain, based on the interaction of the electrons and the photons in the X-ray tube, and patient and image receiver, respectively, how an X-ray image is created,. Mathematically calculate how photons are mitigated in a material and how the activity of a radioactive substance decreases with the time. Explain how setting parameters such as tube voltage and tube current affect the radiation quality of X-ray examinations. Account for the radiation concepts absorbed dose, effective dose and equivalent dose. Give examples of appropriate measures to minimise radiation doses to patients and staff, and, at the same time, optimise the diagnostic quality of the image in X-ray and nuclear medicine. Part 2: Radiographic techniques, 3 HE credits At a general level, describe the structure of the radiographic modalities; the computer tomograph, the MR camera, the

ultrasonic equipment 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

Part 1 - Radiation physics, 4.5 HE credits 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). Part 2 - Radiographic techniques, 3 HE credits During this part, an overview of the stages of the computer tomograph, the magnetic resonance imaging, the PET-camera and ultrasonic equipments is made. In this teaching, study visits concerning the different examination methods are included.

Radiation physics, 4.5 hp

Grading scale: VU

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 Techniques, 3.0 hp

Grading scale: VU

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

Part 1 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. Part 2 This part is conducted with lectures and field studies of the modalities the computer tomograph, the ultrasound MR camera, and the PET-camera. 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.

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 Fail/Pass and is examined through written individual examination. For a Pass grade in part 2, attendance in the field studies and an approved written examination are required. 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 grade in part 2. The student has the right to a total of six examinations to get a Pass grade. The course is given on three occasions. One within the course, one during the following re-examination. The third opportunity is provided before the beginning of the next semester, or in close connection to that. 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

Isaksson, Mats

Grundläggande strålningsfysik

Lund, Annika

Lund : Studentlitteratur, 2002 - 310 s.
ISBN:91-44-01528-3 LIBRIS-ID:8427844
Library search