



**Karolinska
Institutet**

Course syllabus for

Radiotherapy, 15 credits

Radioterapi, 15 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

Course code	2ON003
Course name	Radiotherapy
Credits	15 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Not applicable
Level	AV - Second cycle
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Neurobiology, Care Sciences and Society
Decided by	Programnämnden för sjuksköterskeutbildning och specialistutbildningar för sjuksköterskor
Decision date	2008-02-21
Revised by	Education committee NVS
Last revision	2017-03-13
Course syllabus valid from	Spring 2008

Specific entry requirements

Admitted to the specialist education for nurses

Objectives

The aim of the course is that the student should have enhanced his/her knowledge and understanding of radiotherapy, its underlying physiology, modes of action and methodology

On completion of the course, the student should be able to

Account for and explain the basic principles of external radiotherapy, brachytherapy and systemic radiotherapy

Account for Bohr's atomic model and the prevalent nuclear model, the properties, connection and different radioactive decays of elementary particles and the concept of half-life

Explain the interaction of charged particles, the interaction model of photons and their relation to photon energy and the atomic number of the irradiated agent

Explain how X-ray tubes and linear accelerators are constructed and account for their acceleration principle

Have knowledge about current laws and constitutions

Explain basic principles of computer dose planning and independently be able to carry out a computer-aided 3D-dose planning with given entry data.

Show basic knowledge in topographic anatomy and principles of x-ray computed tomography

Make simple field settings in a linear accelerator and calculations of radiation dose, and monitor units

Make calculations of radioactive decay, radiation damping and the inverse square-law independently

Show awareness of risk philosophy in radiological work and of acute and late risk assessments from a patient perspective.

Content

Contents:

Basic radio physics

Radiation protection

Radiation sources in radiotherapy

Radiation field physics

Computed tomography

Topographic anatomy

Set-up and verification of treatment

Dose planning

Radiobiology in external radiotherapy

Teaching methods

Studies take place according to the LäraNära concept implying active learning independently or in collaboration with others interleaved with the course meetings, including i.a. seminars and presentations. Self-assessments, problem-solving, own reflection and analysis of situations are included in the concept. Lärana consists of a computer program distributed as a cd-rom or on Internet. It is connected to a web server, where information is collected. Work in groups and active participation in seminars and attendance at all scheduled group meetings is compulsory. For carrying out the course, access to a computer (PC) with Internet connection is assumed.

Examination

For each study group and course, two compulsory course meetings of about a day each, will be organised. For participation in a course meeting, previous assignments should be approved. Active participation in the meetings is required for a pass.grade The grading system is Failed/Passed/Passed with distinction. Limited number of examinations or practical training sessions

At Karolinska Institutet a student is entitled to a total of 6 examinations per course to get passed. Student without approved results after 3 examinations have the right to re-take the course once. However, at most 6 examinations.

Transitional provisions

The course has been cancelled and was offered for the last time in the autumn semester of 2012. The course has been replaced with another, and examination will be provided according to the guidelines in the syllabus for 2ON019.

Literature and other teaching aids

Aus; Gunnarsson; Nodbrant

Brakyterapi med palladium-102

Läkartidningen, <http://lakartidningen.se/2000/temp/pda21507.pdf> : 1997 - nr 32-33

Bentel, Gunilla C.

Patient positioning and immobilization in radiation oncology

New York : McGraw-Hill, 1999 - 211 s.

ISBN:0-07-134158-7 (pbk)

[Library search](#)

Dean, David; Herbener, Tomas

Cross-sectional human anatomy

Lippincott Williams and Wilkins,

ISBN:0-683-30385-6

[Library search](#)

Degerfält, Jan

Strålbehandling : historik, fysik, omvårdnad

Lund : Studentlitteratur, 1998 - 204 s.

ISBN:91-44-00308-0 LIBRIS-ID:8352583

[Library search](#)

Jönsson, BA; Jönsson, L

Strålningsfysik och strålskydd

Medicinsk strålningsfysik, unds universitet ej publicerat arbete : 2006

Knöös

Fysikaliska data för radioterapifysik

Radiofysik Lund ej publicerat arbete : 1996

Stanton, Robert; Stinson, Donna

Applied physics for radiation oncology

Madison, Wis. : Medical Physics Pub., cop. 1996 - xii, 366 s.

ISBN:0-944838-61-8 (inb.)

[Library search](#)

Statens strålskyddsinstitut samlingstillstånd för strålbehandling och tillståndsvillkor

www.ssi.se :

Strålskyddslagen 1988:220

www.ssi.se :

Dobbs, Jane; Barrett, Ann; Ash, Daniel

Practical radiotherapy planning.

3rd ed. / b Jane Dobbs, Ann Barrett, Dan Ash : London : Arnold, c1999 - vi, 394 p., [8] p. of plates

ISBN:0-340-70631-7

[Library search](#)

ICRU report nr 50

Prescribing, Recording and Reporting Photon Beam Therapy

International Commission on Radiation Units and Measurements, www.icru.org, 1993

Isaksson, Mats

Grundläggande strålningsfysik

Lund, Annika

Lund : Studentlitteratur, 2002 - 310 s.

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

[Library search](#)

Khan, F

The Physics of Radiation Therapy : Dose Distribution and Scatter analysis