Course syllabus for

Computerized tomography, 30 credits

Datortomografi, 30 hp
This course syllabus is valid from spring 2015.
Please note that the course syllabus is available in the following versions:
Autumn2010 , Autumn2011 , Autumn2014 , Spring2015 , Autumn2023 , Autumn2024

Course code	2QA141
Course name	Computerized tomography
Credits	30 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Radiography
Level	Second cycle, has only first-cycle course/s as entry requirements
Grading scale	Fail (U) or pass (G)
Department	Department of Clinical Science, Intervention and Technology
Decided by	Styrelsen för utbildning
Decision date	2010-02-19
Revised by	Board of Higher Education
Last revision	2014-10-16
Course syllabus valid from	Spring 2015

Specific entry requirements

A minimum of 120 credits including a Degree of Bachelor of Science in Diagnostic Radiology Nursing. And proficiency in Swedish and English equivalent to Swedish B/Swedish 3 and English A/English 6.

Objectives

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

Part 1:
• describe the technical structure of the computer tomograph and explain the connection between this structure and generation of examination images
• explain connections between image quality and the used methodology, parameters setting and administration of contrast media
• describe how image materials is post processed

Part 2:
• apply deeper anatomic knowledge within computer tomography examinations
• apply deeper physiological knowledge within computer tomography examinations
• explain underlying occasions and mechanisms of diseases, aetiology

• explain how the function of the body and the organs is influenced by disease, pathophysiology
• relate the connections between the disease and used examination methodology with regard to ethical issue

Part 3:
• describe various types of databases, compare structures for these and identify relevant search strategies
• describe various types of studies and also be able to explain the differences between a qualitative and a quantitative study
• analyse and summarize results of both descriptive and statistical material
• apply a literature study methodology and based on a given issue review and summarize
• generalise the results of the literature study within prevailing knowledge situation and apply this for own professional development

Content

The course is divided in three parts.

echnology and physical principles, 10.5 hp The course includes lectures in technical structure of the computer tomograph, image production, image quality, settings of parameters in relation patient radiation doses. The course also includes lectures concerning the use of contrast media regarding contrast kinetics, contrast reactions, contrast agent triggered nephropathy. In laboratory sessions, any changes in the image material or the dose at different setting parameters are studied and measured. At laboratory parts, the students are also presented to work station and post processing tools for computed tomography images. **Pathology, anatomy, physiology and methodology, 12 hp** Part two introduces a deeper understanding in anatomy and physiological processes. The emphasis lies at the anatomy that is important for an understanding of the imaging methods and the physiology that gives deeper understanding of the modern function diagnostic methods. The part also gives an advanced study in the genesis mechanism, symptom, epidemiology and treatment principles of common diseases. Different diseases will be presented under lectures, seminars and demonstrations. The main emphasis will be against diseases that are diagnosed within diagnostic imaging sections for example orthopaedic diseases gastrointestinal diseases, lung diseases, kidney- and urinary diseases, cardiovascular diseases, neurological/neurosurgical diseases and cancer.

To obtain deeper knowledge about the methodology of the computed tomography, field studies are carried out. **Literature review, 7.5 hp** During the course is presented various types of databases and a content in these. Further, the student trains to find search strategies to discover the data that are the aim of the search. The course is completed with an overview and the student train to summarize results of review reports.

Teaching methods

The course includes lectures, laboratory sessions and demonstrations and independent written examination tasks.
The course also contains field studies (in part 1 and 2) that be planned in consultation with responsible teacher. Laboratory sessions, demonstrations and field studies are compulsory parts. In consultation with the examiner of the course, the student can receive complementary assignment in case of absence from compulsory parts.

Examination

Part 1 is examined through independent written examination. Part 2 is examined through independent written examination. Part 3 is examined through written compilation and oral presentation.

For a Pass grade in the course is required participation in laboratory sessions, field studies and individual assignment and passed independent written examination.

A student who has failed in the regular examination, is entitled to participate in five more examinations. If the student has failed six examinations/tests, no more examination is offered. The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination for which the student registered but not participated in, will not be regarded as an examination.

Transitional provisions

Examination will be provided during a period of two years after a close-down of the course. Examination may take place under a previous reading list during a period of one year after the date of the renewal of the reading list.

Other directives

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

Language of instruction: Swedish.

Literature and other teaching aids

Kalender, Willi

Computed tomography : fundamentals, system technology, image quality, applications

2., rev. ed. : Erlangen : Publicis, 2005 - 304 s.
ISBN:3-89578-216-5 LIBRIS-ID:9016794
Library search

Differential diagnosis in computed tomography

Burgener, Francis A.; Meyers, Steven P.; Herzog, Christopher; Zaunbauer, Wolfgang

2nd Edition. : Stuttgart : Thieme, [2012], ©2012. - xiv, 854 pages
ISBN:9783131025425 (hardback) LIBRIS-ID:16623340
Library search

Forsberg, Christina; Wengström, Yvonne

Att göra systematiska litteraturstudier : värdering, analys och presentation av omvårdnadsforskning

3. uppl. : Stockholm : Natur & Kultur, 2013 - 219 s.
ISBN:9789127134157 LIBRIS-ID:13560592
Library search