Course syllabus for

Magnetic resonance tomography, 30 credits

Magnetisk resonanstomografi, 30 hp
This course syllabus is valid from spring 2019.
Please note that the course syllabus is available in the following versions:
Autumn2010 , Autumn2011 , Autumn2014 , Spring2015 , Spring2019 , Autumn2023 , Autumn2024

Course code	2QA146
Course name	Magnetic resonance 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	Pass, Fail
Department	Department of Clinical Science, Intervention and Technology
Decided by	Styrelsen för utbildning
Decision date	2010-02-19
Revised by	Education committee CLINTEC
Last revision	2018-10-16
Course syllabus valid from	Spring 2019

Specific entry requirements

At least 120 credits in which it should be included a Degree of Bachelor of Science in Diagnostic Radiology Nursing. In addition, 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 physical principles of phenomenon magnetic resonance
* describe the technical structure of a magnetic resonance imaging system
* explain relationship with arisen artifacts and used parameters for study
* analyse the risks that arise at study with magnetic resonance imaging

Part 2:
* apply acquired knowledge in clinical situations and other related activities
* 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 relationships between disease and used examination methodology with regard to ethical issues

Part 3:
* describe various types of databases, compare structures for these and identify relevant search strategies
* describe different types of studies and also can explain differences between a qualitative and a quantitative study
* analyse and summarise result 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.

Technology and physical principle, 10.5 hp

Grading scale: GU

Course aim to give advanced knowledge of phenomenon nuclear magnetic resonance as well as the technical structure of a magnetic resonance imaging system. Courses intend furthermore to give advanced knowledge of examination methodology as well as an overview of the risks that are united with activities.

Pathology, anatomy, physiology and methodology, 12.0 hp

Grading scale: GU

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 specialisation in the magnetic resonance tomographic methodology is carry out clinical training at magnetic resonance tomographic clinic but also other activities that can be related to this (1 credit of component).

Literature review, 7.5 hp

Grading scale: GU

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.
To deepen and broaden his experience in methodology contents component 2 include clinical placements that can include clinical training and field studies. This is planned in consultation with

course coordinator.
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

Component 1 is assessed through individual written examination.
Component 2 is assessed through individual study assignments as well as written examination.
Part 3 is examined through written compilation and oral presentation.

To pass course so is required approved participation on laboratory sessions, field studies and individual assignment as well as passed individual written examination.

Students who do not pass a regular examination are entitled to re-examination on five more occasions. If the student has failed six examinations/tests, no additional examination is given.
Every time that the student has participated in the same examination it is regarded as an examination session. Submission of a blank exam is regarded as also an examination occasion. An examination for which the student registered but did not participate in will not be counted as an examination.

Transitional provisions

Examination will be provided during a period of one year after a possible closing of the course.
Examination can be carried out according to an earlier literature list during a period of one year after the date of a renewal of the literature list.

Other directives

Evaluation of the course will be carried out according to the guidelines that are established by the Board of Education at Karolinska Institutet.

Language of instruction: Swedish.

Literature and other teaching aids

Westbrook, Catherine; Kaut-Roth, Carolyn; Talbot, John
MRI in practice

4. ed. : Chichester, West Sussex : Wiley-Blackwell, 2011 - vii, 442 s.
ISBN:9781444337433 (pbk. : alk. paper) LIBRIS-ID:12240838
Library search

Burgener, Francis A.
Differential diagnosis in magnetic resonance imaging

Stuttgart ; New York : Thieme, cop. 2002 - ix, 654 s.
ISBN:3-13-108121-X (Stuttgart) LIBRIS-ID:8865969
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