



**Karolinska
Institutet**

Course syllabus for

Magnetic resonance tomography, 7.5 credits

Magnetkameran, 7.5 hp

This course syllabus is valid from spring 2013.

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

[Spring2010](#) , [Spring2012](#) , [Spring2013](#) , [Spring2014](#) , [Spring2018](#) , [Spring2019](#) , [Spring2022](#) , [Spring2025](#)

Course code	1RS034
Course name	Magnetic resonance tomography
Credits	7.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Radiography
Level	G2 - First cycle 2
Grading scale	Pass, Fail
Department	Department of Clinical Science, Intervention and Technology
Decided by	Programnämnd 6
Decision date	2010-03-26
Revised by	Programnämnd 6
Last revision	2012-11-06
Course syllabus valid from	Spring 2013

Specific entry requirements

To be qualified to a higher semester, it is required that the student has taken at least 15 ECT credits from last semester, and all credits from previous semesters.

Objectives

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

- describe basic physical principles of image production with magnetic resonance imaging
- describe the technical structure of a magnetic resonance imaging system
- apply the examination methodology at commonly occurring magnetic resonance examinations.
- inform patients of the MRI examination, drug effects and its side effects in relevant situations
- apply and explain the safety measures that should be taken at a magnetic resonance examination
- describe the diagnostic possibilities and limitations of the technology at the clinical application

Content

The course will treat the physical basic principles of image production with magnetic resonance imaging and the technical structure of the system. The course intends also to provide advanced knowledge in the performance of common examinations such as the investigation of the spine and the brain. The student is also trained to identify diagnostic information that the method can provide. This implies to understand how and why different image sequences are used, and what can be reproduced.

The course also covers the risks that may occur in connection with the examination. Students learn to take adequate safety measures that are compatible at a MRI and inform patients, their families and various professionals about these. Safety measures include taking into account the magnetic field strength but also the ability to handle drugs in a safe manner.

Teaching methods

The working methods that are used during the course are clinical placement in connection with magnetic resonance examinations, seminars, laboratory sessions and lectures.

The course includes mandatory and seminars and clinical rotation

Course coordinator assesses whether and if so how absence from compulsory education elements might be assessed. Before the student participated in the mandatory sessions according to instructions the final study results cannot be reported.

The absence of a mandatory training component could mean that the student cannot make up for the time until the next time the course is offered.

Examination

The course is assessed through a practical examination and an individual written exam. The student will independently through a practical examination to apply and justify precautions in connection with MRI examinations. During the practical examination the student should also demonstrate an understanding of the methodology at selected MRI examinations. The assessment is carried out based on a specific assessment form that served students in connection with course introduction. Furthermore physical, technical and methodological aspects will be assessed through written examination.

For a Pass grade in the course active participation in compulsory parts is required. Clinical placement seminar and laboratory sessions is compulsory. Compensation of absence from compulsory part is planned in consultation with supervisors and course directors.

Students who are not approved for regular examination has the right to participate in five examinations. In connection to the course three occasions will be given 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. Three more opportunities will be provided as described above when the course is run next time.

If the student has six examinations, no additional examination will be given. Each participating in one examination date counts as one occasion.. Submission of blank exam counts as examination.

Examination for which the student registered but not participating are not counted as examination.

The examiner may with immediate effect interrupt a student's clinical rotation, or the equivalent, if the student demonstrates such serious deficiencies in knowledge, skills or attitudes that patient safety or patient confidence in healthcare is at risk. When clinical rotation is interrupted according to this, it implies that the student fails in the current part, and that one clinical rotation opportunity is used up.

In such cases, an individual action plan should be set up for required activities and examinations, before the student is given a possibility for a new clinical rotation in the course.

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

Westbrook, Catherine; Kaut-Roth, Carolyn; Talbot, John

MRI in practice

3. ed. : Oxford : Blackwell Publishing, 2005 - 410 s.

ISBN:1-4051-2787-2 (pbk) LIBRIS-ID:10152174

[Library search](#)

Elster, Allen D.

Questions & answers in magnetic resonance imaging

Burdette, Jonathan H

2. ed. : St. Louis : Mosby, cop. 2001 - 333 s.

ISBN:0-323-01184-5 LIBRIS-ID:4816445

[Library search](#)

Rinck, Peter A.

Magnetic resonance in medicine : the basic textbook of the European magnetic resonance forum

4., completely. rev. ed. : Berlin : Blackwell Wissenschafts-Verlag, 2001 - 245 s.

ISBN:0-632-05986-9 LIBRIS-ID:8420222

[Library search](#)

MRI : from picture to proton

McRobbie, Donald W.

2. ed. : Cambridge Cambridge University Press,c 2007 : Cambridge University Press, 2007 - xii, 394 s.,
[4] pl.-s. i färg

ISBN:0-521-86527-1 (inb.) LIBRIS-ID:10225303

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