

MSFT02, Medical Radiation Physics: Master's Degree Project in Medical Radiation Physics, 30 credits

Medicinsk strålningsfysik: Examensarbete för sjukhusfysikerexamen, 30

högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2021-12-08 and was last revised on 2023-11-17. The revised syllabus comes into effect 2023-11-17 and is valid from the spring semester 2024.

General information

The course is included in the later part of the medical physicist education (semester 10), and includes the final degree project in medical radiation physics. The course is compulsory for the degree of Master of Science in Medical Physics according to The Higher Education Ordinance 2006:1324 (Degree of Master of Science in Medical Physics 300 credits).

Language of instruction: Swedish and English

The teaching is mainly conducted in Swedish, but certain supervision can be given in English. A predominant part of the reading list is in English.

Main field of study Specialisation

Medical Radiation A2E, Second cycle, contains degree project for Master of
Physics Arts/Master of Science (120 credits)

Learning outcomes

The course covers theoretical and applied medical radiation physics and consists of an individual project work under supervision.

Knowledge and understanding

After completing the course, the student should be able to:

- based on the project, demonstrate understanding and problem-solving ability, which altogether entails substantial subject-specific specialisation

- master the scientific methods and the methodology that forms basis of the thesis and demonstrate a reflecting, critical approach to it use.

Competence and skills

After completing the course, the student should be able to:

- use literature or other sources of information to independently collect, compile and assimilate the information required to scientifically process the task
- within a predetermined time frame undertake an experimental and/or theoretical research project with a limited scope
- conduct risk assessment of subject-specific work entailing exposure to ionizing radiation or other kind of risk, and demonstrate familiarity with the laws and regulations governing such work
- demonstrate good skills in planning, systematic documentation and compilation of experimental and/or theoretical work
- demonstrate a deepened ability to independently and critically evaluate and analyse the results obtained, and discuss them from a broader perspective, thereby demonstrating an ability to contribute to the development of knowledge
- in writing and orally present and defend the thesis work, including how the problem is posed, the applied methods and obtained results, for both intradisciplinary and popular science purposes

Judgement and approach

After completing the course, the student should be able to:

- interpret and assess the results obtained in order to perform relevant adjustments to the project methodology during the working process
- discuss and communicate the specific subject area with researchers in the scientific field as well as with non-experts in the wider society
- assess the personal need of knowledge and thus take responsibility for the personal knowledge development within the subject area
- relate the task at hand to applicable scientific, societal and ethical aspects
- critically review and assess the relevance of scientific publications
- demonstrate an understanding of the professional role of medical physicists by, as far as reasonably possible, interacting with other professional categories during the project.

Course content

In consultation with the course coordinator, the supervisor and the director of undergraduate studies, the student is assigned an individual cohesive project corresponding to one semester full-time studies including oral presentation. The project is usually associated with ongoing research and development at Medical radiation physics in Lund or Malmö, different departments at Skane university hospital, or in companies with close connection to the field. Qualified supervision is provided during the course. International degree projects may also occur, often at different hospitals in Denmark. When required, a supervisor at Medical radiation

physics in Lund is then also assigned. Apart from the project, the course may contain compulsory course components with limited extent.

Course design

The teaching mainly consists of regular supervision of the student, who carries out a cohesive project in the subject area. Depending on the project character, lectures and seminars may occur and are then compulsory. Examples are the active participation in a half-time seminar by presenting the work at a popular science level, directed, for instance, to medical physics students on the first years (year 1 and 2), and to participate in the research group's internal group meetings. The degree project normally requires specialised studies (additional need of knowledge) and a literature survey of earlier research in the area. The student should shortly after start of the course, in consultation with the supervisor, prepare a research plan that contains a definition of the project, problem analysis, and a time plan, so that the degree project can be undertaken and completed without delay.

Assessment

Examination takes place orally in the form of a presentation of the project in English, as well as through a scientific report that the student writes in English. The written report is assessed by a reviewer, who is appointed by the examining teacher. Part of this assessment is also an oral discussion. The reviewer is normally a university teacher or a medical physicist who is well oriented in the subject area of the degree project.

Unless otherwise specified by the examining teacher, the use of tools based on generative artificial intelligence (GAI tools) is not permitted for creation of the final version that is submitted or presented for examination. For cases where the examining teacher states that the use of GAI tools is permitted, the use must be clearly declared by the student.

The report of the degree project is public and may not be classified in any part. Medical radiation physics, Lund, archives the report after approval and publishes it in electronic format at Lund university's portal for exam projects.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Grades

Grading scale includes the grades: Fail, Pass, Pass with distinction

A pass grade for the entire course requires participation in all compulsory parts.

Moreover, rules and recommendations from the faculty of natural sciences are applied. The final grade is decided by combining the results of the components included in the examination, the reviewer's assessment of the written report, and the written assessment from supervisors.

Grading criteria for Pass with distinction follow the guidelines of the faculty of natural sciences: The student should have demonstrated good ability to manage a research assignment independently. This includes that they have shown creative proficiency regarding problem formulation, problem solving, and conclusion, as well as ability to put the results in a wider topic-specific context, e.g. in a scientific problem area, or in a relevant field of application. The written and oral presentations of the degree project should hold high quality.

Entry requirements

Admission to the course requires a Pass grade on all previous courses (270 credits) according to the programme syllabus of Degree of Master of Science in Medical Physics (NASJF) 300 credits (25/5/2023 U 2023/626).

Further information

Apart from the aim and contents of the course as above, the qualification descriptor for professional qualification as medical physicists (The Higher Education Ordinance 2006:1324) is used as a basis for the aim of the course, contents and implementation.

The course cannot be included in an exam qualification together with MSFT01 Medical radiation physics: Degree Project for a Degree of Master of Science in Medical Physics, 30 credits.

The course is given at the department of medical radiation physics, Lund university.