



Course syllabus

Strålterapifysik Radiation Therapy Physics

EXTP45, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED BME

Date of Decision: 2023-04-13

General Information

Elective for: BME4-bf

Language of instruction: The course will be given in Swedish

Aim

The course will provide future engineers an introduction to radiation therapy, as a basis for communicating with other health care professionals and working for a safe and effective use of radiotherapy equipment.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- have good knowledge of medical linear accelerators and be able to explain their construction and function.
- have good knowledge of after-loading equipment and radiation sources within brachytherapy

Competences and skills

For a passing grade the student must

- be able to describe radiation field characteristics in terms of absolute and relative dose distribution for both external radiation beams and radioactive sources for brachytherapy.
- be familiar with the treatment process, from diagnosis to completion of treatment.

Judgement and approach

For a passing grade the student must

be able to discuss and develop quality assurance programs, including monitoring of both equipment and working methods, so that each patient is ensured that the absorbed dose in the target volume is consistent with the prescribed absorbed dose, within acceptable limits.

Contents

Brief history, Overview of clinical external radiotherapy and brachytherapy. Medical linear accelerators and radiation sources in radiotherapy. Radiation beam characteristics. Treatment planning and dose calculations, intensitymodulated radiotherapy and optimisation, gating, and image-guided radiotherapy. Radiotherapy with protons, light ions, and neutrons. Dosimetry protocols (IAEA) and beam quality concepts. Quality assurance and quality control, acceptance testing/commissioning and periodic checks of radiotherapy equipment. Accidents and incidents in radiotherapy.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: For a grade 3 the student must pass a written exam.

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.

Admission

Assumed prior knowledge: Mandatory Courses in the BME-Programme

The number of participants is limited to: No

Contact and other information

Course coordinator: Crister Ceberg, crister.ceberg@med.lu.se