

Radiologic Techniques (E025490)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size (nominal values; actual values may depend on programme)
Credits 3.0 Study time 90 h Contact hrs 22.5 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	English	Gent	practicum	12.5 h
			lecture	17.5 h

Lecturers in academic year 2020-2021

Kellens, Pieter-Jan	GE38	staff member
Van Holen, Roel	TW06	lecturer-in-charge
Bacher, Klaus	GE38	co-lecturer

Offered in the following programmes in 2020-2021

	crdts	offering
Master of Science in Biomedical Engineering	3	A
International Master of Science in Biomedical Engineering	3	A
Master of Science in Biomedical Engineering	3	A

Teaching languages

English

Keywords

image quality, nuclear medicine, radiology, quality assurance

Position of the course

The student will get knowledge and insight into the physical principles in medical imaging. Special attention is given to quality assurance and performance measurements of the various imaging techniques and dose calibrators. Thereby this course is an addition to the courses of biomedical signals and images and medical physics where the instrumentation and the effects of ionizing radiation are respectively discussed.

The purpose is to prepare the student for a responsible function in biomedical imaging. In this way the student can make well-considered judgements about the state of biomedical imaging equipment. The student can also critically evaluate new instrumentation trends.

Contents

- Radiation detection
- Radiation spectroscopy
- Image quality: aspects of image quality
- Nuclear medicine:
 - Introductio
 - Use and QC of dose calibratorsIntroduction
 - SPECT: principles and image quality
 - PET: principles and image quality
- X-ray imaging:
 - Introduction
 - Conventional and digital radiography
 - Conventional and digital mammography
 - Fluoroscopy
 - CT
 - Medical grade display systems
- Imaging techniques: integration

Initial competences

Basic medical physics, basic signal- and image processing

Final competences

- 1 To understand the job content and responsibilities of a medical physicist in a nuclear medicine or radiology department.
- 2 Being able to make well-considered judgements about the state of biomedical imaging equipment.
- 3 Being able to critically evaluate new instrumentation trends in medical imaging.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, practicum

Extra information on the teaching methods

Classroom lectures; Lab sessions

Learning materials and price

powerpoint slides and course

References

Course content-related study coaching

individual meetings with the lecturers are possible on an ad hoc basis

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Oral examination

Examination methods in case of periodic evaluation during the second examination period

Oral examination

Examination methods in case of permanent evaluation

Report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Extra information on the examination methods

During examination period: oral closed-book exam, written preparation

During semester: report practical session practicum (1x)

Calculation of the examination mark

Evaluation during examination period and report on practical session