Course Specifications
From the academic year 2016-2017 up to and including the
Quality Assurance and Special Technology in Radiotherapy (D002438)

Course size
(nominal values; actual values may depend on programme)

Credits 6.0  Study time 180 h  Contact hrs 60.0 h

Course offerings in academic year 2018-2019

A (semester 1)  Dutch

Lecturers in academic year 2018-2019

De Wagter, Carlos  GE17  lecturer-in-charge
Vanderstraeten, Barbara  GE17  co-lecturer

Offered in the following programmes in 2018-2019

Postgraduate Certificate Expert in Medical Radiation Physics  crdts offering 6  A

Teaching languages
Dutch

Keywords
QA, preclinical dosimetric verification, anthropomorphic phantom, IMRT, VMAT, tomotherapy, dose painting, Image guided radiotherapy (IGRT), adaptive radiotherapy (ART), Intraoperative radiation therapy (IORT), Stereotactic radiotherapy (SRS/SBRT)

Position of the course
The aim of this course is to enable the students to assure the dosimetric quality of conventional and advanced radiation therapy, as well as of special techniques in radiotherapy. The Quality Assurance (QA) of the total planning and treatment chain is the main focus. Attention is paid to the quantitative accuracy of each of the process steps.

Contents
1. The paradigm of quality assurance (QA) in radiotherapy
   1.1 Patient-specific QA
   1.2 Equipment QA
   1.3 Class-solution QA
   1.4 How much QA is enough?
   1.5 Phantoms for QA
   1.6. National and international recommendations
   2. Advanced radiotherapy and special techniques
   2.1 Intensity modulated radiation therapy (IMRT)
   2.2 Rotational irradiation and tomotherapy
   2.3 Image guided radiotherapy (IGRT) and adaptive radiotherapy (ART)
   2.4 Gated treatments
   2.5 Intraoperative radiation therapy (IORT)
   2.6 Stereotactic radiotherapy
   2.7 Total body irradiation (TBI)
   2.8 Total skin electron irradiation (TSEI)
   3. Specific dosimetry for advanced radiotherapy and special techniques QA
   4. Equipment QA of CT-simulators and linear accelerators
   5. Patient-specific and class-solution QA procedures and QA tools
   6. Basic QA methods for Treatment Planning systems
   7. Practical examples of class-solution QA

Initial competences
Successful completion of at least one of following courses: “Medical dosimetry”, “Technology of radiotherapy” or “Radiotherapy: technology and patient dosimetry”

(Approved) 1
Final competences
The competence of carrying the responsibility for the dosimetric quality assurance of the planning and delivery chain of radiotherapy, including the special techniques

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

Learning materials and price
Syllabus (Dutch and via Minerva) and scientific background literature (cost lower than 15 EURO)

References

Course content-related study coaching
The lecturer is available during or in between lectures; guided tour in the Radiotherapy department.

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Open book examination, oral examination

Examination methods in case of periodic evaluation during the second examination period
Open book examination, 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 possible

Extra information on the examination methods
During examination period: written preparation. During semester: 5 tasks with report.

Calculation of the examination mark
During examination period / Throughout semester = 80%/20%