GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Radiochemistry and Radiopharmaceuticals (D012506)

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

Credits 4.0 **Study time 120 h**

Course offerings and teaching methods in academic year 2024-2025

A (semester 2)	English	Gent	lecture

Lecturers in academic year 2024-2025

De Vos, Filip	FWO2	lecturer-in-charge

Offered in the following programmes in 2024-2025	**crdts**	**offering**
Master of Science in Biomedical Sciences	4	A

Teaching languages

English

Keywords

Radiochemistry, Radiopharmaceuticals

Position of the course

The student(s) will be provided with a thorough knowledge and understanding of the fundamentals of nuclear chemistry that form the basis of the medical applications of
ionizing radiations. These applications involve exposing patients to radiation sources and administering radioactively labeled compounds to patients.
This course teaches the student to propose solutions to biomedical problems based on biological, medical and technical considerations. A second contribution to the training competencies is learning to answer a concrete question relevant to the medical sciences based on current scientific and medical knowledge on the subject.

Contents

- Overview of radioactive decay modes with their applications in
- medicine: nuclear medical imaging, radionuclide therapy,
- brachytherapy, in vitro analysis.
- Laws of radioactive decay with their application to radionuclide
- generators.
- The interaction mechanisms of radiation with matter.
- The laws of the interactions of ionizing radiation.
- Overview of measurement methods for radioactivity determination.
- Spectral analysis.
- The production of radionuclides for medical purposes in a reactor and a
- cyclotron.
- Quality control of radiopharmaceuticals and reference to analytical techniques to determine them.
- Principles of radiochemistry: technetium and coordination radiochemistry, radiochemistry of halogens, PET radiochemistry.
- Applications of radiopharmaceuticals in the subfield of nuclear medicine.

Initial competences

You can download the continuity report at http://qoasis.ugent.be/oasis-web/curriculum/voorkennisvancursus?cursuscode=D001538&taal=nl.
Have successfully completed the undergraduate biomedical sciences program or have otherwise acquired the competencies envisioned therein.

Final competences

1 Knowledge and insight of radiochemistry
2 knowledge and insight of the synthesis and quality control of radiopharmaceuticals
3 knowledge in the medical applications of radiopharmaceuticals

Conditions for credit contract

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

Conditions for exam contract

Access to this course unit via an exam contract is unrestricted

Teaching methods

Lecture

Study material

None

References

Course content-related study coaching

Assessment moments

end-of-term assessment

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

Written assessment

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

Written assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Calculation of the examination mark