Course Specifications
Valid in the academic year 2016-2017

Course

Analytical Biochemistry (C003373)

Lecturers in academic year 2016-2017
Devreese, Bart
WE10 lecturer-in-charge
Strijckmans, Karel
WE08 co-lecturer

Offered in the following programmes in 2016-2017
Bachelor of Science in Biochemistry and Biotechnology
4 A
Preparatory Course Master of Science in Biochemistry and Biotechnology
4 A

Teaching languages
Dutch

Keywords
Analytical methods in biochemistry, radiochemistry

Position of the course
Theoretical and practical overview of common techniques in the analysis of proteins and other biomolecules and the application of radiochemistry.

Contents

Methods in Biochemical analysis, i.e.
• separation methods: electrophoresis, chromatography, ultracentrifugation,
• protein characterization (amino acid analysis, protein sequencing, mass spectrometry), introduction to proteomics,
• study of post-translational modification and protein interactions,
• characterization of sugars and lipids,
• immunological methods (ELISA),
• peptide synthesis.
The lectures of this part are provided by Prof B. Devreese.

Radiochemistry:
• principles of radioactive decay and interaction of radiation with matter,
• activity measurement and data handling, detectors,
• practical radioprotection,
• applications in life sciences:
  • production of radiotracers,
  • in vitro applications: RIA, ligand-binding analysis and autoradiography,
  • in vivo application: functional imaging.
The lectures of this part are provided by Prof K. Strijckmans.

Initial competences
The student should have participated to an exam of the courses Analytical Chemistry and Biochemistry "metabolism 1 from Bachelor 2 Biochemistry-Biotechnology"

Final competences
1. Have knowledge and understand the possibilities of the methods for biomolecular separations and purification.
2. Having knowledge and understand the techniques for protein characterization with

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Methods such as amino acid analysis, protein sequencing, mass spectrometry.

3 Having insight into the possibilities and limitations of radiochemistry for qualitative and quantitative analysis of bio chemical entities or processes.

4 Ability for safe working in a radiochemical laboratory (class II, Belgian Law: KB 20/07/2001 radioprotection).

5 The student develops the following attitudes: in general: problem solving thinking, surplus value of interdisciplinary research, experimental work in a regulated risky environment.

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

Learning materials and price

Syllabi in Dutch, part Radiochemistry: distributed via Acco.
Digital Learning Platform: Minerva: forum, documents and kinemages, FAQ, Cost: 17 EUR.

References

Course content-related study coaching

Via the exercises in addition to the practical exercises: problem solving thinking, via practical exercises: training for basic manipulations in biochemical experiments.
Individual contact with the lecturer/assistant on demand.
Interactive coaching by Minerva.

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

Participation, report.

Possibilities of retake in case of permanent evaluation

Examination during the second examination period is possible in modified form.

Extra information on the examination methods

Oral with written preparation (end 1st semester).
Contents: testing insight in basic concepts and problem solving attitude. The parts on analytical Biochemical methods and radiochemistry are organised by different lecturers and are interrogated separately by the lecturers.
Non periodic evaluation: via evaluation of reports and contribution to practical exercises radiochemistry.

Calculation of the examination mark

Radiochemistry: Permanent evaluation: report of practical exercises (20%) + periodical examen (80%). The report of the practical exercises consists a joint report on all experiments, to be submitted within 10 days after the last experiment. The points from the permanent evaluation are retained for the second exam period that only concerns a periodical exam. Students who are absent without any good reason or who do not participate in (part of) the permanent evaluation, are not passed for the course unit.
Biochemical analysis methods: 100% periodic evaluation.
The final weighing factor is 2:3 for Biochemical analysis methods and 1:3 for Radiochemistry. The student passes only if, for both parts, the quote is at least 10.0 / 20; if not the total score is not more than 9 / 20.

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