GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2025-2026

Protein Chemistry (I002615)

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 2025-2026

A (semester 1)	English	Gent	lecture	
			practical	
			group work	0.0h
			seminar	0.0h

Lecturers in academic year 2025-2026

Van Damme, Els	LA25	lecturer-in-charge
Vanhaeren, Hannes	LA25	co-lecturer

Offered in the following programmes in 2025-2026	crdts	offering
Master of Science in Bioinformatics(main subject Bioscience Engineering)	4	A
Master of Science in Bioscience Engineering: Cell and Gene Biotechnology	4	A
Exchange Programme in Bioinformatics (master's level)	4	A
Exchange Programme in Bioscience Engineering: Cell and Gene Biotechnology (master's level)	4	A

Teaching languages

English

Keywords

Proteins, enzymes, structure, protein-protein/ligand interactions, function of proteins, modifications, analysis methods

Position of the course

- To acquire knowledge related to structure and properties of proteins, and their most important functions
- To understand different analytical techniques used in protein chemistry
- To critically assess scientific literature related to protein research

Contents

1. Structure of proteins: amino acids, structural motifs (alpha helix/beta-sheet), protein folding and prediction of protein structure
2. Post-translational modifications of proteins, in vivo (e.g. glycosylation, phosphorylation, ubiquitinylation) and in vitro (chemical modification of proteins eg. radioactive/fluorescent labels) – importance of modification for protein function
3. Structure-function relationships: Structural analysis of proteins - DNA recognition in prokaryotes and eukaryotes, enzymatic activity, membrane proteins, signal transduction, recognition of other proteins
4. Techniques in protein research: sequence analysis of proteins, chromatographic techniques for separation of amino acids, peptides and proteins (gel filtration, ion exchange chromatography, affinity chromatography), electrophoretic techniques, mass spectrometry
5. Study of the interactions between proteins and ligands (calorimetry – biosensors - arrays - Y2H – Tandem affinity chromatography – immunoprecipitaion and pull down assays)

Initial competences

Basic knowledge of biochemistry and molecular biology.

Final competences

1 Understand the structure, function and importance of proteins.
2 Utilize techniques for analysis of proteins with interpretation of the results.
3 Execute tasks on protein analysis in the frame of a scientific problem
4 Select the best technique for the analysis of a problem
5 Work accurately in a protein laboratory
6 Analyze protein data critically
7 Collaborate in a group for experimental work and reporting
8 Critically assess scientific publications
9 Summarize the most important findings from protein research

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

Group work, Seminar, Lecture, Practical

Extra information on the teaching methods

Practicals and exercises are obligatory

Study material

Type: Slides

Name: Protein chemistry
Indicative price: Free or paid by faculty
Optional: no
Language : English
Available on Ufora : Yes
Online Available : Yes
Available in the Library : No
Available through Student Association : No

References

Scientific papers and books dealing with proteins, protein function and protein analysis techniques.

Course content-related study coaching

Additional information or explanation can be obtained by personal contact, by email or during exercises.

Assessment moments

end-of-term and continuous assessment

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

Oral assessment, Written assessment with open-ended questions

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

Oral assessment, Written assessment with open-ended questions

Examination methods in case of permanent assessment

Participation, Peer and/or self assessment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

Written examination followed by oral discussion

Calculation of the examination mark

Lectures: 80% Practicals and exercises: 20%
Practicals and exercises are obligatory. Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner. Illegal absence will lead to a score of maximum 9/20, regardless of the score for the theoretical exam. If the student scores less than 10/20 on either the theory or the practicals and exercises, this student cannot pass and will receive the lowest non-pass score.