

## Protein Chemistry (I002615)

**Cursusomvang** (nominale waarden; effectieve waarden kunnen verschillen per opleiding)

**Studiepunten 4.0**                      **Studietijd 120 u**

**Aanbodsessies en werkvormen in academiejaar 2023-2024**

A (semester 1)	Engels	Gent	hoorcollege zelfstandig werk practicum werkcollege
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**Lesgevers in academiejaar 2023-2024**

Van Damme, Els	LA25	Verantwoordelijk lesgever
Vanhaeren, Hannes	LA25	Medelesgever

**Aangeboden in onderstaande opleidingen in 2023-2024**

	stptn	aanbodsessie
<a href="#">Master of Science in Bioinformatics (afstudeerrichting Bioscience Engineering)</a>	4	A
<a href="#">Master of Science in Bioscience Engineering: Cell and Gene Biotechnology</a>	4	A
<a href="#">Uitwisselingsprogramma bio-ingenieurswetenschappen: cel- en genbiotechnologie (niveau master-na-bachelor)</a>	4	A
<a href="#">Uitwisselingsprogramma Bioinformatics (niveau master)</a>	4	A

**Onderwijstalen**

Engels

**Trefwoorden**

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

**Situering**

- 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

**Inhoud**

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 – immunoprecipitation and pull down assays)

**Begincompetenties**

Basic knowledge of biochemistry and molecular biology.

**Eindcompetenties**

- 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

#### **Creditcontractvoorwaarde**

Toelating tot dit opleidingsonderdeel via creditcontract is mogelijk mits gunstige beoordeling van de competenties

#### **Examencontractvoorwaarde**

Dit opleidingsonderdeel kan niet via examencontract gevolgd worden

#### **Didactische werkvormen**

Groepswerk, Werkcollege, Hoorcollege, Practicum, Zelfstandig werk

#### **Toelichtingen bij de didactische werkvormen**

Practicum en oefeningen zijn verplicht

#### **Leermateriaal**

Syllabus will be available; additional information (slides, scientific papers) through website/Ufora.

#### **Referenties**

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

#### **Vakinhoudelijke studiebegeleiding**

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

#### **Evaluatiemomenten**

periodegebonden en niet-periodegebonden evaluatie

#### **Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode**

Mondelinge evaluatie, Schriftelijke evaluatie met open vragen, Werkstuk

#### **Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode**

Mondelinge evaluatie, Schriftelijke evaluatie met open vragen

#### **Evaluatievormen bij niet-periodegebonden evaluatie**

Participatie, Werkstuk

#### **Tweede examenkans in geval van niet-periodegebonden evaluatie**

Examen in de tweede examenperiode is niet mogelijk

#### **Toelichtingen bij de evaluatievormen**

Written examination followed by oral discussion

#### **Eindscoreberekening**

Lectures: 75% Practicals and exercises: 25%

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 9/20 on either the theory or the practicals and exercises, this student cannot pass and will receive the lowest non-pass score.