

Biochemistry (J000494)

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

Credits 6.0 **Study time 180 h** **Contact hrs** 45.0h

Course offerings and teaching methods in academic year 2022-2023

A (semester 1)	Dutch	Gent	self-reliant study activities	2.5h
			lecture	42.5h

Lecturers in academic year 2022-2023

Remaut, Katrien	FW01	lecturer-in-charge
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Offered in the following programmes in 2022-2023

Bachelor of Science in Pharmaceutical Sciences	crdts	offering
	6	A

Teaching languages

Dutch

Keywords

Biochemistry, biophysics, bioenergetics, biological macromolecules, carbohydrates, lipids and biomembranes, proteins, enzymes, nucleic acids, metabolism

Position of the course

The biochemistry course builds on the knowledge and insights that were acquired in general and organic chemistry and physics. The students are given insight into the structure, function and interactions of biomolecules (nucleic acids, proteins, carbohydrates and lipids); the most important biochemical processes are described. The students are also encouraged to participate in lifelong learning through self-study.

Contents

- Introduction to biochemistry
- Interactions in aqueous environment
- Nucleic acids
- Amino acids, peptides, proteins
- Structure-function relationship of proteins
- Carbohydrates
- Lipids and biomembranes
- Eicosanoids, steroids and vitamins
- Bioenergetics
- Enzymatic catalysis and kinetics
- Metabolism of carbohydrates, lipids and amino acids.

Initial competences

This course unit builds on certain learning outcomes of course units 'Inorganic Chemistry', 'Organic Chemistry' and 'Physics for Pharmacy' from the study programme 'Bachelor in Pharmaceutical Sciences'.

Final competences

- 1 To have insight into biochemistry in a pharmaceutical context.
- 2 The understand the effect of intra- and intermolecular molecular interactions and the influence of water on biochemical processes
- 3 Have insight into the bioenergetics and the central role of energy on life and biochemical processes
- 4 Demonstrate the role of phosphate compounds and enzymes in endogenous reactions
- 5 Explain the causes of uneven distribution of ions and molecules in different body compartments

- 6 Know the biochemically, structurally and pharmaceutically important sugars, polysaccharides, lipids, biological membranes, amino acids, peptides, proteins, their function and their complexes with other building blocks
- 7 Describe the function and biosynthesis of eicosanoids, steroids and vitamins
- 8 Have insight into the structure function relationship of proteins and nucleic acids and the importance of primary, secondary, tertiary and quaternary structures.
- 9 Understanding the functioning and kinetics of enzymes in a pharmaceutical context
- 10 Know the most important pathways of metabolism
- 11 Understand an English-language manual on biochemistry in the context of lifelong learning

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

Seminar, Lecture, Self-reliant study activities

Extra information on the teaching methods

Theory: lectures supported by peer instruction and audiovisual material. Exercises: under the supervision of assistants and / or the teacher. Detailed exercises are made available through Ufora. The students have ample opportunity to test themselves and interact with each other (via the Ufora forum) and with the supervisors.

Learning materials and price

Mathews, Van Holde et al. Biochemistry 4th Edition,
Pearson 2013 (+ - € 80)
Pharmaceutically oriented supplements (copies and on Ufora)

Course content-related study coaching

Classroom lectures: possibility to ask questions before and after class, or by e-mail

Assessment moments

end-of-term assessment

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

Written examination with multiple choice questions, Written examination with open questions

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

Oral examination, Written examination with multiple choice questions, Written examination with open questions

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

Written exam with use of multiple choice questions and open questions. This exam includes insightful theoretical questions, numerical and non-numerical exercises.

Calculation of the examination mark

Periodical evaluation: Written exam with use of multiple choice questions and open questions. This exam includes insightful theoretical questions, numerical and non-numerical exercises.

Weighted average of the individual scores for the periodic evaluation.