



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Chemistry of biomolecules [S1TCh2>CB]

### Course

Field of study

Chemical Technology

Year/Semester

3/5

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

1,00

### Coordinators

dr inż. Anna Parus

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### Lecturers

### Prerequisites

The student should have basic knowledge of physics, chemistry and biology concerning thermodynamics, electrochemistry, structure, properties of chemical compounds and have the ability to work in a chemical laboratory.

### Course objective

To learn about the chemical structure of basic bio-molecules such as proteins, nucleic acids, carbohydrates, lipids and their derivatives. To learn about the reactivity of bio-molecules of great importance in the functioning of organisms. To lay the groundwork for a better understanding of the major subjects.

### Course-related learning outcomes

Knowledge:

- The students has a non-negligible knowledge of chemistry to the extent that it allows to understand chemical phenomena and processes (K\_W03)
- The students has systematized, theoretically supported general knowledge in general and inorganic, physical and analytical chemistry (K\_W08)

- The students knows the cell structure and functions of cell structures, biochemical basis of metabolic pathways (K\_W06)
- The student knows selected groups of bioactive compounds, their biochemical properties and effects on cells and living organisms (K\_W08)

#### Skills:

- acquire information from literature, databases and other properly selected sources, also in English (K\_U01)
- use basic laboratory techniques in synthesis, isolation and purification of chemical compounds, including bio-molecules and biologically active compounds (K\_U03)
- apply analytical, simulation and experimental methods to formulating and solving research tasks under the supervision of a tutor (K\_U07)

#### Social competences:

- can think and act in an entrepreneurial way (K\_K06)
- understands the need for further education and improving his/her professional, personal and social competences (K\_K01)
- is able to appropriately determine priorities for the implementation of the assigned task (K\_K04)

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired in the lecture is verified during a written credit at the end of the semester.  
Credit threshold: 50% of the points.

### Programme content

Issues: chemical structure and reactivity of basic bio-molecules.

### Course topics

#### Lectures:

Lectures: Discussion of topics related to:

1. the structure and properties of proteins and amino acids, nucleic acids, enzymes, carbohydrates and their derivatives, as well as lipids and prenyl lipids and vitamins.
2. the reactivity of bio-molecules of importance in the functioning of organisms
3. methods of identifying selected chemical combinations and natural bio-molecules

### Teaching methods

1. Lecture with a multimedia presentation, discussion with students, laboratory classes.

### Bibliography

#### Basic:

1. Murray R.K., Granner D.K., Mayes P.A., Rodwell V.W.: Biochemia Harpera PZWL.
2. Berg J.M., Tymoczko J.L., Stryer L.: Biochemia, PWN, Warszawa.
3. Cichocki M. Biochemiczne i molekularne podstawy biotransformacji ksenobiotyków. WN UMP 2015

#### Additional:

1. Kączkowski J.: Podstawy biochemii, PWN, Warszawa.
2. Hames B.D., Hooper N.M., Houghton J.D.: Biochemia - krótkie wykłady, PWN, Warszawa.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	0,50