COURSE DESCRIPTION CARD - SYLLABUS

Course name
Bioorganic chemistry [S1IFar2>CB]

Course

Field of study
Pharmaceutical Engineering

Year/Semester
2/4

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

2,00

Coordinators

dr hab. inż. Anna Parus
anna.parus@put.poznan.pl

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:
1. The students has a non-negligible knowledge of chemistry to the extent that it allows to understand chemical phenomena and processes [K_W3]
2. The students has systematized, theoretically supported general knowledge in general and inorganic, physical and analytical chemistry [K_W8]

3. The students knows the cell structure and functions of cell structures, biochemical basis of metabolic pathways [K_W6]
4. The student knows selected groups of bioactive compounds, their biochemical properties and effects on cells and living organisms [K_W8]

Skills:
1. Acquire information from literature, databases and other properly selected sources, also in English [K_U1]
2. Use basic laboratory techniques in synthesis, isolation and purification of chemical compounds, including bio-molecules and biologically active compounds [K_U3]
3. Apply analytical, simulation and experimental methods to formulating and solving research tasks under the supervision of a tutor [K_U7]

Social competences:
1. Can think and act in an entrepreneurial way [K_K6]
2. Understands the need for further education and improving his/her professional, personal and social competences [K_K1]
3. Is able to appropriately determine priorities for the implementation of the assigned task [K_K4]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired in the lecture and tutorials is verified during a written credit at the end of the semester (stationary or remote form depending on the epidemiological situation). Credit threshold: 50% of the points.

Programme content

The program covers the following topics:
1. Structure and properties of proteins, amino acids, carbohydrates, and their derivatives.
2. Structure and properties of lipids and prenyl lipids.
3. Structure of alkaloids, terpenes, prostaglandins, steroids, phospholipids, and sphingolipids.
4. Structure and properties of purine and pyrimidine bases.
5. Structure and role of selected nucleosides.

Course topics

Lectures and tutorials: discussion of topics related to:
1. structure and properties of proteins and amino acids, carbohydrates and their derivatives,
2. structure and properties of lipids and prenyl lipids
3. structure of alkaloids, terpenes, prostaglandins, steroids, phospholipids and sphingolipids
4. structure and properties of purine and pyrimidine bases
5. the structure and role of selected nucleosides.

Teaching methods

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

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	55	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00