



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Biochemistry

Course

Field of study

Biomedical engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

30

Tutorials

Laboratory classes

Projects/seminars

Other (e.g. online)

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

prof. dr hab. Marian Filipiak

Responsible for the course/lecturer:

Prerequisites

Student starting the course should present a basic knowledge of chemistry and biology

Course objective

Transfer of knowledge of chemistry of living matter, structure and properties of chemical components of living matter, chemical and energetic metabolic pathways.

Course-related learning outcomes

Knowledge



1. Student present a knowledge of structure, properties and functions of basic chemical components of living matter
2. Student present a knowledge of basic chemical and energetic metabolic pathways
3. Student present a knowledge of functions of nucleic acids, basics of genetic engineering, methods of molecular diagnostics

Skills

1. Student is able to make use knowledge of biochemistry in design of biomaterials and biomedical instruments
2. Student has skills of self-study

Social competences

1. Student possess consciousness of meaning of metabolic processes in functioning of biomaterials and biomedical instruments
2. Student possess consciousness of necessity of self-study

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Student knowledge is verified by two written audit works in the middle and by the end of the course, a scope of the works is presented during lectures.

Programme content

1. Cell structure
2. Structure, properties and functions of aminoacids and proteins
3. Structure, properties and functions of carbohydrates
4. Structure, properties and functions of lipids
5. Energy metabolism and energy-rich metabolites
6. Structure, properties and functions of enzymes
7. Metabolism of proteins, carbohydrates and lipids
8. Biological membranes
9. Structure and functions of nucleic acids
10. Biosynthesis of proteins
11. Methods of molecular diagnostics



12. Recombination of DNA
13. DNA mutation and repair systems
14. Genetic modification, genetically modified organisms
15. Coenzyme functions of vitamins

Teaching methods

Lecture, multimedia presentation

Bibliography

Basic

1. B.D. James, N.M. Hooper „Biochemia. Krótkie wykłady.” PWN Warszawa
2. P.C. Turner, A.G. McLennan, A.D. Bates, M.R.H. White „Biologia molekularna. Krótkie wykłady.” PWN Warszawa

Additional

J.M. Berg, J.L. Tymoczko, L. Stryer „Biochemia” PWN Warszawa

Breakdown of average student's workload

| | Hours | ECTS |
|---|-------|------|
| Total workload | 45 | 2,0 |
| Classes requiring direct contact with the teacher | 30 | 1,0 |
| Student's own work (literature studies, preparation for tests) ¹ | 15 | 1,0 |

¹ delete or add other activities as appropriate