Karta przedmiotu / Course description

Informacje ogólne o przedmiocie / General information about the course	
1. Kierunek studiów / Major of study: Medical biotechnology	**2. Poziom kształcenia / Study level:** **3. Forma studiów / Form of study: full-time course**
4. Rok / Year: II	**5. Semestr / Semester: IV**
6. Nazwa przedmiotu / Course name: Biochemistry	
7. Status przedmiotu / Course status: obligatory	
8. Jednostka realizująca przedmiot, adres, e-mail: **Name of Department, mailing address, e-mail:** Department of Biochemistry, Jedności 8, 41-200 Sosnowiec, Poland, Faculty of Pharmaceutical Sciences in Sosnowiec, Medical University of Silesia, Katowice, Poland e-mail: mkapral@sum.edu.pl	
9. Treści programowe przedmiotu Course contents: The aim of the course is to introduce students to the structure and function of important biomolecules, mechanisms of biochemical pathways and their role at the cellular and body level, including pharmacological regulation of specific biochemical reactions and practical applications of enzymes as drugs.	
10. liczba godzin z przedmiotu / Number of hours for the course	**40**
11. liczba punktów ECTS dla przedmiotu / Number of ECTS points for the course	**4**
12. Formy i tematy zajęć / Forms and topics of classes	**Liczba godzin** **Number of hours**
12.1. Lectures	
L1 Protein structure: amino acids, primary, secondary, tertiary and quaternary structure of proteins. Enzymes I: Nomenclature, Kinetics.	**2**
L2 Metabolism of carbohydrates.	**2**
L3 The Krebs cycle and biological oxidation.	**2**
L4 Fatty acid and triacylglycerol metabolism.	**2**
L5 Metabolism of amino acids and non-protein nitrogenous compounds.	**2**
12.2. Seminars	
S1 Protein and non-protein amino acids, biologically active peptides, levels of protein organization. Enzymes - mechanisms of action, inhibition, control of activity, classification and isoenzymes. Coenzymes and vitamins.	**2**
S2 Structure and function of carbohydrates. Catabolic and anabolic pathways of carbohydrates.	**2**
S3 Amphibolic role of the Krebs cycle and the respiratory chain.	**2**
S4 Oxidation and biosynthesis of saturated fatty acids and simple lipids. Ketone bodies. Metabolism of cholesterol and lipoproteins.	**2**
S5 Metabolism of amino acid nitrogen. Biologically important products of amino acid metabolism. Purine and pyrimidine nucleotides.	**2**
12.3 Laboratory classes	
C1 Methods of separation and quantitative determination of proteins. Influence of various factor oh enzymes activity.	**4**
C2 Determination of glucose concentration in the blood serum by glucose oxidase method. Determination of basis and stimulated glycogen synthesis in the liver homogenate.	**4**
C3 Determination of succinate dehydrogenase activity in liver homogenate using	**4**

artificial electron acceptor. Inhibitory effect of malonate and mercury ions on succinate dehydrogenase activity. C4 Physicochemical properties of lipids. Concentration Determination of the properties of cholesterol and its concentration. C5 Methods of urea and creatinine analysis. DNA isolation.	**4** **4**

13. Literatura / Readings

1. D Nelson, M Cox Lehninger: Principles of Biochemistry, 6th edition, 2013.
2. RK Murray, DK Granner, PA Mayes, VW Rodwell Harper's Illustrated Biochemistry 27th Edition, 2006
3. M Lieberman, A Peet Marks' Basic Medical Biochemistry 5th Edition, 2017

14. Kryteria oceny – szczegóły / Detail evaluation criteria

Zgodnie z zaleceniami organów kontrolujących / In accordance with the recommendations of the inspection bodies

Zaliczenie przedmiotu - student osiągnął zakładane efekty uczenia się / Completion of the course – student has achieved the assumed learning outcomes

Szczegółowe kryteria zaliczenia i oceny z przedmiotu są zamieszczone w regulaminie przedmiotu / Detail criteria for completion and evaluation of the course are specified in the course regulations