COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Health	
Course code: KOSE/54O1002W/22	**Course title:** Biochemistry
Type and range of planned learning activities and teaching methods: **Form of instruction:** Lecture **Recommended study range:** **hours weekly:** 1 **hours per semester:** 12 **Teaching method:** on-site	
Credits: 2	**Working load:** 50 hours
Recommended semester/trimester: 1.	
Level of study: I.	
Prerequisities:	
Requirements for passing the course: During the semester: During the semester, active participation in the lecture, in which students analyze the assigned topics. Final evaluation: At the final written exam the student can get max. 50 points.	
Learning outcomes of the course: Knowledge: The student will acquire basic knowledge about biochemistry and biochemical nature of the disease. The student will gain comprehensive knowledge and skills about biochemical processes in the human body. The student will get acquainted with the structure of the cell, especially its organic composition such as carbohydrates, lipids, proteins, nucleic acids. At the same time, he will gain knowledge about the metabolism of carbohydrates, lipids, energy production and localization of these processes in cells. They are also familiar with enzymes as catalysts for biochemical reactions, vitamins and hormones. They will understand the individual phases of clinical-biochemical examination. • Skills: can apply the acquired knowledge in nursing practice. • Competences: the student will be able to dispose of and actively use the above acquired knowledge and skills in nursing practice	
Course contents: Brief subject scheme: 1. Characteristics of the department. Cell structure and its relation to metabolism. Chemical composition of cells. 2. Structure and function of biological membranes, transport of substances. Hydrocarbons and their derivatives. 3. Characteristics and metabolism of carbohydrates (glycolysis, gluconeogenesis, energy balance of glycolysis, pentose cycle). 4. Glycogen metabolism, Citrate cycle, formation of Acetyl CoA, glycemia and its regulation. 5. Characteristics and metabolism of lipids. The role of cholesterol in human metabolism. 6. Biological oxidations, energy production, electron transport and oxidative phosphorylation, respiratory chain complexes. 7. Structure and function of proteins. Significance and function of nucleic acids. 8. Biochemistry of the endocrine system, distribution and function of hormones.	

9. Structure and function of hemoglobin, degradation of heme and formation of bile dyes, formation and transport of bilirubin.
10. Distribution and function of vitamins.
11. Enzymology - enzymes and coenzymes, mechanism of action of enzymes, rate of enzyme reaction, activation and inhibition of enzymes.
12. Individual phases of clinical-biochemical examination. Pre-analytical phase, biological material and its collection, Analytical phase - possible sources of errors in laboratory examination, Post-analytical phase - interpretation of results.

Recommended or required literature:

1. DOBROTA, D. a kol. 2012. Lekárska biochémia. Martin: Osveta, 2012, 723 s. ISBN 978-80-8063-293-9
2. LEDVINA, M.- STOKLASOVÁ, A.- CERMAN, J. 2009. Biochemie pro studující medicíny. 1 díl.Praha: Karolinum, 2009, 269 s., ISBN 978-80-246-1416-8
3. LEDVINA, M.- STOKLASOVÁ, A.- CERMAN, J. 2009. Biochemie pro studující medicíny. 2 díl..Praha: Karolinum, 2009, 275-546 s. ISBN 978-80-246-1415-1
4. MIKUŠOVÁ,K. - KOLLÁROVÁ, M. 2008. Princípy biochémie V schémach a príkladoch. Vydavateľstvo UK, 2008, 161 s., ISBN 978-80-223-2567-7
5. SURŽIN, J. – LEDVINA, M. 2002. Lekárska biochémia. Prešov: Michal Vaško, 2002. 368 s. ISBN
80-7165-326-8
6. ŠAJTER, V. a kol. 2006. Biofyzika, biochémia a rádiológia. Martin, Osveta, 2006, 271 s., ISBN
80-8063-210-3

Language of instruction:
Slovak language

Notes:
The course is taught only in the winter semester and is evaluated only in the relevant examination period of the winter semester of the academic year.

Course evaluation:
Assessed students in total: 223

A	B	C	D	E	FX
35.43	38.12	17.94	5.38	2.69	0.45

Name of lecturer(s): doc. MUDr. Ivan Solovič, CSc., RNDr. Lucián Zastko, PhD., RNDr. Andrea Tvarožná

Last modification: 26.02.2022

Supervisor(s):
Person responsible for the delivery, development and quality of the study programme:
prof. PhDr. Mgr. Helena Kadučáková, PhD.