

Course Information Sheet (in the structure according to Decree No. 614/2002 Coll.)

University: University of Prešov in Prešov	
Faculty: Faculty of Humanities and Natural Sciences	
Code: 2BIO/EROSJBIOC/22	Title of Course: Biochemistry
Type, scope, and method of educational activities: Compulsory course	
Form of Study: Lecture/Laboratory	
Number of contact hours: 2/0/2	
per week: 2/0/2 per level/semester: 26/0/26	
Study method: combined	
Student workload: 150 hours	
Direct education: 40 hours	
Self-study: 60 hours	
Guided work: 50 hours	
Number of credits: 6	
Semester: 4 th semester	
Degree/Level: 1 st degree	
Prerequisites: -	
Grading Policy (Assessment/Evaluation): Exam	
Exam	
Written tests	
Seminar papers	
Assessment criteria: A: 100.00 - 90.00 %, B: 89.99 - 80.00 %, C: 79.99 - 70.00 %, D: 69.99 - 60.00 %, E: 59.99 - 50.00 %. FX: 49,99 % and below	
Aims and Objectives:	
Knowledge gained:	
The student will be able to:	
<ul style="list-style-type: none">- demonstrate general knowledge of biochemistry,- interpret basic biochemical concepts; describe chemical nomenclature,- characterize the structure of important substances in animal and human organisms,- assess and describe the factors influencing the rate of biochemical reactions; the structure and function of biocatalysts of metabolic processes,- investigate the biochemical processes occurring in living organisms and the biochemical patterns of transformation of substances in organisms,- explain the metabolic transformations of individual substances in an organism; the interconversion of biologically important substances in an organism,- describe the regulatory mechanisms of metabolic transformations in living systems.	
Skills Acquired:	
The student will be able to:	
<ul style="list-style-type: none">- present a seminar paper according to a given topic in a group,- discuss and highlight the latest knowledge and importance of the topic,- apply the acquired knowledge in the framework of inter-subject relations.	
Competences acquired:	
The student will be able to:	
<ul style="list-style-type: none">- demonstrate his/her linguistic and professional culture and his/her own attitude towards professional problems of his/her studies,- synthesise and apply the acquired theoretical knowledge,- can explain the procedures and analyses used; can express himself professionally; work independently with literature.	

Syllabus/Indicative Content:

Metabolic functions of the cell. Chemical reactions - characteristics, rate, Michaelis - Menten equation. Enzymes - general characteristics, nomenclature, distribution, structure and function of enzymes, regulation of enzyme activity. Carbohydrate metabolism. Citrate (Krebs) cycle - metabolic and energetic role, reactions and enzymes of the cycle, energy balance. Respiratory chain, oxidative phosphorylation, cellular respiration. Lipid metabolism - fatty acid synthesis, triacylglycerol biosynthesis, beta-oxidation of fatty acids, cholesterol conversion. Protein and amino acid metabolism. Conversion of the carbon skeleton of amino acids. Formation of urea - ornithine - citrulline cycle. Metabolism of nucleic acids - biosynthesis and degradation. Vitamins - structure, biosynthesis, biochemical significance. Hormones - structure, biosynthesis, biochemical significance. Regulatory mechanisms of biochemical processes.

Suggested readings:

PORÁČOVÁ, J. a kol. 2015. Základné biochemické procesy organizmov.

DOBROTA, D. A KOL. 2012. Lekárska biochémia. Martin: Osveta. 723 s. ISBN 978-80-8063-293-9.

MURRAY, R.K., BENDER, D.A., BOTHAM, K.M., KENNELLY, P.J. A KOL. 2013. Harperova ilustrovaná biochemie. 5. čes. vyd. Praha: Galén, 730 s. ISBN 978-807-2629-077.

KOOLMAN, J. A K.H. RÖHM 2012. Barevný atlas biochemie. 1. české vyd. Praha: Grada, 2012, 498 s. ISBN 978-802-4729-770.

MATOUŠ, B. A KOL. 2010. Základy lékařské chemie a biochemie. Praha: Galén. 540s. ISBN 978-80-7262-702-8.

TURECKÝ, L. 2008. Lekárska biochémia II. Bratislava: Asklepios. 200s. ISBN 978-80-7167-123-7.

LÍŠKA, B. A BRECHTLOVÁ, M. 2008. Vybrané kapitoly z funkčnej biochémie. Bratislava: Asklepios. 83 s.

CAMPBELL, M. K. A S.O. FARRELL 2008. Biochemistry, Thomson Brooks/Cole, Belmont. 751 s.

KOLEKTÍV 2006. Lekárska biochémia I. Bratislava: Univerzita Komenského. 242 s. ISBN 80-223-1091-3.

FERENČÍK, M., ŠKÁRKA, B., NOVÁK, M. A TURECKÝ, L. 2000. Biochémia. Bratislava: Slovak Academic Press s.r.o. 924 s.

Language of Instruction: Slovak language

Other course information:

Grading history

Total number of assessed students:

A	B	C	D	E	FX

Lecturer/Instructor:

prof. MVDr. Janka Poráčová, PhD., MBA, lecturer, examiner, practitioner
RNDr. Mária Konečná, PhD., practitioner

Last update: 20. apríla 2026

Approved by: doc. RNDr. Iveta Boroňová, PhD., guarantor