

**FACULTY OF MEDICAL SCIENCE
UNIVERSITY OF KRAGUJEVAC**

Study program : Integrated academic studies of Medicine			
Type and level of studies: Integrated academic studies			
Course unit: BIOCHEMISTRY			
Teacher in charge : Professor Marina Mitrovic, PhD			
Language of instruction : ENGLISH			
ECTS:15			
Prerequisites: Basic biology and chemistry			
Semester: WINTER SEMESTER – 15 weeks			
<p>Course unit objective: This one-semester course is design for students enrolled in Integrated academic studies of Medicine at Faculty of medical science. It provides an overview of the main aspects of biochemistry by relating molecular interactions to their effects on the organism as a whole, especially related to human biology, including regulation of metabolic processes.</p>			
<p>Learning outcomes of course unit:</p> <ul style="list-style-type: none"> • Knowledge about the organization of macromolecules such as proteins, carbohydrates, lipids, nucleic acids and their hierarchical structure and understanding how their assembly into complexes is responsible for specific biological processes. • Understand protein functions including enzyme kinetics, activators and inhibitors; coenzymes and prosthetic groups; allosteric enzymes and isozymes; clinical significance of serum enzymes level. • Describe major metabolic pathways and their interconnection into tightly regulated networks in the whole human body. • Discuss clinical significance of major biochemical parameters used for the diagnosis of various human diseases. 			
<p>Course unit contents <i>Theoretical classes- Lectures</i> : 5 classes a week Enzymology, Regulation of enzyme activity, Clinical enzymology, Vitamins and coenzymes, Oxidative phosphorylation, ROS - free radicals, Carbohydrates, Lipid metabolism, Cholesterol and lipoproteins, Nucleic acids, Amino acids and proteins, Protein synthesis, Biochemistry of hormones, Metabolism of water and bioelements, The biochemistry of the tissues, Integrative metabolism, Clinical biochemistry.</p> <p><i>Practical classes</i> : 5 classes a week. Enzymology, Regulation of enzyme activity, Clinical enzymology, Vitamins and coenzymes, Oxidative phosphorylation, ROS - free radicals, Carbohydrates, Lipid metabolism, Cholesterol and lipoproteins, Nucleic acids, Amino acids and proteins, Protein synthesis, Biochemistry of hormones, Metabolism of water and bioelements, The biochemistry of the tissues, Integrative metabolism, Clinical biochemistry.</p>			
<p>Literature</p> <ul style="list-style-type: none"> • Smith, C. M., Marks, A. D., Lieberman, M. A., Marks, D. B., & Marks, D. B. (2005). Marks' basic medical biochemistry: A clinical approach. Philadelphia: Lippincott Williams & Wilkins. • David L. Nelson, Michael M. Cox. (2008). Lehninger's Principals of Biochemistry, 5th edition • Murray R.K., Granner D.K., Mayes P.A., Rodwell V.W. (2003). Harper's Illustrated Biochemistry. Lange Medical Books. • Richard A. Harvey, Denise R. Ferrier. (2011). Lippincott's Biochemistry 5th edition 			
Number of active teaching classes: 150 per semester			Other classes
Lectures: 75	Practice: 75	Other forms of classes: Independent work:	
Teaching methods: Lectures and practical classes at Faculty of Medical Sciences, clinical problems solving			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures and practical classes	30	oral examination	
Tests		written examination	70

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Seminars/homework			
Project			
Other			
Grading system			
Grade	No. of points	Description	
10	91-100	Excellent	
9	81 – 90	Exceptionally good	
8	71 – 80	Very good	
7	61 – 70	Good	
6	51 – 60	Passing	
5	< 50	Failing	

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