


<b>University of Niš</b> <b>Faculty of Medicine</b>	<b>Study program:</b> <b>INTEGRATED ACADEMIC STUDIES OF MEDICINE</b> <i>ACCREDITATION 2018</i>	
<b>Course: Biochemistry</b>		
<b>Course head:</b> prof. dr Tatjana Cvetković		
<b>Course status:</b>	Required	
<b>Semester: III, IV</b>	<b>Study year: II</b>	
<b>ECTS: 15</b>	<b>Course code:</b> M-II-12	
<b>Course purpose:</b>		
<p>To provide an introduction to:</p> <ul style="list-style-type: none"> <li>▪ basic knowledge and methods of biomolecule research</li> <li>▪ chemical composition, function, and isolation of cell structures</li> <li>▪ mechanisms of action and measurement of activity of enzymes and their significance as biomarkers</li> <li>▪ basic characteristics of anabolic and catabolic processes in organism</li> <li>▪ significance of the products of intermediate metabolism</li> <li>▪ pathways of cell signalling, hormones, and signal molecules</li> <li>▪ reactions of biotransformation of xenobiotics and metabolites</li> <li>▪ structure of nucleic acids, regulation of gene expression, and biosynthesis of proteins</li> <li>▪ composition of body fluids and biochemical function of tissues and organs</li> <li>▪ diagnostic biochemical markers of particular diseases</li> </ul>		
<b>Course outcome:</b> (knowledge, skills, attitudes)		
<p>Knowledge acquired at the <i>Biochemistry</i> course will enable future doctors to:</p> <ul style="list-style-type: none"> <li>▪ decide upon the type of patient material for making a diagnosis and refer patients for appropriate diagnostic procedure;</li> <li>▪ properly interpret biochemical findings</li> <li>▪ use the principles of rational use of laboratory methods for diagnostic purposes, disease course monitoring, outcome monitoring, and therapeutic efficacy monitoring;</li> <li>▪ master the skills of good lab practice;</li> <li>▪ knowledge in molecular medicine will help them develop the preconditions for research work and understand evidence based medicine;</li> <li>▪ build a personal attitude that the use of basic knowledge in clinical medicine is one of the prerequisites of good clinical and research practice.</li> </ul>		
<b>Nr. of classes of active teaching: 195</b>		
<b>Lectures: 105</b>	<b>Practice:: 66</b>	<b>OFT: 24</b>
<b>Course content</b>		
<p><u>Theoretical teaching</u></p> <p>Biochemistry, as a basic biomedical science, aims to provide students with fundamental biochemical processes in the cells of specific tissues and organs in physiologic conditions, determining normal functioning of human organism. Through various forms of teaching, a student gains knowledge about:</p> <ul style="list-style-type: none"> <li>▪ chemical composition of human organism</li> <li>▪ biochemical organization of the cell and localisation of certain metabolic pathways within subcellular organelles;</li> <li>▪ structure and function of biological membranes;</li> <li>▪ structure and action of enzymes and vitamins;</li> <li>▪ biochemistry of carbohydrates, lipids, amino acids, non-protein compounds;</li> <li>▪ structure and function of simple and complex proteins (nucleoproteids, chromoproteids)</li> <li>▪ metabolism of water and inorganic substances;</li> <li>▪ biochemistry of hormones, and</li> <li>▪ biochemical properties of body fluids and tissues.</li> </ul> <p><u>Practical teaching:</u></p> <p>Follows the methodical units of the theoretical classes through practical work, presentations and animations. Through practical task solving and algorithms, a student more easily acquires knowledge and master the principles of biochemical processes in an organism.</p>		

**Active teaching: 12 (chemistry) + 93 (biochemistry) = 105****3. OFT**

1.	SEMINAR-Diagnostic significance of enzymes
2.	SEMINAR- regulation of carbohydrate metabolism
3.	SEMINAR-Intermedijary metabolism
4.	SEMINAR– Structure of hemoglobin and its functions Disorders of hemoglobin synthesis. Heme catabolism. Hyperbilirubinemia. Synthesis of urea.
5.	SEMINAR– Biochemical functions of hormones and hormone excretion disorders.
6.	Digestion of organic matter – discussion (small group work)
7.	Biochemical functions of proteins and analysis of specific metabolic pathways – discussion (small group work).
8.	Acid-base status disorders – discussion (small group work).

**Recommended literature:**

1. Koračević D, Bjelaković G, Đorđević V, Nikolić J, Pavlović D, Kocić G. BIOHEMIJA, Četvrto izdanje, Savremena administracija, Beograd 2006.
2. Miholjčić M, Kavarić J: Biohemija, Oktoih, Podgorica 1998.
3. Lehninger LA, Nelson LD, Cox MM. PRINCIPLES OF BIOCHEMISTRY, Sec. ed, Worth Publishers, USA. 2000.
4. Devlin MTH. TEXTBOOK OF BIOCHEMISTRY WITH CLINICAL CORELATION, Forth Ed, Wiley- Liss Inc, USA. 2006.
5. Voet D, Voet JG. Biochemistry, 3rd Ed. –John Wiley & Sons, New York, USA 2004.
6. Martin WD, Mayes P, Rodwell V, Granner D. HARPEROV PREGLED BIOHEMIJE, drugo izdanje, Savremena administracija, Beograd 1989.
7. Bojanović J. i Čorbić M. Opšta hemija, Gornji Milanovac: Dečje novine; 1991.
8. Petković M. Organska hemija: za studente medicine i stomatologije, Niš: Izdavačka jedinica Univerziteta; 1990.
9. Petković M. Hemija biomolekula, Niš: Izdavačka jedinica Univerziteta; 1990.
10. Tomin J. i Abramović M. Organska hemija: udžbenik za studente medicine i stomatologije, Niš: Prosveta; 2004.
11. Abramović M, Trutić N. i Pavlović R. Praktikum iz hemije za studente medicine i stomatologije, Niš: Prosveta; 2005.

**Teaching methods:**

Lectures, practical instruction, lab work, seminars, demonstrations, case reports, consultations, practice – group work with 10-12 students. All the teaching activities require student preparation, cooperation and involvement. Students should cooperate in problem solving, mentored by teachers and associates, in order to acquire and refine the skills required for independent learning during the studies and throughout professional life. Students acquire the skills necessary for critical evaluation of literature results, demonstrating the ability to implement the scientific approach in clinical problem solving.

**Required previously passed exams:**

Molecular and human genetics

**Grade (max. 100 points)****Pre-exam obligations**

Activity during classes

- Practice, lectures(vežbe, predavanja): 0 – 6
- Seminar papers: 0 – 4
- Tests: 0 – 20
- Practical exam: 0 – 20

**Final exam**

- Oral exam: 0 – 50

Exam can be taken in the form of 2 colloquia.