

**BACHELOR 'S PROGRAMME**  
**MEDICAL BIOCHEMISTRY**  
**3<sup>RD</sup> YEAR OF STUDY, 1<sup>ST</sup> SEMESTER**

<b>COURSE TITLE</b>		<b>MEDICAL BIOCHEMISTRY</b>
COURSE CODE	31010030050SL1223110	
COURSE TYPE	full attendance/ tutorial	
COURSE LEVEL	1 <sup>st</sup> cycle (bachelor's degree)	
YEAR OF STUDY, SEMESTER	3 <sup>rd</sup> year of study, 1 <sup>st</sup> semester	
NUMBER OF ECTS CREDITS	5	
NUMBER OF HOURS PER WEEK	4 (2 hours lecture + 2 laboratory hours)	
NAME OF LECTURE HOLDER	Assoc. Prof. PhD Brindusa Alina PETRE	
NAME OF SEMINAR HOLDER	Assoc. Prof. PhD Brindusa Alina PETRE	
PREREQUISITES	Advanced level of English	
<b>A</b>	<b>GENERAL AND COURSE-SPECIFIC COMPETENCES</b>	
	<p><b>General competences:</b></p> <ul style="list-style-type: none"> <li>→ Performing professional tasks efficiently and responsibly in compliance with the law and field-specific deontology under qualified assistance.</li> <li>→ Carrying out multidisciplinary team activities using interpersonal communication skills to meet the proposed objectives of learning and experimental work.</li> <li>→ Efficient use of information sources and communication and training resources assisted in a language of international circulation (English)</li> </ul> <p><b>Course-specific competences:</b></p> <ul style="list-style-type: none"> <li>→ Operating with notions on the relationship between the structure and biochemical activity of biological compounds.</li> <li>→ Performing analyzes and ensuring quality control through methods and techniques specific to bioanalytical analyzes procedures in compliance with the rules of good practice in the laboratory of biochemistry.</li> <li>→ Carrying out experimental bioanalytical procedures for characterization of peptide, proteins, antibodies in an autonomous manner.</li> <li>→ Application of biochemical technologies in various fields, in compliance with health and diseases conditions.</li> </ul>	
<b>B</b>	<b>LEARNING OUTCOMES</b>	
	<ul style="list-style-type: none"> <li>→ After completing and promoting the discipline, students acquire a consistent body of theoretical and practical knowledge in the field of Medical Biochemistry.</li> <li>→ Students will be able to answer theoretical problems for approaching biomedical aspects of peptide/proteins and carbohydrates and lipids and to perform a series of bioanalytical analyzes (qualitative and quantitative) to determine the structures of biomolecules in body.</li> <li>→ Students will also be able to interpret and correlate the role of proteins, enzymes, antibodies and metabolites in some pathophysiological conditions.</li> </ul>	
<b>C</b>	<b>LECTURE CONTENT</b>	
	<ul style="list-style-type: none"> <li>• Introduction to biomolecules with physiological role (nucleotides, nucleic acids, peptides, proteins, enzymes, antibodies, metabolites).</li> <li>• The hydro-electrolytic balance and the acid-base balance of the body.</li> <li>• Physiological and pathological aspects of amino acid metabolism.</li> </ul>	

	<ul style="list-style-type: none"> <li>• Peptides with biological functions.</li> <li>• Methods of protein characterization: electrophoretic methods, chromatographic methods, mass spectrometry methods and enzymatic cleavage.</li> <li>• Carbohydrates and lipids - sources and mechanisms for regulating their metabolism.</li> <li>• Biochemical and pathophysiological aspects of hormones.</li> <li>• Immunological methods that cause antigen-antibody interactions.</li> </ul>
<b>D</b>	<b>RECOMMENDED READING FOR LECTURES</b>
	<ol style="list-style-type: none"> <li>1. Bishop M., Dubin-Engelkirk J.L.D., Fody E.P., Clinical chemistry. Principle, procedure, correlation, Ed. Lippincott Williams &amp; Wilkins, 1999</li> <li>2. Miriam D. Rosenthal, Robert H. Glew, Medical Biochemistry: Human Metabolism in Health and Diseases, Ed. John Wiley &amp; Sons</li> <li>3. Thomas M. Devlin, Ph.D., Textbook of Biochemistry with Clinical Correlations, Ed. 2004, Wiley-Liss, Inc.</li> <li>4. Richard Coico, Geoffrey Sunshine, Immunology: A Short Course, Ed. Sixth Edition 2009.</li> <li>5. Catherine Sheehan, Clinical Immunology: Principles and laboratory Diagnosis, 2nd Edition 1990.</li> </ol>
<b>E</b>	<b>LABORATORY CONTENT</b>
	<ol style="list-style-type: none"> <li>1. Labor Protection Rules. Getting started. Specific calculations regarding the laboratory topics.</li> <li>2. Separation of a of complex proteins mixture by electrophoretic methods.</li> <li>3. Determination of serum enzyme activity.</li> <li>4. Enzymatic activity determination in DBS samples.</li> <li>5. Determination of antibody-antigen interactions by Western Blot and ELISA.</li> <li>6. Determination of the epitope determining sequence by affinity and mass spectrometry.</li> <li>7. Students reports (ppt presentation) and laboratory activity evaluation</li> </ol>
<b>F</b>	<b>RECOMMENDED READING FOR LABORATORY – EXPERIMENTAL PART</b>
	<ol style="list-style-type: none"> <li>1. DM Vasudevan, Sreekumari S, Kannan Vaidyanathan, Textbook of Biochemistry for Medical Students, 2013.</li> <li>2. Ioannis S. Patrikios, Book of Laboratory Techniques, 2013</li> <li>3. Bishop M., Dubin-Engelkirk J.L.D., Fody E.P., Clinical chemistry. Principle, procedure, correlation, Ed. Lippincott Williams &amp; Wilkins, 1999</li> <li>4. Catherine Sheehan, Clinical Immunology: Principles and laboratory Diagnosis, 2nd Edition 1990.</li> </ol>
<b>G</b>	<b>EDUCATION STYLE</b>
LEARNING AND TEACHING METHODS	Narration, demonstrated examples, knowledge synthesis, discovery learning, conversation, description of some case studies, online platform working
ASSESSMENT METHODS	Continuous assessment during the course and laboratory. Power-point presentation on a selected topic from the course and assessment of results obtained during laboratory. Final evaluation (written exam). The assessment grades are from 1 to 10.
LANGUAGE OF INSTRUCTION	English