

Study Programme: Bachelor Academic Studies in Biochemistry
Course Unit Title: Biochemistry in health and disease
Course Unit Code: IB-608
Name of Lecturer(s): Associate Professor Ivana Beara, Associate Professor Marija Lesjak, Assistant Professor Jovana Francuz
Type and Level of Studies: Bachelor of Science Degree
Course Status (compulsory/elective): elective
Semester (winter/summer): summer
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face-to-face
Number of ECTS Allocated: 6
Prerequisites: none
<p>Course Aims:</p> <p>The aim of the course is to provide students with the necessary theoretical knowledge of the biochemical processes that take place in the pathological states. Also, the objective of the course is to develop student's ability to recognize the difference in the structure, function and amount of biomolecules between physiological and pathological states, as well as the interaction of appropriate groups of drugs and target biomolecules and their influence on the establishment of homeostasis.</p>
<p>Learning Outcomes:</p> <p>Upon successful completion of the course, student should be able to: 1) understand basic biochemical principles of pathological conditions; 2) understand the role of biomolecules in the pathogenesis of selected diseases; 3) understand the interaction of biomolecules and drugs; 4) to understand the mechanism of action of the drug in the biochemical process.</p>
<p>Syllabus:</p> <p><i>Theory</i></p> <p>Biochemical processes in healthy cells and their change in pathological conditions. The role of biomolecules in the formation and development of the diseases of: 1) central and peripheral nervous system (e.g. Alzheimer's and Parkinson's diseases, multiple sclerosis, schizophrenia, depression); 2) gastrointestinal system (e.g. Crohn's disease); 3) cardiovascular system (e.g. atherosclerosis, hypertension); 4) skeletal system (e.g. rickets, osteoporosis); 5) renal and urinary systems (e.g. renal failure, urinary infections); 6) endocrine system (e.g. hyperthyroidism, gigantism); 7) vascular system (e.g. thrombophilia, haemophilia, anaemia); 8) respiratory system (e.g. respiratory infections); 10) reproductive system (e.g. sexually transmitted diseases); 11) inflammation and immune response (e.g. eicosanoids as inflammatory mediators). The effect of drugs on biomolecules involved in pathological processes. Model-systems for testing potential therapeutic agents.</p> <p><i>Practice</i></p> <p>Analysis of case studies of different diseases from the biochemical aspect, as well as the preparation, discussion and defence of the project (seminar paper) on the chosen topic.</p>
<p>Required Reading:</p> <ol style="list-style-type: none"> 1. E. C. Toy, W. E. Seifert, H. W. Strobel, K. P. Harms: Case files biochemistry, McGraw Hill, 2015. 2. N.S. Dhalla: Advances in Biochemistry in Health and Disease, Springer, 2010 3. S. Tomlinson, A. M. Heagerty, A.P. Weetman, R. Malik: Mechanisms of disease, Cambridge, 2008

4. E. Newsholme, A. Leech: Functional Biochemistry in Health and Disease, Wiley, 2010

Weekly Contact Hours: 5 (75) **Lectures:** 3 (45) **Practical work:** 2 (30)

Teaching Methods:

Lectures, laboratory work, seminar(s)

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	Final exam	points
Active class participation	10	written exam	60
Practical work	10	oral exam	
Preliminary exam(s)		
Seminar(s)	20		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.