

Study Programme: Master Academic Studies in Biochemistry		
Course Unit Title: Glycobiology		
Course Unit Code: B-520		
Name of Lecturer(s): Assistant Professor Jovana Francuz		
Type and Level of Studies: Master of Science Degree		
Course Status (compulsory/elective): compulsory		
Semester (winter/summer): winter		
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 goal of the course is to provide students with advanced and extended knowledge of structure, biosynthesis and function of carbohydrates, especially of polysaccharides and glycoconjugates. Furthermore, the goal of the course is to develop students' ability to establish relationship between the gained knowledge of carbohydrates and glycoconjugates and their role in biochemistry and medicine. Also aim of this course is to provide students theoretical and practical knowledge of structural analysis, synthesis and use of carbohydrates and glycoconjugates.</p>		
<p>Learning Outcomes:</p> <p>By the end of this course, students will be able to: differentiate carbohydrate classes and glycoconjugates, understand and explain biosynthesis and biochemical mechanisms of action of carbohydrates and glycoconjugates, and independently choose methods for structural analysis and synthesis of carbohydrates and glycoconjugates.</p>		
<p>Syllabus:</p> <p><i>Theory</i></p> <p>Structure and properties of carbohydrates, polysaccharides and glycoconjugates. O- and N- glycosylated proteins properties, biosynthesis and their functions. Glycolipids and glycosylation of membrane proteins, synthesis and biological functions. Enzymology of glycoconjugates. Structural analysis of glycoconjugates. Conformations of oligosaccharides, polysaccharides and glycoconjugates. Carbohydrate recognition in cell signalling and adhesion. Glycobiology of plants, bacteria and viruses. Glycobiology and disease. The future of glycobiology and its impact on biotechnology.</p> <p><i>Practice</i></p> <p>Synthesis and structural analysis of selected carbohydrates.</p>		
<p>Required Reading:</p> <ol style="list-style-type: none"> 1. J. Francuz: Glycobiology, internal script (ePMF), 2019. 2. M. E. Taylor, K. Drickamer: <i>Introduction to Glycobiology</i>, Oxford University Press, Oxford, 2011. 3. A. Varki, R. D. Cummings, J. D. Esko, H. H. Freeze, P. Stanley, C. R. Bertozzi, G. W. Hart, M. E. Etzler: <i>Essentials of Glycobiology</i>, Cold Spring Harbor Laboratory Press, New York, 2009. 		
Weekly Contact Hours: 75	Lectures: 45	Practical work: 30
<p>Teaching Methods:</p> <p>Lectures, laboratory work, seminar(s)</p>		
Knowledge Assessment (maximum of 100 points): 100		

Pre-exam obligations	points	Final exam	points
Active class participation	10	written exam	70
Practical work	10	oral exam	
Preliminary exam(s)		
Seminar(s)	10		

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