Course Unit Descriptor

Study Programme: Doctoral Academic Studies in Biochemistry			
Course Unit Title: Bioorganic Chemistry of Carbohydrates			
Course Unit Code: DSB603			
Name of Lecturer(s): Professor Velimir Popsavin, Assistant professor Jovana Francuz			
Type and Level of Studies: PhD degree			
Course Status (compulsory/elective): elective			
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: 15			
Prerequisites: None			
Course Aims: Acquiring new knowledge on the application of bio-active carbohydrates, their derivatives, analogues and model systems, for studying fundamental biological processes.			
Learning Outcomes: Students will be trained to understand the fundamental mechanisms of biochemical processes and basic functions of complex biological systems, using modern chemical methods and selected synthetic molecules originating from carbohydrates.			
Syllabus: *Theory* Bioorganic receptors for molecular recognition of carbohydrates. Exploitation of monosaccharides as convenient starting materials for the synthesis of complex targets bearing multiple stereogenic centers. Biologically active compounds containing carbohydrates and/or derivatives. Contemporary approaches towards the asymmetric synthesis of monosaccharides and related molecules. Combinatorial carbohydrate chemistry. *Practice* Total synthesis of biologically active molecules by utilizing monosaccharides as chiral precursors. Molecular design of the selected bioorganic model systems.			
Required Reading: 1. Verlag, Berlin, 2008. 2. D. E. Levy, P. Fügedi: The Organic Chemistry o f Sugars, Taylor & Francis Group LLC, Boca Raton, 2006. 3. C. Schmuck, H. Wennemers: Highlights in Bioorganic Chemistry – Methods and Applications, Wiley-VCH, Weinheim, 2004. 4. K. C. Nicolaou, H. J. Mitchell: Adventures in Carbohydrate Chemistry: New Synthetic Technologies, Chemical Synthesis, Molecular Design, and Chemical Biology, Angew. Chem. Int. Ed. **2001**, *40*, 1576–1624.			
Weekly Contact Hours: 150	**Lectures:** 75	**Practical work:** 75	
Teaching Methods: Lectures, seminar(s)			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	**Final exam**	points

Active class participation		written exam	60
Practical work		oral exam	20
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.