Level: Master Academic Studies in Biochemistry

Course title: Glycobiology (B-520)

Status: Obligatory

ECTS: 6

Requirements: none

Learning objectives

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.

Learning outcomes

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.

Syllabus

Theoretical instruction: 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.

Practical instruction: Synthesis and structural analysis of selected carbohydrates.

Weekly teaching load				Other:
Lectures: 3	Exercises: 2	Other forms of teaching:	Student research:	