Course: Contemporary experimental methods in biochemistry

Teacher: ass. prof. Vukovic Nenad, PhD

Course status: Compulsory

ECTS: 10

Attendance prerequisites: Students must be enrolled in the second year of the study programme

Study purpose

The aim of the course to provide students with multidisciplinary methods of experimental work in biochemistry.

Study outcome

Students should learn biochemical techniques, immunological techniques, microbiological techniques, molecular biology techniques and chemical techniques. Isolation of proteins using various methods. Ability to choose the adequate method or a combination of methods independently. Ability to modify the method depending on a substrate. Methodological and experimental approaches to isolation and identification of proteins, nucleic acids and enzymes form biological substrates of different origins. Ability to apply acquired knowledge independently in scientific and professional work, also to follow and apply new achievements in this field of science.

Course contents

Biochemical techniques: electrophoreses, chromatography types, isolation and purification of proteins and nucleic acids, immunoelectrophoretic techniques, immunodiffusion techniques. Chemical methods, ^{1}H NMR, 2D NMR, GM, UV/VIS, colorimetry, turbidimetry, spectrophotometry. Testing of biological activities of pharmacologically active substances and natural products. *In vitro*, *in vivo* and *ex vivo* tests. Analysis of principles of selection of methods, substrates, goal biomolecules, biological response activators/inhibitors, means of biological activity identification and showing results. Detailed analysis of identification of anti-inflammatory, antioxidative, cytotoxic and antimicrobial activities. Selected examples of *in vitro*, *in vivo* and *ex vivo* methods for testing various biological activities.

Literature:

1. Структурне инструменталне методе Слободан Милосављевић , Хемијски факултет , Београд 1994
2. Spectrometric Identification of Organic Compounds, Robert Silverstein, Francis Webster John Wiley &Sons 1998
3. Drug Metabolite Isolation and Determination, I. Reid and P. Leppard ,Planum Press New York 1982
4. Methodological Surveys In Biochemistry and Analysis Vol 14 , I. Reid and A Wilson 1984

Hours of active teaching / learning	Lectures: 5	Study research work: /

Coursework methods: Lectures, projects, laboratory experiments

Grading (maximum 100 points)

Before the exam	**points**	**Final exam**	**points**
students' commitment during lectures	10	written exam	50
Laboratory experiments	20	oral exam	
colloquium (-a)			
project (-s)	20		