Study program: BIOLOGY

Type and level of studies: Master academic studies of second degree

Course unit: B206 - Enzymology

Teacher in charge: Nevena H. Đukić, Ph.D

Language of instruction: English

ECTS: 6

Prerequisites: /

Semester: Summer Semester

Course unit objective:
The acquisition of knowledge and skills about: enzymes as the basis for the functioning of living systems; structural and physiological organization of the enzymes. The application of this knowledge in new enzyme researches.

Learning outcomes of Course unit:
Students are trained to acquire knowledge about the biochemical structure, chemical and biochemical organization of the enzymes, the mechanism of the enzyme activity, methods of isolation and identification of enzyme activities, chemical structure and the conformation of the enzymes, the enzymes activity in function of the structure and conformation of the enzyme molecule, the identification of regulatory enzymes and markers, identification of the organization of living systems on the basis of arrangement of the enzyme and the enzymatic reaction, and the ability of students for independent research and professional work in this field.

Course unit contents:
Theoretical classes
Nomenclature and classification of enzymes. Configuration and conformation of enzymes in function of biological activity. Types of chemical bonds and interactions in enzymatic reactions. Multienzymes complexes. The enzymes attached to the cell structure. Holoenzymes. Enzymes of different biological species. Determination of enzyme activity - chemical and biological methods.
Practical classes:
Buffers and buffering systems. Determination of the reaction environment pH. The application of colorimetry and spectrophotometry. Application of different types of chromatography. The enzymatic activity in function of temperature and the environment pH. The changes of enzymatic activity by changing enzyme concentration. Hydrolytic enzymes, control of the activityes. Proteolytic enzymes, determination of the activity. DNase, determination of the activity. RNase, determination of the activity. Amylase activity. Determination of alkaline phosphatase. Determining the activity of phosphorylase. Enzymes in biochemical processes, term paper. Regulatory enzymes, isoenzymes, term paper.

Literature
Donald Voet, Judith G. Voet, Biochemistry, 4th Edition 2011.
Solujić S, Stojanović J. General biochemistry. Faculty of Science, Kragujevac, 2006.
Petronijević ŽBl. General and applied enzymology. Faculty of Technology, Leskovac, 2002.

Number of active teaching hours

Lectures:	Practice:	Other forms of classes: mentoring (consultative) system	Independent work:	Other classes

Teaching methods: Lectures, practical classes, seminars

Examination methods (maximum 100 points)

Exam prerequisites	No of points	Final exam	No of points
Student's activity during lectures		Written examination	30
Practical classes		Oral examination	40
Term paper	30		

Grading system

Grade	No. of points	Description
10	91 - 100	Excellent
9	81 - 90	Exceptionally good
8	71 - 80	Very good

7	61 - 70	Good
6	51 - 60	Passing
5	< 50	Failing