Study program: Environmental protection

Type and level of study: Bachelor academic studies

Course Title: Biochemical Processes in the Environment

Teachers: **Dejana Panković**

Status: Obligatory, semester IV

ECTS: 8

Prerequisite: None

The goal of course
Gaining knowledge about the basic biochemical processes in living organisms and their changes under the influence of abiotic and biotic stressors from the environment.

The outcome of the subject
Acquired knowledge should provide an understanding of the interactions between pollutants in the environment and living organisms. In the practical part of the course students will learn about the biochemical processes that are applied in the identification and examination of the toxic and mutagenic effects of synthetic and natural compounds from the environment.

Syllabus
Theoretical study - Importance of biochemistry in agriculture. Carbohydrates: definition, classification, structure, properties of glucose, biological significance of carbohydrates. Proteins: introduction, definition, classification, properties and structure of proteins. Amino-acids: definition, structure, classification and properties of amino acids. Lipids: introduction, definition, classification of the lipids, properties of fats and oils, biological significance, purines, pyrimidines and nucleic acids. Minerals and their biochemical functions. Enzymes: definition, classification, chemical nature of enzymes, factors affecting enzyme activity, biological role of enzyme as a catalyst. Vitamins: introduction, classification, properties, functions and deficiency symptoms of vitamin A, D , E , K, B complex (B1 and B12) and vitamin C (ascorbic acid). Nutrition: definition, nutritional components of the food, importance of the energy needs, nutritional importance of carbohydrates, proteins, fats and fatty acids, minerals, water and fiber. Biochemical changes in the course of germinating seeds. Biochemical changes during ripening fruits. Fermentation processing of nutrients in animals, regulation of growth and development in animals.
Practical classes - Preparation for laboratory work, introduction to laboratory equipment, making solutions, determination of pH, colorimetry and spectrophotometry (carbohydrates and proteins).

Literature
1. Kovačević, Z. (2006). Biohemija i molekularna biologija. Medicinski fakultet. Novi Sad.
2. Nelson, D.L. & Cox, M.M. (2004). Lehninger Principles Of Biochemistry. Freeman W.H.
3. Hodgson, E. & Smart, R. (2001). Introduction to Biochemical Toxicology. Appleton & Lange, 3rd edition.
4. Ćurčić, N. & Panković, D. (2011). Gajenje genetički otpornih biljaka prema bolestima u cilju zaštite životne sredine. Univerzitet Edukons. Sremska Kamenica.
5. Ecological Biochemistry: Environmental and Interspecies Interactions, 2014, Gerd-Joachim Krauss , Dietrich H. Nies , ISBN: 978-3-527-68600-1, Wiley-Blackwell

Number of lectures: 5				Other Classes
Lectures: 3	Practices: 2	Other forms of teaching:	Student research work:	

Teaching methods:

Score (maximum 100 points)

Pre-commitments	**Poens**	**The final exam**	Poens
Activity during lectures	10	Written exam	40
Practical classes	10	Oral examination	
Colloquia	40		
Seminars			
Total	60		40