Study program: Environmental protection

Type and level of study: Bachelor academic studies

Course Title: Methods of Instrumental Analysis

Teachers: **Mira Pucarević**

Status: Obligatory, semester IV

ECTS: 8

Prerequisite: None

The goal of course
The aim of this course is to acquire knowledge of the standard and other methods of analysis of environmental samples, sample preparation techniques and analysis of inorganic and organic contaminants: acid digestion, microwave digestion, liquid-liquid and solid-phase extraction and soxlett extraction.

The outcome of the subject
Students will be able to understand the problems related to the analysis of complex matrices and to correctly select and apply appropriate methods of analysis and to properly interpret the results of experimental analysis. The subject provides knowledge about the methods of ensuring confidence in the result of laboratory examination and knowledge skills in the presentation of the results.

Syllabus
Theoretical study – The specificity of the sampling of soil, water, sediment, air and the plant material. The techniques of preparation, concentration, purification and analysis of low, medium and high volatile organic compounds. The use of standard and non-standard methods. Standards of laboratory work SRPS ISO 17025.
Practical classes –
The exercises in the laboratory and practical introduction to the following areas: Residues of organochlorine pesticides in the soil, polychlorinated biphenyls in sediments, the residues of herbicides in groundwater, heavy metals in surface water, cyclohexane and benzene in the air, the residues of insecticides in fruits and vegetables,

Literature
1. Marjanović, J.N. & Jankovitš, F.I. (1983). Instrumentalne metode analize, udžbenik sa praktičnim primerima. Tehnološki fakultet i Zavod za izdavanje udžbenika. Novi Sad.
2. Trajković, J., Baras, J., Mirić, M. & Šiler, S. (1983). Analize životnih namirnica. TMF. Beograd.
3. Mišović, J. & Ast, T. (1992). Instrumentalne metode hemijske analize. TMF. Beograd.
4. Marjanović, J.N. (2001). Instrumentalne metode analize. I/1 Metode razdvajanja. Univerzitet u Banjoj Luci. Tehnološki fakultet.
5. Marjanović, J.N. & Suturović, J.Z. (1995).: Instrumentalne metode analize – zbirka zadataka. Tehnološki fakultet, Novi Sad.
6. Quantitative Chemical Analysis, Daniel C. Harris, 2007, by W.H. Feeram and Company, 1-664.

Number of lectures: 6				Other Classes
Lectures: 2	Practices: 4	Other forms of teaching:	Student research work:	

Teaching methods: Lectures, using computer technology, discussions with students, individual and team work.

Score (maximum 100 points)

Pre-commitments	**Poens**	**The final exam**	Poens
Activity during lectures	10	Written exam	30
Practical classes	30	Oral examination	
Colloquia			
Seminars	30		
Total	70		30