Study Programme : MSc in Biology

Degree level: Master degree

Course Title: Biology of drinking and waste waters

Professor: Jelica Simeunović

Required/Elective Course: elective

Number of ECTS: 7

Prerequisites:

Course Objective:

The goal of this course is to familiarize students with the biological and microbiological water quality problems of drinking and waste waters, methods for individual groups of microorganism's detection, newer methods and techniques of examination. Students should acquire knowledge in the field of water supply; learn the biological characteristics of groundwater and surface water sources, problems of reinfection in the network, collapse of the wells and microbiological methods of wastewater treatment processes. The second goal of the course is to introduce students with the legislation in the area of drinking and waste water.

Course Outcome:

After successfully completed the pre-examination and examination commitments student can:
to gain the basic knowledge about the biology of the preparation of drinking water and waste water treatments and knowledge about modern methods of determination of drinking and waste water quality and pollution assessment.

Course Content:

Theoretical part

1) Cycle of water circulation, microorganisms and aquatic environments 2) Metabolic diversity of bacteria, the physiological group of bacteria, representatives of non-pathogenic and pathogenic species 3) Health significance of the presence of certain groups of microorganisms (viruses, bacteria, protozoa, algae, fungi) in drinking water 4) Biological significance of total and viable counts of bacteria and adaptation to the conditions of poor nutrient 5) Iron and manganese oxidizing bacteria 6) Microorganisms as biological indicators of water quality and as active participants in the process of purifying water 7) Processes of nitrification and denitrification 8) Microbial biodegradation of organic components and interactions with pollutants 9) Microbial community of activated sludge and activated carbon 10) Filamentous bacteria and "proliferation sludge" phenomenon.

Practical part

1) Microbiological analysis of different samples of drinking water, sanitary point of view, the interpretation of results (examples of different waters- central water supply, wells, bottled waters) 2) Detection of iron and manganese oxidizing bacteria 3) Ecological and sanitary aspect of the different types of wastewaters 4) Microbiological characterization of samples of activated sludge from bioairation basins.

Reading List:

1. Petrović O., Gajin S., Matavulj M., Radnović D., Svirčev Z. (1998): Microbiological investigation of surface water quality. Institute of Biology, Faculty of Sciences, University of Novi Sad.
2. Petrović O. (1999): Microbiological and biological aspects of wastewater treatment. Monograph "Small water and sewage systems", Institute of Chemistry, Faculty of Sciences, University of Novi Sad, pp. 126-143.
3. Petrović O., Radnović D., Gajin S., Matavulj M., Svirčev Z. (2001): Microorganisms in drinking water, the impact of disinfection, legislation. In "Water quality control" Dalmacija B. (ed) Institute of Chemistry, Faculty of Sciences, University of Novi Sad, pp. 431-439.

Total hours:				
Lectures: 2	Practicals:	Other:2	Student research work:5	

Methods of instruction:

Lectures using power point presentation on the video beam, exercises, and consultations.

Assessment (maximum number of points 100)

Requirements	**points**	**Final exam**	**points**
Active participation in lectures	10	Practical exam	-
Active participation in practicals	-	Oral exam	60
Test(s) or	-		
Pre-exam testing	30		

Remark: