

Course title: SANITARY MICROBIOLOGY

ECTS credit allocation (and other scores): 2.0

Semester: autumn

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 15/15

Course coordinator/ Department and e-mail: Prof. dr hab. inż. Ewa Korzeniewska, Department of Water Protection Engineering and Environmental Microbiology, e-mail: ewa.korzeniewska@uwm.edu.pl; ewakmikr@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Isolation of microorganisms from various natural environments (water, air), skin (hands) and human mucosa. Assessment of their biodiversity, the effectiveness of disinfectants, antibiotic resistance. Understanding the principles of identifying pathogenic bacteria on the example of intestinal gram-negative bacteria (*Salmonella* spp.) and mold fungi. Assessment of microbiological contamination of indoor air. Sanitary and bacteriological tests of drinking water from various intakes. Microscopic observations of nuisance bacteria in the water supply network. Study of the removal of indicator bacteria from waste water after various stages of treatment.

LECTURES: Pathogenic and potentially pathogenic microorganisms as biological factors that threaten human health in drinking water, sewage, sewage sludge and air. Basic information on medical microbiology, defense of the body against infection, vaccines. The mechanism of action of antibiotics and disinfectants on microorganisms. The system of sanitary indicators in the assessment of the suitability of waters: drinking, swimming pools, surface waters and for recreational purposes. Inconvenience microorganisms forming biofilm and intra-tubular deposits in drinking water. Removal of pathogenic microorganisms in the process of wastewater treatment and stabilization of sewage sludge.

Learning purpose: Understanding the biodiversity of microorganisms inhabiting natural environments and municipal facilities.

On completion of the study programme the graduate will gain:

Knowledge: Student has knowledge of microbiological processes occurring in the natural and technical environments

Skills: Student performs simple microbiological analyzes used in environmental engineering

Social Competencies: Student is responsible for the sanitary safety of his own and others' work in a microbiology laboratory

Basic literature: 1) DAY T.J., Sewer Management Systems, Ed. Wiley & Sons, 2000; 2) Wilson B.A., Salyers A.A., Whitt D.D., Winkler M.E., Bacterial Pathogenesis: A Molecular Approach, ASM Press, 2011.

Supplementary literature:

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 1.2

Student's independent work: 0.8