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| FACULTY: | Faculty of Mechanical Engineering and Energetics |
| FIELD OF STUDY: | Food Technology and Human Nutrition |
| ERASMUS COORDINATOR OF THE FACULTY: | Agnieszka Szparaga, PhD, DSc, Eng |
| E-MAIL ADDRESS OF THE COORDINATOR: | Agnieszka.szparaga@tu.koszalin.pl |
| COURSE TITLE: | **General microbiology** |
| LECTURER’S NAME: | Ewa Czerwińska, PhD |
| E-MAIL ADDRESS OF THE LECTURER: | Ewa.czerwinska@tu.koszalin.pl |
| ECTS POINTS FOR THE COURSE: | 4 |
| COURSE CODE (USOS): | 0811>2000-MO (Lec); 0811>2000-MO-lab |
| ACADEMIC YEAR: | 2024/2025 |
| SEMESTER: (W – winter, S – summer) | S |
| HOURS IN SEMESTER: | Lec. 30h + Lab. 30h |
| LEVEL OF THE COURSE:  (1st cycle, 2nd cycle, 3rd cycle) | 1st cycle |
| TEACHING METHOD:  (lecture, laboratory, group tutorials, seminar, other-what type?) | Lecture, laboratory |
| LANGUAGE OF INSTRUCTION: | * **English full time scheme for classes with 5 and more International Erasmus+ students enrolled/accepted;** * **English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 International Erasmus+ students enrolled/ accepted;** |
| ASSESSMENT METOD:  (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?) | Written exam, class test, written reports |
| COURSE CONTENT: | **Lecture:**  Microbiology as a science of microscopic size organisms. Diversity and history of microorganisms. Cell structure and organization of bacteria, fungi and protista. Viruses – viral structure, replication cycles, states of viral infections. Microbial metabolism: enzymes, catabolic and anabolic reaction, aerobic respiration, fermentation and anaerobic respiration, type of metabolism: chemoorganotrophy =heterotrophy, chemolithotrophy, phototrophy. The share of microorganisms in the circulation of matter and energy flow - biogeochemical cycles of carbon, oxygen, nitrogen, phosphorus, sulfur and other elements. Impact of abiotic and biotic environmental factors on the growth and development and activity of microorganisms. Impact of microorganisms: physico-chemical and biological changes in the environment - interactions between microorganisms.  **Laboratory:**  Sterilization and disinfection methods. Microbiological media. Macroscopic evaluation of morphology of bacterial colonies on the culture medium. Procedures for the preparation of microscopic slides; simple and complex staining methods; microscopic observation by using light microscope. Fluorescence microscopy methods in the microbial studies. Determination of physiological and biochemical properties of bacteria by using media and API kit for identification. Microbiological analysis of water, air and soil samples; estimation number of colony forming units (CFU) of bacteria and fungi; estimation the most probable number (MPN) of bacteria and estimation of cell number by membrane filtration in the water samples. Impact of environmental factors on the growth of microorganisms. Evaluation of yeast and mold fungi by microscopic methods. |
| ADDITIONAL INFORMATION: | References:  1.Nicklin J., Graeme-Cook K., Paget T., Killington R., 2001. Instant Notes in Microbiology. BIOS Scientific Publishers Limited, Oxford.  2.Hogg S., 2005. Essential microbiology. John Wiley & Sons, Ltd, England.  3.Salyers A.A., Whitt D. D., 2001. Microbiology. Diversity, Disease, and The Environment. Fitzgerald Science Press, Inc. of Bethesda, MD, USA. |

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