

FACULTY:	Faculty of Mechanical Engineering
FIELD OF STUDY:	Food Technology and Human Nutrition
ERASMUS COORDINATOR OF THE FACULTY:	Krzysztof Rokosz, PhD, DSc, Eng. Małgorzata Smuga-Kogut, PhD
E-MAIL ADDRESS OF THE COORDINATOR:	<ul style="list-style-type: none"> <li>• krzysztof.rokosz@tu.koszalin.pl</li> <li>• malgorzata.smuga-kogut@tu.koszalin.pl (Food Technology and Human Nutrition)</li> </ul>
COURSE TITLE:	General microbiology
LECTURER'S NAME:	Katarzyna Lewicka-Rataj, PhD
E-MAIL ADDRESS OF THE LECTURER:	katarzyna.lewicka@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	5
ACADEMIC YEAR:	2020/2021
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	Lec. 30h + Lab. 30h
LEVEL OF THE COURSE: (1 <sup>st</sup> cycle, 2 <sup>nd</sup> cycle, 3 <sup>rd</sup> cycle)	1 <sup>st</sup> cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture, laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam, class test, written reports
COURSE CONTENT:	<p><b>Lecture:</b> 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.</p> <p><b>Laboratory:</b> 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.</p>

	Impact of environmental factors on the growth of microorganisms. Evaluation of yeast and mold fungi by microscopic methods.
ADDITIONAL INFORMATION:	<p>References:</p> <ol style="list-style-type: none"> <li>1. Nicklin J., Graeme-Cook K., Paget T., Killington R., 2001. Instant Notes in Microbiology. BIOS Scientific Publishers Limited, Oxford.</li> <li>2. Hogg S., 2005. Essential microbiology. John Wiley &amp; Sons, Ltd, England.</li> <li>3. Salyers A.A., Whitt D. D., 2001. Microbiology. Diversity, Disease, and The Environment. Fitzgerald Science Press, Inc. of Bethesda, MD, USA.</li> </ol>

Katarzyna Lewicka-Rataj  
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