

Course code																																							
Type and description	Background Course																																						
ECTS credit	2																																						
Course name	Modern Microbiological Analysis in Food Industry																																						
Course name in Polish	Nowoczesna analiza mikrobiologiczna w przemyśle spożywczym																																						
Language of instruction	English																																						
Course level	8 PRK																																						
Course coordinator	Prof. dr hab. inż. Alina Kunicka-Styczyńska (0000-0002-4611-9109)																																						
Course instructors	Prof. dr hab. inż. Alina Kunicka-Styczyńska (0000-0002-4611-9109)																																						
Delivery methods and course duration	<table><tr><th></th><th>Lecture</th><th>Tutorials</th><th>Laboratory</th><th>Project</th><th>Seminar</th><th>Other</th><th>Total of teaching hours during semester</th></tr><tr><td>Contact hours</td><td>15</td><td></td><td></td><td></td><td></td><td>0</td><td>15</td></tr><tr><td>E-learning</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td></td></tr><tr><td>Assessment criteria (weightage)</td><td>1,00</td><td></td><td></td><td></td><td></td><td>0,00</td><td></td></tr></table>								Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester	Contact hours	15					0	15	E-learning	No	No	No	No	No	No		Assessment criteria (weightage)	1,00					0,00	
	Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester																																
Contact hours	15					0	15																																
E-learning	No	No	No	No	No	No																																	
Assessment criteria (weightage)	1,00					0,00																																	
Course objective	The aim of the subject is a transfer of knowledge of modern technics in microbiological analysis applied in industrial practice of food and beverages production																																						
Learning outcomes	After completing the subject a student is able to: 1. Indicate the objectives and scope of the microbiological analysis in food production – outcomes W1, W4, K1 2. Choose appropriate system of microbiological analysis to detect specific groups of microorganisms – outcomes W4, U3, K1 3. Apply instrumental analysis techniques used in microbiological analysis – outcomes W4, K1, K2 4. Learn independently in a targeted manner – outcomes U3 5. Demonstrate ability to work in a team – outcomes U3																																						
Assessment methods	Effects 1-3 – an open test Effects 4-5 – observation activities in the classroom Final assessment includes: - an open test result 60% - activity in the classroom 40%																																						
Prerequisites	Basic knowledge in general microbiology																																						
Course content with delivery methods	Defining the aims of microbiological analysis in food production, and an indication of the modern, automated techniques to ensure fast and reliable assessment of the microbiological quality of the product. Criteria for the selection of techniques for continuous monitoring of the microbiological purity of the food and beverage production environment. An overview of the rules of operation and the identification of weaknesses and strengths of selected microbiological analysis systems designed for the use in the food industry. Systems designed to detect (Milliflex® Quantum system, EZ-FluoTM Rapid Detection System, TEMPO® system, HY-LITE® system) and microorganisms identification (API®, CHEMUMEX® technology, GENE-UP® platform) in food and environmental samples. 1. Rapid detection of microorganisms in food industry focusing on bioburden monitoring in a production environments. Milliflex® Quantum system (Merck) for quantitative detection of viable and culturable microorganisms in liquid samples; 2. EZ-FluoTM Rapid Detection System (Merck) for rapid detection and quantification of microbial contamination in food and beverages; 3. TEMPO® system (bioMerieux) for a rapid monitoring of microbiological quality control parameters in food and beverages and a production environment; 4. HY-LITE® system (Merck) for a rapid detection of microorganisms in production environment; 5. CHEMUMEX® technology (bioMerieux) for a rapid detection of viable culturable and viable non-culturable microorganisms by flow cytometry; 6. API® (bioMerieux) international standardized identification system for microorganisms; 7. GENE-UP® platform (bioMerieux) for detection and identification of common pathogens in food industry																																						
Basic reference materials	1. Buszewski B., Rogowska A., Pomastowski P., Złoch M., Railean-Plugaru V. 2017. Identification of microorganisms by modern analytical techniques, Journal of AOAC Internat. 100, 1607-1623 2. Pomeranz Y. 2013. Food Analysis: Theory and Practice, Springer																																						
Other reference materials	-																																						
Average student workload outside classroom	35 h																																						
Comments	-																																						
Last update	25.01.2022																																						