SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Foodborne and waterborne pathogenic microorganisms

Educational subject description sheet

Basic information

Field of study Biotechnology	**Didactic cycle** 2023/24
Speciality -	**Subject code** BBTBTjS_D.340K.01637.23
Organizational unit Faculty of Biology and Biotechnology	**Lecture languages** english
Study level first cycle (engineering degree)	**Mandatory** Elective subjects
Study form full-time studies	**Block** Major subjects
Education profile General academic	**Disciplines** Biological sciences

Coordinator	Elżbieta Hać-Szymańczuk
Teacher	Elżbieta Hać-Szymańczuk

Period	**Examination**	**Number of ECTS points**
Semester 7	Pass with grade **Activities and hours** Lecture: 15	1

Goals

Code	Goal
C1	Familiarizing students with the etiological factors of diseases occurring after eating food containing harmful microorganisms, mechanisms of the body's defense against poisoning of various types and the possibilities of avoiding them through proper conduct in the industrial production and distribution of food.

Entry requirements

Information concerning the fields of general and food microbiology, as well as the basic knowledge of microorganisms and processes, in which they participate, including the role of enzymes in these processes.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the criteria of morphological and physiological diagnostics of saprophytic and pathogenic microorganisms	BTj_K3_W06, BTj_K3_W08, BTj_K3_W09, BTj_K3_W10	Written credit
W2	the pathways for the entry of microorganisms that pose a threat to the human bod	BTj_K3_W09, BTj_K3_W10, BTj_K3_W11	Written credit
W3	the factors promoting and inhibiting the growth of microorganisms	BTj_K3_W08, BTj_K3_W10, BTj_K3_W11	Written credit
Skills – Student can:			
U1	interpret the results of the performed experiments	BTj_K3_U04_inz, BTj_K3_U22	Report
Social competences – Student is ready to:			
K1	work safely owing to the awareness of the benefits and dangers related to the utilization of microorganisms in biotechnological processes	BTj_K3_K01, BTj_K3_K03, BTj_K3_K06	Report

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Types of pathogenic microorganisms available in food (yeasts, molds and bacteria) and metabolites by non-produced ones. Types of food most exposed to pathogens. The response of the human body to contact with the pathogen and ways to avoid food poisoning.	W1, W2, W3, U1, K1	Lecture

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, E-learning - lecture part, Problem solving, Individual work

Activities	Examination method	Percentage
Lecture	Written credit	90%
Lecture	Report	10%

Activities	Credit conditions
Lecture	Obligatory attendance at the lecture (only lecture subject). The final grade for the course consists of: preparation of an individual analysis of a defined problem (10%) and a written test (90%). From each part you should get min. 51% of possible points.

Literature

Obligatory

1. Willey J., Sandman K., Wood D. 2023: Prescott's microbiology. McGraw Hill, New York
2. Salyers A.A., Whitt Dixie D. 2001: Microbiology: Diversity, Disease, and the Environment. Wiley Inc.
3. Gautier M. 2014: Encyclopedia of Food Microbiology (Second Edition), Elsevier Ltd.

Optional

1. English-language literature recommended by the teacher
2. Sperber W.H., Doyle M.P. 2009: Compendium of the Microbiological Spoilage of Foods and Beverages. Springer
3. Toldra F. 2009: Safety of Meat and Processed Meat. Springer

Calculation of ECTS points

Activity form	Activity hours*
Lecture	15
Preparation for the exam	5
Preparing a report	5
Student workload	**Hours** 25
Number of ECTS points	**ECTS** 1

* hour means 45 minutes

Effects

Code	Content
BTj_K3_K01	The graduate is ready to proper storage of data, updating and extending knowledge on topics related to biotechnology and the related sciences;
BTj_K3_K03	The graduate is ready to for safe work via the selection and application of a proper technique of handling, storing and disposing of laboratory materials (e.g. using proper techniques in terms of handling, storing and disposing of bacteria, chemical substances and dangerous bio-waste);
BTj_K3_K06	The graduate is ready to presenting justified arguments supporting one’s standpoint regarding scientific, ethical and social topics influencing the progress in biological sciences;
BTj_K3_U04_inz	The graduate can present and discuss key principles of scientific interdisciplinary bases, as well as a multidisciplinary approach to the processes and mechanisms of life;
BTj_K3_U22	The graduate can find and assess information from various sources, including from original research, and present in a well organised manner (e.g. essays, reports and laboratory reports);
BTj_K3_W06	The graduate knows and understands the functions of various cells (prokaryotic and eukaryotic), being able to critically explain, how their properties are related to varying biological functions, knowing how they can be tested experimentally
BTj_K3_W08	The graduate knows and understands the features of cellular metabolism and its control, including the knowledge of certain experimental techniques;
BTj_K3_W09	The graduate knows and understands living organisms and their place in the natural environment, and how they can be used for the good of humanity;
BTj_K3_W10	The graduate knows and understands terms, principles and theories related to processes and mechanisms which have shaped the world of nature, knowing how they can be used efficiently;
BTj_K3_W11	The graduate knows and understands the principles of OHS and ergonomics;