SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Food technology

Educational subject description sheet

Basic information

Field of study Biotechnology	**Didactic cycle** 2024/25
Speciality -	**Subject code** BBTBTjS_D.320.01625.24
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	Małgorzata Ziarno
Teacher	Małgorzata Ziarno, Mirosław Słowiński

Period	**Examination**	**Number of ECTS points**
Semester 6	Pass with grade **Activities and hours** Lecture: 30	2

Goals

Code	Goal
C1	Basic knowledge about raw materials for the food industry, basic operations and unit processes applied in food technology and food preservation, as well as the issues related to the practical use of probiotic strains in food production or processing, including an indication of innovative possibilities for the use of probiotics in the food industry.

Entry requirements

The student has a basic knowledge of chemistry and physics

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the information on raw materials for the food industry	BTj_K3_W11, BTj_K3_W15_inz	Written credit
W2	the information on food preservation methods	BTj_K3_W11, BTj_K3_W15_inz	Written credit
W3	the phenomena occurring in the processes and operations that make up the technological process	BTj_K3_W11, BTj_K3_W14, BTj_K3_W15_inz	Written credit
Skills – Student can:			
U1	utilize the basic knowledge of operations and unit processes in food technology	BTj_K3_U07	Written credit
U2	select methods of preservation depending on technological conditions	BTj_K3_U07	Written credit
U3	apply the basic knowledge of the design and production of probiotic food, including overcoming the difficulties associated with the production process and the final product storage	BTj_K3_U07	Written credit
U4	follow the legal requirements that must be met in order for a food product to be defined as "probiotic"	BTj_K3_U07	Written credit
Social competences – Student is ready to:			
K1	constantly expand knowledge and its practical use	BTj_K3_K03, BTj_K3_K06	Written credit

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Characteristics of food industry raw materials, physical and chemical properties of raw materials and food products. Pre-treatment of raw materials, mechanical operations. Thermal operations, the influence of heating and cooling on food quality. The use of physicochemical processes, crystallization, coagulation and gelling, emulsion formation and agglomeration in food technology. Chemical processes: hydrolysis, hydrogenation and transesterification in food technology. The use of enzymes. Methods of food preservation. Packaging for the food industry. Production of food of plant and animal origin, including probiotic, fermented or non-fermented (market examples). Definition of a probiotic strain and probiotic criteria. Characteristics of the most commonly used probiotic strains. Production of probiotics biomass. Methods of testing probiotics in food products.	W1, W2, W3, U1, U2, U3, U4, K1	Lecture

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, Conversation lecture, E-learning - lecture part, Presentation, Display

Activities	Examination method	Percentage
Lecture	Written credit	100%

Activities	Credit conditions
Lecture	The assessment of the learning outcomes consists of a final grade (minimum 51% of points).

Literature

Obligatory

1. Berk Z. 2009-2018. Food Process Engineering and Technology
2. Brennan J. G. 2006-2012. Food Processing Handbook
3. Shafiur Rahman M. 2007-2020. Handbook of Food Preservation

Optional

1. Gibson G.R., Williams C.M. (Eds.). Functional foods. Concept to product. 2000 CRC Press, Cambridge
2. Campbell-Platt G. 2009. Food Science and Technology
3. Whitaker J. R., Voragen A.G. J., Wong D. W. S. 2003. Handbook of Food Enzymology
4. Greco L.V., Bruno M. N. 2008. Food Science and Technology: New Research
5. Smith J., Charter E. (Eds.). Functional Food Product Development. 2010 Blackwell Publishing

Calculation of ECTS points

Activity form	Activity hours*
Lecture	30
Preparation for the test	20
Student workload	**Hours** 50
Number of ECTS points	**ECTS** 2

* hour means 45 minutes

Effects

Code	Content
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_U07	The graduate can follow proper principles of safety and work ethics during the execution of scientific research using various experimental methods under laboratory and field conditions
BTj_K3_W11	The graduate knows and understands the principles of OHS and ergonomics;
BTj_K3_W14	The graduate knows and understands the significance of copyright protection, the protection of industrial property and patent right;
BTj_K3_W15_inz	The graduate knows and understands the systems currently recommended for managing quality and safety in the biotechnological industry; the principles of creating and developing the forms of individual entrepreneurship;