SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Study programme

Food Science - Technology and Nutrition

Faculty:	Faculty of Food Technology
Level of study:	second cycle (post bachelor's degree)
Education profile:	General academic
Form of study:	full-time studies
Academic year:	2025/26

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Basic information

Faculty name:	Faculty of Food Technology
Major name:	Food Science - Technology and Nutrition
Level of study:	second cycle (post bachelor's degree)
Profile of study:	General academic
Form of study:	full-time studies
Duration of studies (number of semesters):	4
Number of ECTS required to complete the studies:	120
The number of ECTS points a student obtains during classes conducted with the direct participation of academic teachers or other persons conducting classes:	60
Professional title awarded to graduates:	magister
ISCED code:	0721
Language of study:	english

Assigning the major to the fields and disciplines to which the learning outcomes relate

Food technology and nutrition	100%

Major characteristics

Major characteristics

Food Science-Technology and Nutrition second-cycle studies are of a natural and technical nature and endure four semesters. Students taking up this study degree gain in-depth specialist knowledge in food technology and human nutrition.

The course curriculum covers fundamental, humanistic, and social subjects as well as major and elective courses, enabling students to gain the information, abilities, and skills required for future employment in sectors of the economy that deal with producing and ensuring food quality. The studies also get ready for research and science projects. Specialised labs and semi-technical venues are used for classes. Interesting experiments are made possible by modern research equipment, which leads to the creation of creative and intriguing diploma theses. A wide selection of elective subjects allows students to develop their research interests. The choice of elective courses is flexible and subject to periodic adjustments based on student interests, requirements, suggestions, scientific advancements, and employer demands (external stakeholders). The studies also provide the opportunity to carry out research and part of the study program at partner universities belonging to the UNIgreen alliance and as part of the CEEPUS and Erasmus + programs. Students can also develop their interests during domestic and foreign professional internships, which will be carried out twice during their studies. The studies end with the defence of a master's thesis.

Learning objectives

The aim of education in Food Science - Technology, and Nutrition is to deepen students' specialized knowledge and equip them with skills and competency consistent with the highest standards in food production, human nutrition, food quality control, and consumer protection. The studies are intended to prepare the graduate for the demands of the modern market on a professional and social level, to ensure the sustainable growth of the modern food economy, and to apply current nutritional principles that align with scientific knowledge. As a result, the graduate will be prepared to work in positions that require high professional qualifications in businesses and other organisations, the modern food chain, or its institutional environment, such as accredited research laboratories, research and development departments, units supervising product quality, advisory or consulting companies, including those related to food law etc.

Education concept

The education concept for full-time second-cycle studies in the general academic field of study Food Science - Technology and Nutrition covers issues falling within the scientific discipline of Food and Nutrition Technology, in which the academic staff conducts scientific research. The education concept for this field of study assumes that graduates of the second cycle will have advanced, in-depth knowledge and skills in the field of health aspects related to nutrition, as well as factors related to food processing, storage and distribution, principles of functioning of the food market and the essence of consumer behavior. In addition, they will acquire knowledge of quality management systems and sustainable food economy. The education concept for this field of study is directly in line with the mission of WULS-SGGW, which assumes that society's intellectual, social, and economic development will be served, with particular emphasis on the sustainable development of the food economy and the natural environment. Students also have the opportunity to complete part of the study programs at universities of the UNIgreen alliance, aiming to promote excellence in education, research, and innovation in sustainable agriculture, green biotechnology, and environmental and life sciences.

Description of work placement (if provided for in the study programme)

The program of second-cycle studies in the field of Food Science - Technology and Nutrition includes mandatory professional internships, the aim of which is to deepen practical skills related to the field of study, prepare the student for future professional work, and enable the use of knowledge consolidated during studies in industrial or laboratory reality. Depending on their interests, students can implement internships with a laboratory profile (control laboratories, research laboratories, sanitary supervision units) or internships with a technological /gastronomic profile (food industry plants, catering plants). Participation in the work of an institution selected by the student that produces or controls food quality allows them to familiarize themselves with the functioning, goals, and tasks carried out at various work positions. Professional internships in a total of 240 hours will be carried out during the 2nd and 3rd semesters of studies. Detailed rules, methods, and modes of implementation of professional internships are specified in the internship regulations.

Graduate profile

Graduates of second-cycle studies in Food Science – Technology and Nutrition who have obtained a master's degree have an

interdisciplinary education, combining knowledge in food processing and the application of cutting-edge technologies with expertise in modern nutrition. Graduates are highly qualified staff for the food industry and related industries; research centers dealing with food issues, and laboratories for analyzing and assessing the quality of raw materials and food products. Graduates can evaluate the compliance of the functioning of food chain enterprises with systems for ensuring health safety and food quality management. They are prepared for the practical use of extensive knowledge and skills in human nutrition and food production, assessing its quality and consumer behavior in active and effective professionals. In addition, they are implemented to conduct advanced scientific research and are thus prepared to continue their education at the third level of studies in doctoral schools. Graduates are prepared to work in the international, global food production market.

Learning outcomes

Knowledge

Code	Content	PRK
TN_K2_W01	The graduate knows and understands, in an extended scope, the composition and properties of raw materials, auxiliaries, food additives, and food industry products, including novel food, the possibilities and conditions of use of them in food production, taking into account the principles of sustainable development and their impact on human health, including bioprocesses to overcome global problems of food resources and human nutrition	P7S_WG
TN_K2_W02	The graduate knows and understands the possibilities and limitations of using machines, devices and instruments used for food processing and testing and the basics of their implementation and development trends in the area of their use	P7S_WG
TN_K2_W03	The graduate knows and understands, at an advanced level, phenomena and changes occurring in raw materials, semi-finished products, and food products in a natural way, and under the influence of technological processes, food storage and testing	P7S_WG
TN_K2_W04	The graduate knows and understands advanced methods and techniques used for food processing, preservation, storage, and testing and development of innovative, healthy, high-quality products	P7S_WG
TN_K2_W05	The graduate knows and understands, in an extended scope, consumer protection in the food market and factors determining the quality and health safety of food with a different degree of processing, health hazards related to food, and methods of reducing the risk associated with these hazards, as well as systems and standards related to quality and safety assurance of food	P7S_WG
TN_K2_W06	The graduate knows and understands, to an in-depth degree, rules and organization methods of the production and chain of food supply and quality management systems (planning, production organization, storage, distribution of food and food consumption in collective and individual nutrition) following the legal requirements of assurance of quality and food safety and the principles of sustainable development	P7S_WG
TN_K2_W07	The graduate knows and understands, at advanced level, rules for assessing the diet, nutritional quality and health of individuals and populations as well as cultural and social aspects of food production, distribution and consumption, food quality design, including intangible aspects of food, and its socio-cultural functions	P7S_WG
TN_K2_W08	The graduate knows and understands, to an in-depth degree, economic, social, environmental, ethical, and legal conditions of food production and the principles of development of new products, distribution, and offering food to consumers, including basic concepts and principles in the field of protection of industrial property and copyright	P7S_WK
TN_K2_W09	The graduate knows and understands, to an extent, the principles of creating and managing various forms of individual entrepreneurship in the field of food economy	P7S_WK

Skills

Code	Content	PRK
TN_K2_U01	The graduate can design experiments and experimental systems for food research using analytical, simulation and computer methods, as well as independently conduct experiments to solve complex problems	P7S_UW
TN_K2_U02	The graduate can use, in an extended scope, select methods and tools to make observations, measurements, and calculations in the field of phenomena occurring during processing, storage, research of food, human nutrition and consumer behaviour on the food market, and also for critical analysis and creative interpretation of obtained results and preparation of reports and scientific research studies	P7S_UW

Code	Content	PRK
TN_K2_U03	The graduate can analyse and evaluate the existing solutions appropriate for the food economy, identify problems and opportunities for professional activity, search for new solutions, and ways of their implementation using modern tools, including experiments, analytical methods, computer simulations, information and communication techniques, and others	P7S_UW
TN_K2_U04	The graduate can skilfully select sources of information, synthesize obtained data and draw conclusions, and perceive various conditions of professional issues related to the aspects of human nutrition, food production, food evaluation, consumer protection, quality and safety in the food chain as well as technological, ethical, economic and ecological aspects	P7S_UW
TN_K2_U05	The graduate can formulate and test hypotheses related to research problems in food science and nutrition	P7S_UW
TN_K2_U06	The graduate can communicate effectively on specialist topics with a diverse audience, participate in and lead debates on professional issues, use a foreign language at the B2+ level of the Common European Framework of Reference for Languages	P7S_UK
TN_K2_U07	The graduate can organize teamwork, take on different roles in the team and cooperate with other team members	P7S_UO
TN_K2_U08	The graduate can independently plan further professional development and guide others in this area	P7S_UU

Social competence

Code	Content	PRK
TN_K2_K01	The graduate is ready to recognize the importance of knowledge in professional life, analyse it critically and seek sources from experts	P7S_KK
TN_K2_K02	The graduate is ready to conduct scientific research, perform various advanced tasks, formulate conclusions and opinions in the field of food production and identify and manage crisis factors in the food industry	P7S_KO
TN_K2_K03	The graduate is ready to use the acquired knowledge and skills in professional life in a socially responsible, ethical manner, consistent with the public interest, as well as with respect for professional traditions	P7S_KR

Study plan

Semester 1

In the first semester, students complete library training on the platform available at https://szkolenia.sggw.pl

Subject	Number of hours	ECTS points	Form of verification	Mandatory
OHS training	OHS training: 4	0	Pass	Obligatory subjects
Advanced techniques in food engineering	Lecture: 15 Laboratory exercises: 16 Project exercises: 30	5	Exam	Obligatory subjects
AI in learning and research	Laboratory exercises: 45	4	Pass with grade	Obligatory subjects
Biotechnology for food innovations	Lecture: 15 Laboratory exercises: 45	5	Exam	Obligatory subjects
Contemporary processing technologies and food analysis	Lecture: 15 Laboratory exercises: 60	6	Exam	Obligatory subjects
Global challenges of food production and distribution	Lecture: 15 Auditorium exercises: 30	4	Pass with grade	Obligatory subjects
Intelectual Property Management	Lecture: 15	1	Pass with grade	Obligatory subjects
Electives 1 (open group of subjects)	Lecture: 15 Project exercises: 30	4	Pass with grade	Mandatory group
The student chooses one subject				
Food in culture and society	Lecture: 15 Project exercises: 30	4	Pass with grade	Elective subjects
Introduction to food antropology	Lecture: 15 Project exercises: 30	4	Pass with grade	Elective subjects
Sum	**350**	**29**		

Semester 2

The student chooses foreign language in the form of a selected language course or subject in a language other than English

Subject	Number of hours	ECTS points	Form of verification	Mandatory
Application of chemistry and biochemistry in food studies	Lecture: 15 Laboratory exercises: 45	5	Exam	Obligatory subjects
Comprehension in human nutrition	Lecture: 30 Laboratory exercises: 50	7	Exam	Obligatory subjects
Experiment planning	Lecture: 30 Laboratory exercises: 30	5	Pass with grade	Obligatory subjects
Food quality management system in the international trade	Lecture: 20 Auditorium exercises: 25	2	Pass with grade	Obligatory subjects
Nutrition and consumer policy	Lecture: 15 Laboratory exercises: 30	3	Pass with grade	Obligatory subjects
Seminar 1	Seminar exercises: 30	2	Pass with grade	Mandatory group
The student chooses one subject				
Seminar (food technology) 1	Seminar exercises: 30	2	Pass with grade	Elective subjects
Seminar (human nutrition) 1	Seminar exercises: 30	2	Pass with grade	Elective subjects
Subject in a foreign language (open group of subjects)	Contact hours: 30	2	Pass with grade	Mandatory group
The student chooses foreign language in the form of a selected language course or subject in a language other than English				
English as a foreign language	Language course: 30	2	Pass with grade	Elective subjects
German as a foreign language	Language course: 30	2	Pass with grade	Elective subjects
Russian as a foreign language	Language course: 30	2	Pass with grade	Elective subjects
Les aromes et ses ingrédients secrets	Lecture: 20 Project exercises: 10	2	Pass with grade	Elective subjects
Spanish as a foreign language	Language course: 30	2	Pass with grade	Elective subjects
Professional practice 1	Apprenticeships: 120	4	Pass	Mandatory group

Subject	Number of hours	ECTS points	Form of verification	Mandatory
The student completes a technological and laboratory or gastronomy and nutrition practice				
Gastronomy and nutrition practice	Apprenticeships: 120	4	Pass	Elective subjects
Technological and laboratory practice	Apprenticeships: 120	4	Pass	Elective subjects
Sum	**470**	**30**		

Semester 3

Subject	Number of hours	ECTS points	Form of verification	Mandatory
Career paths	Seminar exercises: 45	3	Pass	Obligatory subjects
Challenges management in food industry	Lecture: 8 Laboratory exercises: 42 Project exercises: 10	5	Pass with grade	Obligatory subjects
Food technologists at work	Laboratory exercises: 45	3	Pass with grade	Obligatory subjects
Introduction to writing a diploma thesis	Seminar exercises: 15	1	Pass	Obligatory subjects
Nutrition education	Lecture: 15 Laboratory exercises: 30	3	Exam	Obligatory subjects
Seminar 2	Seminar exercises: 30	2	Pass with grade	Mandatory group
The student chooses one subject				
Seminar (food technology) 2	Seminar exercises: 30	2	Pass with grade	Elective subjects
Seminar (human nutrition) 2	Seminar exercises: 30	2	Pass with grade	Elective subjects
Subject in a foreign language (open group of subjects)	Contact hours: 30	2	Exam/pass with grade	Mandatory group
The student chooses foreign language in the form of a selected language course or subject in a language other than English				
English as a foreign language	Language course: 30	2	Pass with grade	Elective subjects
German as a foreign language	Language course: 30	2	Pass with grade	Elective subjects
Russian as a foreign language	Language course: 30	2	Pass with grade	Elective subjects

Subject	Number of hours	ECTS points	Form of verification	Mandatory
Spanish as a foreign language	Language course: 30	2	Pass with grade	Elective subjects
Valorisation des déchets de l'industrie agroalimentaire par des procédés de ferment	Lecture: 20 Project exercises: 10	2	Pass with grade	Elective subjects
Research project laboratory	Laboratory exercises: 90	8	Pass with grade	Mandatory group
The student chooses one subject				
Nutritional research project laboratory	Laboratory exercises: 90	8	Pass with grade	Elective subjects
Technological research project laboratory	Laboratory exercises: 90	8	Pass with grade	Elective subjects
Professional practice 2	Apprenticeships: 120	4	Pass	Mandatory group
The student completes a technological and laboratory or gastronomy and nutrition practice				
Gastronomy and nutrition practice	Apprenticeships: 120	4	Pass	Elective subjects
Technological and laboratory practice	Apprenticeships: 120	4	Pass	Elective subjects
Sum	**480**	**31**		

Semester 4

Subject	Number of hours	ECTS points	Form of verification	Mandatory
Electives 2 (open group of subjects)	Contact hours: 120	8	Pass with grade	Mandatory group
The student chooses subjects from the list for 8 ECTS points				
Applied statistics	Lecture: 15 Auditorium exercises: 30	3	Pass with grade	Elective subjects
Auditor of food quality management system	Lecture: 20 Auditorium exercises: 20	2	Pass with grade	Elective subjects
Biopolymers for food packaging	Lecture: 15 Project exercises: 15	2	Pass with grade	Elective subjects
Carcinogens and anticarcinogens in food	Lecture: 21 Auditorium exercises: 9	2	Pass with grade	Elective subjects

Subject	Number of hours	ECTS points	Form of verification	Mandatory
Chemistry and raw materials transformation	Lecture: 15 Laboratory exercises: 30	3	Pass with grade	Elective subjects
Circular design for food	Lecture: 15 Project exercises: 15	2	Pass with grade	Elective subjects
Energy for human	Lecture: 30 Laboratory exercises: 15	3	Pass with grade	Elective subjects
Food quality supervision methods	Lecture: 20 Auditorium exercises: 20	2	Pass with grade	Elective subjects
Fried food	Lecture: 15 Laboratory exercises: 15	2	Pass with grade	Elective subjects
Fungi in food technology	Lecture: 20 Auditorium exercises: 10	2	Pass with grade	Elective subjects
Innovative food and food additives based on microorganisms	Lecture: 20 Auditorium exercises: 25	3	Pass with grade	Elective subjects
Lactic acid bacteria in food production	Lecture: 15 Laboratory exercises: 15	2	Pass with grade	Elective subjects
Microbiological diagnostic methods in the food industry	Lecture: 15 Laboratory exercises: 15	2	Pass with grade	Elective subjects
Plant-based stimulant and psychoactive substances	Lecture: 21 Auditorium exercises: 9	2	Pass with grade	Elective subjects
Practical cases of use of peculiar chemicals: murder, addiction, doping or healing	Lecture: 30 Auditorium exercises: 15	3	Pass with grade	Elective subjects
Probiotic food and microbiome	Lecture: 20 Auditorium exercises: 20	2	Pass with grade	Elective subjects
Vegan trends in milk and meat technology	Lecture: 20 Auditorium exercises: 10	2	Pass with grade	Elective subjects
Seminar 3	Seminar exercises: 30	2	Pass with grade	Mandatory group
The student chooses one subject				
Seminar (food technology) 3	Seminar exercises: 30	2	Pass with grade	Elective subjects

Subject	Number of hours	ECTS points	Form of verification	Mandatory
Seminar (human nutrition) 3	Seminar exercises: 30	2	Pass with grade	Elective subjects
Master thesis	Diploma thesis: 0	20	Pass with grade	Mandatory group
Student chooses the topic of the diploma thesis				
Master thesis 1	Diploma thesis: 0	20	Pass with grade	Elective subjects
Master thesis 2	Diploma thesis: 0	20	Pass with grade	Elective subjects
Sum	**150**	**30**		

Description of the learning outcomes assigned to the subjects and the curriculum content ensuring the achievement of these outcomes

Subject name:		Advanced techniques in food engineering	ECTS: 5
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	innovative processes and operations used in food production	TN_K2_W04
	W2	operations and devices in the technological process	TN_K2_W02
Skills: (In terms of skills, the graduate can)	U1	assess and propose operations and solutions construction taking into account the process conditions	TN_K2_U01
	U2	analyze technical solutions in the field of new techniques in food engineering	TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	taking leadership in a group and taking responsibility for it	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Innovative processes and operations used in food production, especially in the scope of supercritical extraction, biosensors, the process of manufacturing and testing the stability of emulsions, the latest methods of testing the microstructure, the process of manufacturing and testing the foaming properties. During projects and laboratory exersices students analyze technical solutions in the field of new techniques in food engineering, assess and propose operations and construction solutions taking into account the process conditions.	
Examination methods:		Test (written or computer based), Report, Presentation	

Subject name:		AI in learning and research	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	functionality and scope of various AI tools, including those for literature review, academic writing, data collection, analysis, and visualization, the ethical implications and potential limitations of using AI in research contexts	TN_K2_W02
Skills: (In terms of skills, the graduate can)	U1	effectively utilize AI tools for knowledge discovery, academic writing, and conducting literature reviews, collect, analyze, and visualize research data using AI-driven platforms and methods	TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	collaborate effectively in interdisciplinary teams that integrate AI into academic and professional research	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Artificial intelligence tools and their applications in academic research. Through hands-on laboratory exercises, students will explore practical methods for integrating AI into literature review, data analysis, and visualization to enhance learning outcomes.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Biotechnology for food innovations	ECTS: 5
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	biotechnological processes, scaling up bioprocesses and downstream processing, metabolic pathways and technology of alternative microbial origin nutrients and bioactive components like microbial proteins, lipids, amino acids, vitamins, dyes, bioactive polysaccharides and peptides, antioxidants, sugar substitutes, novel food of microbial origin and their potential in developing innovative food products	TN_K2_W01, TN_K2_W02, TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	plan a biotechnological process, conduct a culture aimed at obtaining a bioproduct and use it to formulate a new food product.	TN_K2_U01, TN_K2_U05, TN_K2_U06, TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	use biotechnological knowledge in food production.	TN_K2_K01, TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The principles of designing and implementing innovative biotechnological processes aimed at the synthesis of food ingredients of microbiological origin and formulation of novel food of microbial origin according to sustainable management of natural resources.	
Examination methods:		Written exam, Project	

Subject name:		Contemporary processing technologies and food analysis	ECTS: 6
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	modern and innovative technologies used in food analysis	TN_K2_W05
	W2	modern, advanced and unconventional technologies and tools in the use of production and improvement of quality and safety from plant or animal origin	TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	individually plan an innovative technological processing steps to produce food; describe, interpret and analyze the phenomena occurring in modern technological processes of plant/animal food production	TN_K2_U02
	U2	choose an appropriate analytical method and perform it to analyze food quality and safety	TN_K2_U01
Social competences: (Within the scope of competence, the graduate is ready to)	K1	produce and analyze food using modern, advanced technology with importance of social, professional and ethical responsibility	TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The student will know the specifics of the advanced processing technologies used in the food industry. The student will be familiar with advanced techniques for analyzing food of plant and animal origin.	
Examination methods:		Test (written or computer based), Report	

Subject name:		Global challenges of food production and distribution	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	the principles of operation of agri-food markets in the world, market mechanisms, and the role and impact of economic policy	TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	indicate the national and global agri-food market changes and their determinants	TN_K2_U03, TN_K2_U04
	U2	indicate the most important problems and challenges related to food production and distribution in the world	TN_K2_U03, TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	analyze agricultural and raw material markets and indicates the practical usefulness of the analysis	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		The economic and social principles of the functioning of agricultural commodity markets in the world and to be aware of the important problems and challenges related to the production and distribution of food in the world. Data analysis, case studies, and discussion will allow students to evaluate existing solutions suitable for the food economy practically and find the usefulness of various reports and analyses.	
Examination methods:		Written credit, Presentation, Assessment of activity during classes	

Subject name:		Intelectual Property Management	ECTS: 1
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	the essence and role of intellectual property management, as well as the principles of organizing intellectual property protection in the enterprise	TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	in-depth use of knowledge to manage intellectual property in the enterprise, taking into account economic and legal aspects in the field of intellectual property protection	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	self-expanding knowledge in the field of intellectual property management	TN_K2_K01
	K2	conscious use and management of intellectual property in the enterprise, bearing in mind the importance of social, ethical and professional responsibility for non-compliance with the law in the field of intellectual property protection	TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Intellectual property management strategies. Company secret. Protection of intellectual property at the international level. Internet domain protection. Database protection. Organizations for the collective management of copyright or related rights.	
Examination methods:		Presentation, Test (written or computer based)	

Subject name:		Food in culture and society	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	environmental, social and legal conditions determining the use of natural resources and the functioning and development of urban and rural areas, taking into account engineering activities	TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	describe and present their own completed research project in the form of a scientific paper with an abstract in English (at the B2+ level of the Common European Framework of Reference for Languages)	TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	systematic interdisciplinary updating of knowledge in the field of environmental protection by using various sources and has a desire to inspire other people in this regard	TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Food and social organisation – „ How Food Made History”. Symbolic value of food. Food in religion. Food taboos and their social functions. Food as a part of social rituals. The social functions of meal. Health concepts and food. Medicalization of food consumption. Perception of relations between food and health. Obesity vs. Hunger. Eating disorders and social order. Social stratification, body and food. Fashion and food in contemporary societies. Food during lifespan.Food and aesthetics. Food in TV and Media. Food and subcultures. Diets. Globalisation and industrialisation of food – changes in late modern societies. Changes in eating practices in contemporary societies. Course evaluation.	
Examination methods:		Written credit, Presentation	

Subject name:		Introduction to food antropology	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth degree, rules and organization methods of the production and chain of food supply in the context of cultural differences	TN_K2_W06
	W2	in-depth degree, economic, social, environmental, ethical, and legal conditions of food production and the principles of development of new products, distribution, and offering food to consumers, including basic concepts and principles in the field of protection of industrial property and copyright	TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	skilfully select sources of information, synthesize obtained data and draw conclusions, and perceive various conditions of professional issues related to the aspects of human nutrition, food production, food evaluation, consumer protection, quality and safety in the food chain as well as technological, ethical, economic and ecological aspects	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	conduct scientific research, perform various advanced tasks, formulate conclusions and opinions in the field of food production	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		The role of food in culture and the creation of cultural differences. The different ways of obtaining, producing and consuming food depending on the type of society, and the connections between food and symbolic and religious systems. The role of “typical dishes” and products in creating national identity in a given country and in the migration situation. The role of food in creating the image of a given group, food as intangible cultural heritage (including the UNESCO list).	
Examination methods:		Oral credit, Project	

Subject name:		Application of chemistry and biochemistry in food studies	ECTS: 5
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	possibilities of using bioactive ingredients from food industry waste products	TN_K2_W01, TN_K2_W04
	W2	possibilities and goals of modifying food ingredients	TN_K2_W03
Skills: (In terms of skills, the graduate can)	U1	plan and carry out biochemical modification of selected food ingredients	TN_K2_U01, TN_K2_U07
	U2	select appropriate chemical and biochemical methods to analyze changes occurring in modified food ingredients	TN_K2_U02, TN_K2_U05
Social competences: (Within the scope of competence, the graduate is ready to)	K1	formulate opinions in the topic of possibilities of using chemical and biochemical processes in food studies	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Biochemical modifications of food ingredients. Changes occurring in modified food ingredients.Waste products of food industry and possibilities of their modification.	
Examination methods:		Written exam, Report	

Subject name:		Comprehension in human nutrition	ECTS: 7
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	nutritional recommendations and guidelines, the role of public health nutrition strategies in improving global health outcomes, and the various types of studies in nutritional epidemiology, including randomized controlled trials, which contribute to evidence-based medicine and public health	TN_K2_W01, TN_K2_W07, TN_K2_W08
	W2	the role of nutrition in preventing diet-related diseases such as cardiovascular diseases, cancer, and cognitive decline, based on findings from meta-analyses, as well as global strategies to prevent malnutrition, promote successful aging, and enhance cognitive function and the relationship between diet and mental health	TN_K2_W07
	W3	the risks associated with food additives, flavorings, and chemical contaminants, and the strategies to reduce harmful exposure to these substances	TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	prepare, code, and manage nutrition data for analysis, including selecting and applying appropriate statistical tests, validate dietary assessment tools, such as food frequency questionnaires, and critically evaluate the methodologies and quality of scientific research in nutritional epidemiology	TN_K2_U01, TN_K2_U02, TN_K2_U04
	U2	conduct meta-analyses, systematic reviews, and survival analyses, while effectively controlling for confounding variables in public health nutrition studies as well as apply practical indicators for evaluating diet quality, perform holistic analyses using nutritional profiles, and assess interactions in nutrition research to generate comprehensive dietary recommendations	TN_K2_U02, TN_K2_U07
	U3	analyze and identify food additives and contaminants, estimate dietary exposure to harmful substances, and assess the implications of chemical migration from packaging materials on food safety	TN_K2_U01, TN_K2_U05, TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	engage with public health stakeholders, communicating research findings on diet quality, food safety, and nutrition strategies clearly and responsibly to promote health and well-being in diverse communities	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		The course combines theoretical knowledge and practical skills to explore the role of nutrition in global health. Topics include nutritional epidemiology, global dietary guidelines, strategies for preventing diet-related diseases, successful ageing and food safety.	
Examination methods:		Written exam, Report, Presentation	

Subject name:		Experiment planning	ECTS: 5
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	principles of experimental design and their application in food science and nutrition	TN_K2_W02
Skills: (In terms of skills, the graduate can)	U1	formulate research questions and hypotheses for food science experiments, design and conduct experiments using appropriate methodologies and tools, effectively communicate research findings through reports and presentations, apply experimental results to solve practical problems in food science and technology	TN_K2_U01, TN_K2_U02, TN_K2_U05
Social competences: (Within the scope of competence, the graduate is ready to)	K1	demonstrate responsibility and ethical awareness in planning and conducting experiments, develop critical thinking and problem-solving skills to address real-world challenges in food science and nutrition	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Theoretical and practical aspects of experimental planning, enabling students to design experiments, analyze data, and apply findings to solve real-world problems in food science and technology. Through lectures and laboratory exercises, students will develop skills in formulating hypotheses, selecting appropriate methodologies, and critically interpreting experimental results.	
Examination methods:		Test (written or computer based), Presentation, Assessment of activity during classes	

Subject name:		Food quality management system in the international trade	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	selected requirements of quality management systems on the international market	TN_K2_W06
Skills: (In terms of skills, the graduate can)	U1	design the procedures or other documents for the selected quality management system requirements for the case study plant	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	recognize the importance of information in professional life and cooperate with experts in the food sector's quality management field	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Quality management systems in the international trade of foods. Mandatory documentation of quality management systems, including the principles of its development.	
Examination methods:		Test (written or computer based), Project	

Subject name:		Nutrition and consumer policy	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	instruments/measures, and challenges faced by nutrition and consumer policy development at national, regional, and global levels, consumer rights in the field of consumer protection and education	TN_K2_W05, TN_K2_W06, TN_K2_W07
Skills: (In terms of skills, the graduate can)	U1	carry out the analysis regarding the food consumption, select sources of information referring to nutrition and consumer policy, effectively work in group	TN_K2_U03, TN_K2_U04, TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	critically analyse the information referring nutrition and consumer policy an can seek sources from experts	TN_K2_K01, TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Nutrition and consumer policy definitions, framework, and instruments. Consumer information and cancellation rights. Leadership and strategies system thinking in shifting consumption patterns towards sustainability and health. Case studies of unfair market practices in selected countries and regions.	
Examination methods:		Written credit, Presentation, Assessment of speeches during classes	

Subject name:		Seminar (food technology) 1	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth issues related to modern food technology, with particular emphasis on current trends	TN_K2_W02, TN_K2_W03, TN_K2_W04, TN_K2_W06, TN_K2_W07, TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	use international scientific and professional literature in the broadly understood field of food science	TN_K2_U03, TN_K2_U04
	U2	prepare and deliver reports and participate in discussions, using appropriate arguments, and taking into account different points of view in the discussion	TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	deepen continuously the acquired acquired knowledge and skills in the era of scientific and technological progress, as well as as well as be responsible for conducting professional activity	TN_K2_K01, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Developing proficiency in the preparation and delivery of presentations. Giving presentations on the presenter's chosen food processing-related subjects and participating in discussions.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Seminar (human nutrition) 1	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth discussion of issues related to modern nutrition, with particular emphasis on current trends	TN_K2_W04, TN_K2_W05, TN_K2_W06, TN_K2_W07, TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	use international scientific and professional literature in the broadly understood field of food science	TN_K2_U03, TN_K2_U04
	U2	prepare and deliver reports and participate in discussions, using appropriate arguments, and taking into account different points of view in the discussion	TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	deepen continuously the acquired acquired knowledge and skills in the era of scientific and technological progress, as well as as well as be responsible for conducting professional activity	TN_K2_K01, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Developing proficiency in the preparation and delivery of presentations. Giving presentations on the presenter's chosen food processing-related subjects and participating in discussions.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		English as a foreign language	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	vocabulary of the specialist language for the field of study	TN_K2_W01
Skills: (In terms of skills, the graduate can)	U1	describe phenomena, processes and procedures	TN_K2_U04
	U2	conduct correspondence and take notes	TN_K2_U04
	U3	give explanations, give reasons, express opinions or make plans	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	prepare and deliver presentations	TN_K2_K01, TN_K2_K02
	K2	conduct interviews and discussions	TN_K2_K01, TN_K2_K02
	K3	communicate correctly in most situations of professional life using specialised linguistic resources	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Effective use of a foreign language in the field of study in the four skills (listening, speaking, writing and reading) in professional and scientific communication. Lexical functions: development and correct use of specialised linguistic resources. Practising oral and written communication.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		German as a foreign language	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	vocabulary of the specialist language for the field of study	TN_K2_W01
Skills: (In terms of skills, the graduate can)	U1	describe phenomena, processes and procedures	TN_K2_U04
	U2	conduct correspondence and take notes	TN_K2_U04
	U3	give explanations, give reasons, express opinions or make plans	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	prepare and deliver presentations	TN_K2_K01, TN_K2_K02
	K2	conducting interviews and discussions	TN_K2_K01, TN_K2_K02
	K3	communicate correctly in most situations of professional life using specialised linguistic resources	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Effective use of a foreign language in the field of study in the four skills (listening, speaking, writing and reading) in professional and scientific communication. Lexical functions: development and correct use of specialised linguistic resources. Practising oral and written communication.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Russian as a foreign language	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	vocabulary of the specialist language for the field of study	TN_K2_W01
Skills: (In terms of skills, the graduate can)	U1	describe phenomena, processes and procedures	TN_K2_U04
	U2	conduct correspondence and take notes	TN_K2_U04
	U3	give explanations, give reasons, express opinions or make plans	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	prepare and deliver presentations	TN_K2_K01, TN_K2_K02
	K2	conduct interviews and discussions	TN_K2_K01, TN_K2_K02
	K3	communicate correctly in most situations of professional life using specialised linguistic resources	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Effective use of a foreign language in field of study in the four skills (listening, speaking, writing and reading) in professional and scientific communication. Lexical functions: development and correct use of specialised linguistic resources. Practising oral and written communication.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Les aromes et ses ingrédients secrets	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	mechanism of operation of the sense of smell, body's reactions to smell, classification of chemical substances that create a smell, influence of chemical structure on the perceived sensory impression, the role of smell in food production, cosmetic products, aromatherapy, essential pathways of synthesis of aroma compounds in food by enzymatic and chemical transformations, methods of isolating and analyzing aroma compounds	TN_K2_W01, TN_K2_W03
Skills: (In terms of skills, the graduate can)	U1	name groups of compounds characterized by volatility and influencing the sensory impression, assess the quality of food in terms of its sensory characteristics, predict the types of compounds formed from precursors that are food ingredients, isolate an aroma compound and perform a quantitative analysis, express and convert the concentration of aroma compounds in ppm and ppb.	TN_K2_U01, TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	use the acquired knowledge in professional life and deepen competencies related to knowledge of a foreign language and its practical use	TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Specificity of scent compounds in the context of possible ways of obtaining them, the relationship between structure and sensory features, basic methods of synthesis and biosynthesis of fragrance compounds, and specific instrumental techniques used to study these compounds.	
Examination methods:		Test (written or computer based), Report	

Subject name:		Spanish as a foreign language	ECTS: 4
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	vocabulary of the specialist language for the field of study	TN_K2_W01
Skills: (In terms of skills, the graduate can)	U1	describe phenomena, processes and procedures	TN_K2_U04
	U2	conduct correspondence and take notes	TN_K2_U04
	U3	give explanations, give reasons, express opinions, make plans	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	prepare and deliver presentations	TN_K2_K01, TN_K2_K02
	K2	conduct interviews and discussions	TN_K2_K01, TN_K2_K02
	K3	communicate correctly in most situations of professional life using specialised linguistic resources	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Effective use of a foreign language in the field of study in the four skills (listening, speaking, writing and reading) in professional and scientific communication. Lexical functions: development and correct use of specialised linguistic resources. Practising oral and written communication.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Gastronomy and nutrition practice	ECTS: 8
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	culinary processing, cooking techniques, food sourcing, flavor profiles, and food pairings	TN_K2_W01, TN_K2_W02, TN_K2_W03
	W2	nutrition basics, including role of macronutrients and micronutrients in diet planning, dietary guidelines, population needs, and special diets like vegetarian, vegan, gluten-free, and allergen-friendly	TN_K2_W07
Skills: (In terms of skills, the graduate can)	U1	culinary prepare and present, emphasizing balancing creativity and efficiency in kitchen operations	TN_K2_U02
	U2	apply principles of nutritional assessment in meal planning and food preparation	TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	develop communication skills, teamwork and customer or patient service	TN_K2_K01, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Students are required to compare their theoretical knowledge with practical experience and evaluate their performance in catering and nutritional facilities. Additionally, the coordinator will verify the premises through the National Official Business Register (REGON), ensuring their suitability through verification of activities performed.	
Examination methods:		Report	

Subject name:		Technological and laboratory practice	ECTS: 8
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	type of services provided by the company or laboratory as well as the tasks and specific activities of its individual departments	TN_K2_W06
	W2	characteristics, storage conditions and characteristics of food quality and safety (raw materials and products) and the principles of operation of food quality and safety assurance systems	TN_K2_W06
	W3	basic technological processes used in the production of the main product ranges and the methods of controlling their quality and safety	TN_K2_W04, TN_K2_W06
	W4	machine equipment of production lines: construction and operating principles of machines and devices or laboratory equipment of food research	TN_K2_W02
	W5	principles of waste management and reagent management in the laboratory	TN_K2_W06
	W6	formal and informal methods of serving the enterprise's customer and the types and circulation of documents	TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	describe the structure of the plant and the organization of work in the plant	TN_K2_U04
	U2	describe the support and service departments of an industrial plant or laboratory dealing with food research and list their tasks	TN_K2_U03
	U3	critically analyze solutions existing in the workplace, related to processing, quality assessment and management	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	recognize the deep importance of knowledge in professional life, critically analyze the resources he/she has and search for its sources among experts	TN_K2_K01, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The practical use of theoretical knowledge acquired during studies. Practical experience in an area consistent with the field of study, including experience in performing professional duties.	
Examination methods:		Report	

Subject name:		Career paths	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	the perspectives of career in the area of food technology, nutrition and related	TN_K2_W09
Skills: (In terms of skills, the graduate can)	U1	select information sources, draw conclusions and indicate the conditions applying for a job and creating own career life	TN_K2_U08
Social competences: (Within the scope of competence, the graduate is ready to)	K1	use personal potential to plan professional life and build teamwork	TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Discussion of options for finding a job after graduation. Presentation of various career paths and discussion of their specific examples. Awareness of the consequences of various career decisions.	
Examination methods:		Essay, Presentation, Assessment of speeches during classes	

Subject name:		Challenges management in food industry	ECTS: 5
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	problems and potential crisis situations in the food industry and ways to solve them	TN_K2_W05, TN_K2_W06
Skills: (In terms of skills, the graduate can)	U1	identify problems and potential crisis situations in the food industry and propose solutions to them	TN_K2_U03, TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	solve practical problems occurring in the food industry as part of teamwork	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		The concepts of crisis management and problem resolution within the food industry, focusing on practical methods for addressing challenging situations. The characterization and analysis of current threats across various food industry sectors (meat, dairy, fruit and vegetable, grain, fat, and food concentrates), ensuring a comprehensive understanding of sector-specific risks. Evaluating quality management systems in response to crises, providing participants with the skills to identify root causes and implement effective solutions.	
Examination methods:		Written credit, Report, Project	

Subject name:		Food technologists at work	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	characteristics and specificity of selected raw materials and products of animal and plant origin; stages of most important technologies used in contemporary food processing	TN_K2_W03
Skills: (In terms of skills, the graduate can)	U1	use appropriate technologies and exploit their potential in the production of plant and animal origin food	TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	the use of knowledge about selected raw materials and technological processes in obtaining products of animal and plant origin	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Assessment of the possibility of using appropriate technology to obtain a specific group of products. Ability to select appropriate methods for food analysis and/or evaluation.	
Examination methods:		Report, Test (written or computer based)	

Subject name:		Introduction to writing a diploma thesis	ECTS: 1
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	information about writing a master thesis	TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	search for literature on a specific topic	TN_K2_U08
Social competences: (Within the scope of competence, the graduate is ready to)	K1	prepare scientific papers, such as a diploma thesis, in cooperation with the supervisor	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		The course content about writing the diploma thesis, explaining possible types of master's theses, how avoid plagiarism during wring thesis will be necessary to achie the learning outcomes. Additionally, students will be using databases for searching scientific publications, as well as using AI in literature searching.	
Examination methods:		Project	

Subject name:		Nutrition education	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	primary causes of unhealthy food choices and habbits, and methods for preventing them	TN_K2_W07
Skills: (In terms of skills, the graduate can)	U1	find, analyze, interpret and use the information needed to plan and conduct nutrition education	TN_K2_U04
	U2	select the healthy food products that meet the nutritional needs of various consumer groups	TN_K2_U04
	U3	provide knowledge about healthy food choices and their consequences using various education materials	TN_K2_U04
	U4	work in team, taking different roles in a team	TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	establish relationships with different groups of consumers and influence their healthy food choices	TN_K2_K03
	K2	update the knowledge in the field of food and nutrition with the critical attitude to available information	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Selection of healthy food products available on the market dedicated to various groups of consumers and meeting their needs according to the scientific literature analysis. Ability to propose and prepare nutrition education to increase the consumption of chosen healthy foods, using various forms of education, didactic methods and materials.	
Examination methods:		Written exam, Project	

Subject name:		Seminar (food technology) 2	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth issues related to knowledge of food technology and the scope of the diploma thesis, as well as methods that can be used to verify identified scientific and professional problems	TN_K2_W01, TN_K2_W03, TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	use international scientific and professional literature on the subject of the thesis, prepare and deliver papers, and then discuss the issues presented in a committed manner, using appropriate argumentation	TN_K2_U04, TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	deepen continuously the acquired acquired knowledge and skills in the era of scientific and technological progress, as well as ethical conduct of scientific research	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Preparation of presentations regarding the thesis outline, literature review and research methods within the selected thesis, active participation in the discussion.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Seminar (human nutrition) 2	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth issues related to knowledge of human nutrition and the scope of the diploma thesis, as well as methods that can be used to verify identified scientific and professional problems	TN_K2_W04, TN_K2_W05, TN_K2_W07
Skills: (In terms of skills, the graduate can)	U1	use international scientific and professional literature on the subject of the thesis, prepare and deliver papers, and then discuss the issues presented in a committed manner, using appropriate argumentation	TN_K2_U04, TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	deepen continuously the acquired acquired knowledge and skills in the era of scientific and technological progress, as well as ethical conduct of scientific research	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Preparation of presentations regarding the thesis outline, literature review and research methods within the selected thesis, active participation in the discussion.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Valorisation des déchets de l'industrie agroalimentaire par des procédés de ferment	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	composition and value of waste, ways of using different groups of microorganisms in waste valorization processes	TN_K2_W01
	W2	methods of improving conventional technological processes with waste valorization technologies	TN_K2_W02, TN_K2_W03
	W3	current problems discussed in scientific literature concerning waste valorization in fermentation processes	TN_K2_W01
Skills: (In terms of skills, the graduate can)	U1	analyze the relationship between biochemical phenomena occurring in microbial cells and use them in developing waste valorization processes	TN_K2_U03
	U2	select the right raw material, biological material and technology for valorization of food industry waste	TN_K2_U01, TN_K2_U03
Social competences: (Within the scope of competence, the graduate is ready to)	K1	use knowledge on waste valorization by fermentation processes to solve professional problems, including consultations and seeking specialist opinions	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Characterization of food industry waste and understanding of fermentation processes in terms of the use of microorganisms in valorization and development of the circular economy trend.	
Examination methods:		Test (written or computer based), Presentation	

Subject name:		Nutritional research project laboratory	ECTS: 8
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	methodology used to carry out research experiments in order to solve a defined research problem and statistical analysis of results and the principles of the techniques used	TN_K2_W02, TN_K2_W04, TN_K2_W06, TN_K2_W07
Skills: (In terms of skills, the graduate can)	U1	correctly select and use appropriate research procedures and techniques as well as statistical analyses to solve a specific research problem	TN_K2_U01, TN_K2_U02, TN_K2_U04, TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	properly adapt the methodology in research practice and is ready to learn new solutions	TN_K2_K01, TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The classes are designed to deepen the student's knowledge and practical skills in the field of safety, organization, planning and implementation of experimental work in a research laboratory as part of a diploma thesis. Using the example of the topic of their own diploma thesis, the student, supported by the supervisor, develops, optimizes and checks the correct operation of analytical procedures, learns to operate and interpret scientific and research equipment used during the implementation of the diploma thesis. The classes also cover other practical elements specific to the given topic of the diploma thesis, the mastery of which is necessary for the proper conduct of the planned research.	
Examination methods:		Assessment of work in the laboratory	

Subject name:		Technological research project laboratory	ECTS: 8
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	methodology used to carry out research experiments in order to solve a defined research problem and statistical analysis of results and the principles of operation of the techniques used	TN_K2_W02, TN_K2_W04, TN_K2_W06
Skills: (In terms of skills, the graduate can)	U1	correctly select and use appropriate research procedures and techniques as well as statistical analyses to solve a specific research problem	TN_K2_U01, TN_K2_U02, TN_K2_U04, TN_K2_U05
Social competences: (Within the scope of competence, the graduate is ready to)	K1	properly adapt the methodology in research practice and is ready to learn new solutions	TN_K2_K01, TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The classes are designed to deepen the student's knowledge and practical skills in the field of safety, organization, planning and implementation of experimental work in a research laboratory as part of a diploma thesis. Using the example of the topic of their own diploma thesis, the student, supported by the supervisor, develops, optimizes and checks the correct operation of analytical procedures, learns to operate and interpret scientific and research equipment used during the implementation of the diploma thesis. The classes also cover other practical elements specific to the given topic of the diploma thesis, the mastery of which is necessary for the proper conduct of the planned research.	
Examination methods:		Assessment of work in the laboratory	

Subject name:		Applied statistics	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	data acquisition, ordering and aggregation	TN_K2_W04, TN_K2_W09
	W2	Six Sigma method as a type of statistical analysis for quality	TN_K2_W05, TN_K2_W09
Skills: (In terms of skills, the graduate can)	U1	select tools and methods of statistical analysis to the nature of the data and research postulates, interprets their results knows how to estimate and make inferences based on the analysis of representative data	TN_K2_U01, TN_K2_U02, TN_K2_U05
	U2	estimate and make inferences based on the analysis of representative data	TN_K2_U01, TN_K2_U02, TN_K2_U05
	U3	use software based on advanced databases and has the ability to use advanced statistical software	TN_K2_U01, TN_K2_U02, TN_K2_U05
Social competences: (Within the scope of competence, the graduate is ready to)	K1	conducting empirical research, formulating conclusions while being aware of the possible errors that accompany such research.	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		The way to obtain, organise and analyse data using computer programmes. The most commonly used statistical methods such as regression analysis, analysis of variance, as well as advanced ways of analysing data using multivariate analysis to support decision-making.	
Examination methods:		Test (written or computer based), Report	

Subject name:		Auditor of food quality management system	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	internal audit process in accordance with the ISO 19011 standard	TN_K2_W05
Skills: (In terms of skills, the graduate can)	U1	plan, conduct and document an internal audit in a food sector establishment	TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	prepare, conduct and document the audit aa internal auditor of quality management systems in the food sector	TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Internal audit process in accordance with the ISO 19011 standard. The student will be able to prepare, conduct and document the audit process in a food plant in an in-depth way.	
Examination methods:		Test (written or computer based), Project	

Subject name:		Biopolymers for food packaging	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	division and characteristics of biopolymers used for the production of biodegradable including edible packaging	TN_K2_W03
	W2	basic methods for obtaining biopolymers used for food packaging production	TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	select information sources and draw conclusions, as well as understand the technological and ecological conditions for the production and application of biopolymers in food packaging	TN_K2_U04, TN_K2_U06
	U2	work in the team in the preparation and implementation of a project	TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	acquiring knowledge and researching different biopolymers using for packaging production for food applications	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Fundamentals of knowledge about natural and biodegradable polymers used in the production of food packaging. Application of different biopolymers as packaging materials for food products.	
Examination methods:		Test (written or computer based), Report	

Subject name:		Carcinogens and anticarcinogens in food	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	chemical carcinogens present in food and physical factors potentially responsible for carcinogenesis, the chemical structures of carcinogens and their occurrence, how they are formed during food processing and industrial processes, the classification of carcinogens according to different international organisations, the metabolism of selected carcinogens; the student can indicate dietary anticancerogenic compounds and their mode of action using specialised English vocabulary in food technology and nutrition at the level B2+	TN_K2_W01, TN_K2_W03, TN_K2_W05
Skills: (In terms of skills, the graduate can)	U1	search for relevant scientific data, use specialized scientific vocabulary in the field of food technology and nutrition and correctly and freely express their thoughts in writing and/or orally using the English language	TN_K2_U04, TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	recognise the relevance of information in professional life, examine it critically, and seek sources from specialists and appropriate literature	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Fundamental knowledge of the names, chemical structures, classification and origin of carcinogens in various food products. Examples of anti-carcinogens and food products containing them.	
Examination methods:		Test (written or computer based), Presentation	

Subject name:		Chemistry and raw materials transformation	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	structure and properties of biomolecules in various types of waste raw materials and knows the possibilities of chemical and enzymatic modification to obtain specific properties useful in food technology	TN_K2_W01, TN_K2_W03, TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	designs a process of waste raw material valorization in food production in accordance with the principles of circular economy and the goals of sustainable development	TN_K2_U01, TN_K2_U03, TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	paln and conduct experiments and conclude on the results by working in a team	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		The course expands knowledge of the valorization of waste raw materials in food production. Students will work in a team to design this process following the principles of circular economy and the goals of sustainable development based on the structure and properties of biomolecules present in selected raw materials.	
Examination methods:		Test (written or computer based), Presentation	

Subject name:		Circular design for food	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth issues of the principles of the circular economy in food production for positive environmental outcomes, this includes understanding circular food design, future food innovations, and their role in sustainable food production, as well as the eco-design of packaging and sustainable packaging practices	TN_K2_W03, TN_K2_W04
	W2	in-depth issues of innovative food production methods that reduce carbon footprint and food waste	TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	select information sources and draw conclusions, as well as understand the technological and ecological conditions of sustainable food production	TN_K2_U04, TN_K2_U06
	U2	work in team in the preparation and implementation of a project	TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	recognize the importance of acquiring knowledge and researching circular solutions in food production to incorporate environmental aspects into future food design	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Fundamentals of knowledge in the field of circular solutions for food design as a tool in the product and service sectors. Goals of increasing sustainability and reducing negative environmental impact at the product design stage.	
Examination methods:		Test (written or computer based), Presentation	

Subject name:		Energy for human	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	principal energy source on the earth	TN_K2_W02
	W2	conversion of energies to useable energy e.g. heat or electricity	TN_K2_W02
Skills: (In terms of skills, the graduate can)	U1	conduct calculations related to energy changes	TN_K2_U01, TN_K2_U02
	U2	construct small energy source	TN_K2_U01, TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	consider and understand various statements and opinions of team members, and apply them to the future action	TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Chemical characteristics of various energy sources, e.g. hydrocarbons, systems for their conversion (e.g. combustion) into usable energy and solar radiation as an energy source. Solar energy as a source of usable energy, principles of mass-to-energy conversion.	
Examination methods:		Written credit, Report	

Subject name:		Food quality supervision methods	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	issues about the complex impact of determinants of food quality and health safety from primary production to food consumption	TN_K2_W02, TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	plan an experiment to compare modern and traditional diagnostic methods	TN_K2_U01
	U2	critically discuss scientific data in the field of modern diagnostic methods, identify the problem, search the solution	TN_K2_U03
Social competences: (Within the scope of competence, the graduate is ready to)	K1	recognize the importance of knowledge in professional life, analyse it critically and seek sources from experts, act creatively and cooperate and work in a group, taking on different roles	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Deepen knowledge about food quality assurance, with particular emphasis on factors that determine the quality of the finished product. The ability to analyse the importance of these factors in the entire food chain by lectures involving. As part of practical activity, solving a case study leading to prepare a solution to the problem of ensuring food quality in the report form.	
Examination methods:		Essay, Report	

Subject name:		Fried food	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	characteristics of selected raw materials used to obtain fried food and the technology of its production, methods and techniques of analysis of fried food, influence of raw materials and technological factors on the quality of fried food, and its influence on human health	TN_K2_W01, TN_K2_W03, TN_K2_W04, TN_K2_W05, TN_K2_W06
Skills: (In terms of skills, the graduate can)	U1	apply appropriate research methods to assess the quality of fried products and propose technologies for manufacturing fried products, select appropriate raw materials and additives that improve the quality of fried products	TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	use of acquired knowledge about selected raw materials, production technologies and design of fried food	TN_K2_K01, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The knowledge of the fried food market, production technologies, and the processes occurring during frying to develop an understanding of industry practices and underlying mechanisms. Methods for assessing the quality and safety of fried food and frying oils, ensuring compliance with standards and practical analytical skills. Technologies to improve the quality and safety of fried products.	
Examination methods:		Test (written or computer based), Report	

Subject name:		Fungi in food technology	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	the lists of fungi useful in food biotechnology and food production, the mechanisms of the selected metabolites overproduction on cellular level and by the regulation of processing conditions, the use of fungal metabolites and their role in food production	TN_K2_W01, TN_K2_W02, TN_K2_W06
Skills: (In terms of skills, the graduate can)	U1	carry out the process of obtaining selected biotechnological products with the use of fungi, select data, interpret the results of determinations important in processes involving fungi, formulate conclusions	TN_K2_U04, TN_K2_U06, TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	critical analysis of data on the use of microscopic and macroscopic fungi in food technology, including those related to the role of fungi, health risks resulting from their use in food production	TN_K2_K01, TN_K2_K02
Course content ensuring the achievement of learning outcomes:		Advanced fungal diagnostics. Legal regulations regarding the use of edible fungi in the food industry. Mushrooms as a raw material for food processing. Health risk. Mushroom cultivation technology. Use of microscopic fungi in traditional and innovative food products. Metabolites of filamentous fungi. Regulation of biochemical pathways leading to overproduction of desired metabolites, industrial-level cultivation strategies, isolation and purification of fungal metabolites. Use of fungal metabolites as technological additives, nutrients, excipients, packaging materials and as dietary supplements.	
Examination methods:		Written credit, Presentation, Assessment of speeches during classes	

Subject name:		Innovative food and food additives based on microorganisms	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	indicates products with the presence of live microflora, understands the role of these microorganisms in shaping the sensory, health and quality characteristics of food as well as understands the risks associated with their presence, lists biotechnologically obtained food sources and additives, and understands how they are manufactured (e.g. microbiological protein, microbiological fat, vitamins, polysaccharides) and how innovative food products can be developed thanks to them	TN_K2_W01, TN_K2_W03, TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	designing innovative food products based on the use of microorganisms and their metabolites for modifying food composition, recipes, technological processes while respecting sustainability and developing a circular economy	TN_K2_U01, TN_K2_U02, TN_K2_U03, TN_K2_U04, TN_K2_U06, TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	properly and effectively perform professional tasks involving the design or modification of food products with microorganisms and/or their metabolites	TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Technology production of food containing live, technologically or nutritionally necessary microflora. The role of microorganisms in shaping food characteristics. Microbial metabolites in shaping food safety (e.g. bacteriocins, packaging based on polymers produced by microorganisms, phages and their enzymes). Production of microbial protein and fat and other selected metabolites of bacteria, molds and yeasts in food production (e.g. enzymes, antioxidants, stabilizers, emulsifiers, organic acids, dyes and sweeteners). Use of microbial metabolites in designing innovative food.	
Examination methods:		Written credit, Project, Presentation, Assessment of speeches during classes	

Subject name:		Lactic acid bacteria in food production	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	properties and genetics of lactic acid bacteria	TN_K2_W03
	W2	application of lactic acid bacteria in various food industry sectors	TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	define and provide examples of probiotics, prebiotics, synbiotics, starter cultures, and protective cultures as well as elaborate on the mechanisms by which lactic acid bacteria influence human health	TN_K2_U01
Course content ensuring the achievement of learning outcomes:		The necessary for the food industry knowledge and skills in using lactic acid bacteria in production processes. The properties and genetics of lactic acid bacteria and their application in various sectors of the food industry. Examples of probiotics, prebiotics, synbiotics, starter cultures, and protective cultures, discussing the mechanisms of the impact of lactic acid bacteria on human health. Deepen knowledge and skills in the analysis and application of lactic acid bacteria in food production.	
Examination methods:		Written credit, Presentation	

Subject name:		Microbiological diagnostic methods in the food industry	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth classical and modern microbiological diagnostic methods used in the food industry to assess the quality, safety of food products and the food production environment	TN_K2_W02, TN_K2_W05
Skills: (In terms of skills, the graduate can)	U1	plan the scope of microbiological tests and apply appropriate diagnostic methods to identify and count microorganisms in the food industry and assess the microbiological quality of raw materials, semi-finished products, the product and the production environment, etc. based on the obtained test results	TN_K2_U01, TN_K2_U02, TN_K2_U04, TN_K2_U05, TN_K2_U06, TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	continuous self-education and correct use of microbiological diagnostic methods to assess the level of hygiene and microbiological safety in the food industry and to properly interpret test results	TN_K2_K01, TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Microbiological criteria of the hygiene of the technological process and the food products. Selected phenotypic and genotypic diagnostic methods will be presented, taking into account the latest solutions used in laboratory and industrial practice for microorganisms analysis occurring in the food and feed production chain. Ability to design microbiological analyses taking into account the applicable requirements and to practically use selected microbiological diagnostic techniques.	
Examination methods:		Written credit, Report	

Subject name:		Plant-based stimulant and psychoactive substances	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	plant species generating stimulant and psychoactive compounds, the chemical structure and classification of stimulant and psychoactive compounds, their role in plant metabolism and their influence on the human body, the application of the stimulant and psychoactive substances in medicine and cultural practices, their toxicity and side effects, legal regulations regarding the cultivation of plants containing psychoactive substances, synthetic analogues of naturally occurring stimulant and psychoactive substances	TN_K2_W01, TN_K2_W03, TN_K2_W05
Skills: (In terms of skills, the graduate can)	U1	search for relevant scientific data, use specialized scientific vocabulary in the field of food technology and nutrition and correctly and freely express their thoughts in writing and/or orally using the English language	TN_K2_U04, TN_K2_U06
Social competences: (Within the scope of competence, the graduate is ready to)	K1	recognise the relevance of information in professional life, examine it critically, and seek sources from specialists and appropriate literature	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Fundamental knowledge on plant materials that serve as sources of compounds possessing psychotropic and stimulating effects.	
Examination methods:		Test (written or computer based), Assessment of speeches during classes	

Subject name:		Practical cases of use of peculiar chemicals: murder, addiction, doping or healing	ECTS: 3
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	beneficial and adverse action of chemicals that might be extracted from plants and might be content in foodstuffs	TN_K2_W01
Skills: (In terms of skills, the graduate can)	U1	evaluate qualitatively and quantitatively the effects of different substances on the human body	TN_K2_U01, TN_K2_U04
Course content ensuring the achievement of learning outcomes:		Chemical properties of various chemical substances used in practice in the past to achieve various effects on the human body, including causing human death. Presenting the doses and methods of applying lethal substances based on real events that took place in the past.	
Examination methods:		Written credit, Report	

Subject name:		Probiotic food and microbiome	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	composition of the human microbiota, with particular emphasis on probiotic bacteria	TN_K2_W01, TN_K2_W05
	W2	impact of diet on the composition of the gastrointestinal microbiota food of human	TN_K2_W05
Skills: (In terms of skills, the graduate can)	U1	search and analyze information from various sources regarding probiotics, microbiome and health	TN_K2_U04
	U2	design and conduct experiments related to the use of probiotic bacteria in food production	TN_K2_U01, TN_K2_U02
Social competences: (Within the scope of competence, the graduate is ready to)	K1	plan and conduct scientific research, formulate conclusions and opinions in the field of food microbiology and human health	TN_K2_K02
	K2	understand the importance of transferring knowledge about proper human nutrition and the social consequences of nutritional errors	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		The concept of biotics and microbiome in shaping human health. Skills in operating laboratory equipment during diagnostic tests and microbiological analyses of probiotic food, and will also allow for the interpretation and verification of test results.	
Examination methods:		Written credit, Project, Report	

Subject name:		Vegan trends in milk and meat technology	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	production structures and consumption and for dairy and meat products and their vegan alternatives, characteristics of raw materials and technologies employed in the production of vegan substitutes for dairy and meat products, the influence of raw materials and technologies on the quality attributes of vegan products (including their nutritional value, sensory properties, safety, and shelf life), the principles and requirements for naming and labelling dairy and meat substitute products	TN_K2_W01, TN_K2_W03, TN_K2_W04
Skills: (In terms of skills, the graduate can)	U1	effectively communicate and express thoughts, both in writing and orally, in technical English, and also prepare a project and/or presentation in this language, accurately using specialized scientific vocabulary relevant to the subject of classes	TN_K2_U06
	U2	work in a team	TN_K2_U07
Social competences: (Within the scope of competence, the graduate is ready to)	K1	enhance foreign language competencies for their practical use in professional life, and recognize the need for training in professional life given the ongoing advancements in knowledge and technology within the field of food processing	TN_K2_K01, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		Background on shifts in consumption habits (towards reducing the consumption of animal-origin products) and their influence on the food market. Main raw materials utilized in the production of vegan meat and dairy substitutes. Technologies/methods of processing non-animal raw materials employed to imitate the characteristics of animal-origin products. Differences in selected quality attributes between meat/dairy products and their vegan counterparts. Principles of naming and labelling vegan products (legal regulations).	
Examination methods:		Written credit, Presentation	

Subject name:		Seminar (food technology) 3	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth research issues in the field of modern food technology	TN_K2_W03, TN_K2_W04, TN_K2_W05, TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	make in-depth use of international scientific and professional literature in the field of their research, as well as take an active part in discussions, using appropriate arguments, and taking into account different perspectives on professional development	TN_K2_U05, TN_K2_U06, TN_K2_U07, TN_K2_U08
Social competences: (Within the scope of competence, the graduate is ready to)	K1	developing professional achievements and maintaining the ethos of the profession and the social responsibility for conducting professional activity	TN_K2_K02, TN_K2_K03
	K2	deepen continuously the acquired acquired knowledge and skills in the era of scientific and technological progress	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Preparation of an extensive presentation of the obtained results and a synthetic presentation of the diploma thesis, active participation in the discussion.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Seminar (human nutrition) 3	ECTS: 2
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth research issues in the field of modern human nutrition	TN_K2_W04, TN_K2_W05, TN_K2_W07, TN_K2_W08
Skills: (In terms of skills, the graduate can)	U1	make in-depth use of international scientific and professional literature in the field of their research, as well as take an active part in discussions, using appropriate arguments, and taking into account different perspectives on professional development	TN_K2_U05, TN_K2_U06, TN_K2_U07, TN_K2_U08
Social competences: (Within the scope of competence, the graduate is ready to)	K1	developing professional achievements and maintaining the ethos of the profession and the social responsibility for conducting professional activity	TN_K2_K02, TN_K2_K03
	K2	deepen continuously the acquired acquired knowledge and skills in the era of scientific and technological progress	TN_K2_K01
Course content ensuring the achievement of learning outcomes:		Preparation of an extensive presentation of the obtained results and a synthetic presentation of the diploma thesis, active participation in the discussion.	
Examination methods:		Presentation, Assessment of activity during classes	

Subject name:		Master thesis 1	ECTS: 20
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth theoretical issues related wit the prepared master's thesis and the methodology used during the implementation of research experiments in order to solve a defined research problem and statistical analysis of the results; understands copyright and the possibility of patent protection of the obtained solution if it concerns the state of the art	TN_K2_W01, TN_K2_W02, TN_K2_W03, TN_K2_W04, TN_K2_W05, TN_K2_W06, TN_K2_W07
Skills: (In terms of skills, the graduate can)	U1	properly select sources of literature and conduct a synthetic review of literature concerning a specific research topic and develop a research concept and plan, define the research objective and research hypothesis, correctly applying the appropriate research methodology to achieve the assumed research objective, performs a statistical analysis of the obtained results, discusses the results, formulates conclusions and statements	TN_K2_U01, TN_K2_U02, TN_K2_U03, TN_K2_U04, TN_K2_U05
	U2	prepare a written work in the form of a master's thesis using correct language and correctly edits the work in accordance with the guidelines for diploma thesis	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	continuously deepen knowledge and skills related to professional life and to search for reliable sources of knowledge in the era of digital civilization and is engaged in reliable preparation of a diploma thesis and is ready to conduct research work	TN_K2_K01, TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The student is to complete an empirical master's thesis based on their own scientific research in the form of a technological experiment, laboratory research, survey research or meta-analysis, i.e. a statistical analysis of a systematic review of available publications. The purpose of conducting their own research is to deepen the student's knowledge and skills in the scope of a selected topic related to the scientific discipline of food and nutrition technology, to teach them to develop and implement a research plan using appropriate scientific research equipment, survey tools or statistical tools that enable a systematic review and meta-analysis in accordance with the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), which include a minimum set of elements necessary for the proper conduct of systematic reviews and meta-analyses. Each graduate, under the substantive supervision of the thesis supervisor and according to an individual work schedule, defines the research objective and research hypothesis, prepares a review of the literature on the subject matter related to the thesis topic, a methodological description of the research and its statistical analysis, discusses the obtained results and observed relationships, discusses the results with available literature data and formulates statements and conclusions.	
Examination methods:		Report	

Subject name:		Master thesis 2	ECTS: 20
Effects:		The content of the effect assigned to the subject:	Directional effect reference:
Knowledge: (In terms of knowledge, the graduate knows and understands)	W1	in-depth theoretical issues related to the prepared master's thesis, the methodology used to implement research experiments to solve a defined research problem, and statistics analysis of the results, understands and respects the copyright	TN_K2_W01, TN_K2_W02, TN_K2_W03, TN_K2_W04, TN_K2_W05, TN_K2_W06, TN_K2_W07
Skills: (In terms of skills, the graduate can)	U1	properly select sources of literature and conduct a synthetic review of the literature concerning a specific research topic; develop a research concept and plan, define the research objective, and research hypothesis, correctly applying the appropriate research methodology to achieve the assumed research objective; perform a statistical analysis of the obtained results; discuss the results, formulate statements and conclusions	TN_K2_U01, TN_K2_U02, TN_K2_U03, TN_K2_U04, TN_K2_U05
	U2	prepare a written work in the form of a master's thesis using correct language and correctly edit the work according to the guidelines for diploma thesis,	TN_K2_U04
Social competences: (Within the scope of competence, the graduate is ready to)	K1	continuously deepen knowledge and skills related to professional life and to search for reliable sources of knowledge in the era of digital civilization; is engaged in reliable preparation of a diploma thesis and is ready to conduct research work.	TN_K2_K01, TN_K2_K02, TN_K2_K03
Course content ensuring the achievement of learning outcomes:		The student is to complete an empirical master's thesis based on their own scientific research in the form of a technological experiment, laboratory research, survey research or meta-analysis, i.e. a statistical analysis of a systematic review of available publications. The purpose of conducting their own research is to deepen the student's knowledge and skills in the scope of a selected topic related to the scientific discipline of food and nutrition technology, to teach them to develop and implement a research plan using appropriate scientific research equipment, survey tools or statistical tools that enable a systematic review and meta-analysis in accordance with the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), which include a minimum set of elements necessary for the proper conduct of systematic reviews and meta-analyses. Each graduate, under the substantive supervision of the thesis supervisor and according to an individual work schedule, defines the research objective and research hypothesis, prepares a review of the literature on the subject matter related to the thesis topic, a methodological description of the research and its statistical analysis, discusses the obtained results and observed relationships, discusses the results with available literature data and formulates statements and conclusions.	
Examination methods:		Report	

Programme indicators

Name	Value
Potwierdzenie – na podstawie planu studiów, że student realizuje zajęcia z dziedziny nauk humanistycznych i/lub społecznych, którym przypisano nie mniej niż 5 punktów ECTS	9
Potwierdzenie – na podstawie planu studiów, że student ma możliwość wyboru zajęć, którym łącznie przypisano liczbę punktów ECTS nie niższą niż 30% ECTS określonych dla programu tych studiów	58/120 (48.33%)
Potwierdzenie, że program studiów o profilu ogólnoakademickim obejmuje zajęcia związane z prowadzoną w uczelni działalnością naukową, w wymiarze większym niż 50% liczby punktów ECTS, określonej dla programu tych studiów	103.68/120 (86.4%)
Potwierdzenie, że liczba punktów ECTS uzyskanych w programie studiów poprzez realizację zajęć z wykorzystaniem metod i technik kształcenia na odległość jest nie wyższa niż 75% ogólnej liczby punktów ECTS w programie studiów o profilu ogólnoakademickim	0/120 (0%)
Liczba godzin w programie	1450