

WARSAW UNIVERSITY OF LIFE SCIENCES

Study programme
Food Science - Technology and Nutrition

Intramural first-level studies

Warsaw, 2022

Study programme

1. Degree programme name: **Food Science - Technology and Nutrition**
2. Studies stage: **1st level**
3. Profile of studies: **general academic**
4. Form of studies: **intramural**
5. Duration of studies: **6 semesters (3 years)**
6. Number of ECTS required to complete the studies: **180**
7. The professional title awarded to graduates: **Bachelor's degree**
8. ISCED code for the field of study: 0721
9. The field of study is assigned to the discipline/disciplines:

No.	Discipline	Leading discipline YES/NO	Percentage of learning outcomes related to the discipline
1	NUTRITION AND FOOD TECHNOLOGY	YES	100%
Total			100%

10. Learning outcomes

taking into account the universal characteristics of the first level specified in the Act from 22nd December 2015 on the Integrated Qualifications System for qualifications at level 6 of PQF, typical for qualifications obtained under the higher education and learning system after obtaining a full qualification at level 4.

Degree programme name: Food Science - Technology and Nutrition

Studies stage: 1st level

Profile of studies: general academic

Universal characteristics of level 6 in PQF and characteristics of the second level of learning outcomes for qualifications at level 6 of PQF		Directional learning outcomes	
		Symbol of directional effect	Directional learning outcomes related to specific categories and scopes
KNOWLEDGE - the graduate KNOWS AND UNDERSTANDS			
P6U_W	at the advanced level - facts, theories, methods, and complex relationships between them, varied, complex conditions of the conducted activity		
P6S_WG <i>Scope and depth - completeness of cognitive perspective and dependency</i>	at the advanced level - chosen facts, objects and phenomenon, their methods and theories explaining the complex relationships between them, constituting basic general knowledge in the field of scientific or artistic disciplines forming the theoretical basis and selected issues in the field of detailed knowledge - appropriate for the study programme, as well as, in the case of practical studies - practical applications of this knowledge in professional activities related to their direction	FSTN1_K_W01	theoretical issues in the field of biological, chemical, mathematical, and related sciences, which are the basis for the description of phenomena occurring in food and the human being body, used for its description
		FSTN1_K_W02	processes and phenomena occurring in the human being body in the nutrition process and the influence of food ingredients on the human being body and functions, importance and influence of food ingredients and energy value on the development and functioning of the human being body and their importance in ensuring public health
		FSTN1_K_W03	the composition and properties of raw materials, auxiliaries, food additives, and food industry products, 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
		FSTN1_K_W04	the theoretical basis of phenomenon 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
		FSTN1_K_W05	basics of construction and operation of machines, devices, and instruments used for

		<p>FSTN1_K_W06</p> <p>FSTN1_K_W07</p> <p>FSTN1_K_W08</p> <p>FSTN1_K_W09</p> <p>FSTN1_K_W10</p>	<p>food processing and testing</p> <p>methods and techniques used for food processing, preservation, storage, and testing</p> <p>principles of good production and hygiene practice as well as systems and standards related to quality and safety assurance of food</p> <p>rules and organization methods of the production and chain of food supply (planning, production organization, storage, distribution of food and food consumption in collective and individual nutrition) in accordance with the legal requirements of assurance of quality and food safety and the principles of sustainable development</p> <p>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</p> <p>rules for assessing the diet, nutritional quality and health of individuals and population 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</p>
<p>P6S_WK <i>Context</i> <i>/ conditions, effects</i></p>	<p>fundamental dilemmas of modern civilization</p> <p>basic economic, legal, ethical, and other conditions of various types of professional activity related to the field of study, including basic concepts and principles in the field of protection of industrial property and copyright</p> <p>basic principles of creating and developing of various forms entrepreneurship</p>	<p>FSTN1_K_W11</p> <p>FSTN1_K_W12</p>	<p>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</p> <p>foundations for the creation of enterprises operating in the area of the food economy and the way of management of these enterprises, determining the effectiveness of their activity</p>
SKILLS – graduate IS ABLE TO			

<p>P6U_U</p>	<p>perform tasks innovatively and solve complex and unusual problems in variable and not fully predictable conditions</p> <p>independently plan own learning throughout life</p> <p>communicate with the surrounding, justify a position</p>		
<p>P6S_UW <i>Use of knowledge / problems solved and tasks performed</i></p>	<p>use possessed knowledge</p> <ul style="list-style-type: none"> - formulate and solve complex and unusual problems and perform tasks in conditions not fully predictable by: - proper selection of sources and information derived from them, evaluation, critical analysis and synthesis of this information, - selection and application of appropriate methods and tools, including advanced information and communication techniques <p>use possessed knowledge</p> <ul style="list-style-type: none"> - formulate and solve problems and perform tasks typical for professional activities related to the field of study - in the case of studies with a practical profile 	<p>FSTN1_K_U01</p> <p>FSTN1_K_U02</p> <p>FSTN1_K_U03</p> <p>FSTN1_K_U04</p> <p>FSTN1_K_U05</p> <p>FSTN1_K_U06</p>	<p>conduct experiments and solve practical issues in the field of basic sciences, and then implement them in activities carried out under directional issues in the field of food processing and human nutrition</p> <p>assess the composition, energy and nutritional value of food products, determine their impact on the growth, development, functioning and health of the body, assess the diet, and nutritional status, and use the obtained results to rationalize the nutrition of individuals and different population groups</p> <p>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 critically analyze and interpret the obtained data, assess the credibility of own actions,</p> <p>analyze 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</p> <p>carry out activities in the field of the technological and functional design of food production and mass catering plants, taking into account the marketing strategy and in accordance with the applicable standards of good manufacturing and hygienic practice as well as food quality and safety systems</p> <p>obtain, analyze and synthesize the obtained information and draw conclusions taking into account various conditions related to the aspects of human nutrition, food</p>

			production, including regional production, food evaluation, consumer protection, intellectual property protection, legal, technological, economic, social, and sociological, cultural, ecological and ethical aspects of food production and consumption as well as quality and safety assurance in the food chain and human nutrition
P6S_UK <i>Communication - receiving and creating statements, disseminating knowledge in the scientific community and using a foreign language</i>	<p>communicate with the surrounding using specialized terminology</p> <p>take part in the debate - to present, evaluate and discuss different opinions and positions</p> <p>use a foreign language at the B2 level of the European System for the Description of Languages</p>	FSTN1_K_U07	communicate with the surrounding using specialist terminology appropriate for the field of study, including taking part in a discussion on professional issues, also using a foreign language in the field relevant to the field of study, in accordance with the requirements set out for B2 level of the European System for the Description of Education Linguistic
P6S_UO <i>Work organization / planning and teamwork</i>	<p>plan and organize work individually and in a team</p> <p>interact with other people as part of teamwork (also of an interdisciplinary nature)</p>	FSTN1_K_U08	plan, organize and carry out, independently or in a team, simple project tasks related to food production and evaluation, human nutrition, and consumer behaviour
P6S_UU <i>Learning / planning personal and others development</i>	independently plan and implement his own learning throughout his life	FSTN1_K_U09	update knowledge and deepen practical skills in the field of study, taking into account the progress in the development of science and technology, and the need for specific competences in the food production and human nutrition sector
COMPETENCES – graduate IS READY TO			

<p>P6U_K</p>	<p>cultivating and disseminating patterns of proper proceedings in the work environment and outside it</p> <p>decide independently, make a critical evaluation of their own activities and activities of the teams that he manages and the organizations in which he participates, take responsibility for the effects of these activities</p>		
<p>P6S_KK <i>Grades/Critical evaluation</i></p>	<p>make a critical evaluation of own knowledge and received content</p> <p>recognition of knowledge meaning in „get to know” and practical problems and to consult an expert opinion in a case of self-solving difficulties</p>	<p>FSTN1_K_K01</p>	<p>contact and exchange of experiences and knowledge with the experts in order to explore better solutions for particular problems connected to among others: food production, delivery chain, food storage and human nutrition</p>
<p>P6S_KO <i>Responsibility/completing the social commitment for the public interest</i></p>	<p>complete the social commitment, to co-organize the activities for the social environment</p> <p>initialize activities for the public interest</p> <p>to think and work the enterprising way</p>	<p>FSTN1_K_K02</p> <p>FSTN1_K_K03</p>	<p>complete professional duties in a socially responsible manner, enterprising, ethical, compatible with the public interest and also with the respect for professional tradition, and for the right to intellectual property protection</p> <p>take responsibility for the high quality and high pro-health value food production, meeting the quality standards and health safety requirements</p>
<p>P6S_KR <i>Professional role/independence and ethos development</i></p>	<p>take responsibility for professional role performance, in it:</p> <ul style="list-style-type: none"> — compliance with the professional ethics and to demand it from others, — caring for the achievements and professional tradition 	<p>FSTN1_K_K04</p>	<p>responsible performing of professional roles, in it: compliance with the professional ethics and exploring knowledge related to the profession</p>

11. A brief description of the education concept

Food is a basic good for a human being, constituting a need of the first order. Ensuring food security related to the availability of food for citizens at any time in terms of physical, economic, and health security, remains a priority for national governments, therefore the labour market will always need qualified specialists in food production and human nutrition.

Sustainable development of the food economy, contributing to minimizing the negative effects in terms of climate change, is included in the mission of the Warsaw University of Life Sciences. The university aims to conduct research and education at the highest level as well as the implementation activities in cooperation with national and foreign institutions. The university provides the society with opportunities for continuous acquisition and supplement of knowledge by organizing various forms of education, including courses in English, not only in the field of 1st and 2nd-degree studies but also in the doctoral school, postgraduate studies, additional training courses, open university, open laboratories and other forms.

Education in the field of Food Science - Technology and Nutrition is carried out in English as a part of the scientific discipline Food and Nutrition Technology. The implementation of the didactic process involves mainly employees of the Institute of Food Sciences and the Institute of Human Nutrition Sciences of the Warsaw University of Life Sciences, units with world-renowned achievements in the field of food science and human nutrition. The educators engaged in the implementation of the curriculum, specialize in human nutrition and dietetics (including the specific nutritional needs of various population groups), in technological as well as engineering and biotechnological areas of food production, commodity science, quality assessment and food safety, food law, food quality and safety assurance systems as well as economic, organizational and environmental aspects of food production and human nutrition.

The concept of the education in the field of study assumes that graduates have knowledge in the field of food technology and nutritional sciences, with particular emphasis on the processing, preservation, and storage of food of plant and animal origin, food biotechnology, food analysis, and evaluation of food quality, food engineering, and the impact of the production processes on the nutritional, dietary and health aspects of food products. Students have the opportunity to acquire knowledge and skills in the field of the organization of the production processes, basics economics, and marketing in a food industry enterprise and mass catering establishments, as well as the basics of production management. They also understand the rules of the food market and the essence of food marketing and consumer behaviour.

The graduates can work in various food processing companies, in research or research and development institutes, in laboratories, institutions branches of the food industry, in food distribution units, in catering, in disseminating knowledge institutions, in consulting and auditing companies, and

in other institutions of the food chain. The aim of the studies in the field of Food Science - Technology and Nutrition is also to prepare the student to conduct scientific research and to enable the graduate to continue the education at the second-degree studies.

The studies in the field of Food Science - Technology and Nutrition last 6 semesters, and the assigned number of ECTS points is 180, with the number of ECTS points equal to 30 in each semester. The programme of the studies includes general subjects which broaden and systematize students' basic knowledge, and then more and more specialized classes. In the 6th semester of the studies, students implement a technological or nutritional project involving the use of competences related to knowledge, practical skills, and social competences. A wide range of elective subjects enables the students to deepen their knowledge in the field of food science. The students have also the possibility to join in many Erasmus and CEEPUS programmes as well as participate in a vocational training abroad as a part of the international programmes, including vocational training within the Erasmus programme. The studies result in a graduation exam.

The assumed learning outcomes comply with the concept and educational objectives and conform to the sixth level of the Polish Qualification Framework. First-cycle studies in Food Science - Technology and Nutrition end with obtaining a bachelor's degree. The curriculum is the result of a discussion among employees involved in teaching in various fields of study, adapting the programme to the current needs related to the interest of foreign candidates in the field of study about the proposed profile, consultations with employers, and also results from the cooperation established with Bohai University in China, under which the double degree process will be implemented.

Graduates of the faculty are prepared to meet the needs of the modern labour market, which indicates the need to constantly deepen their knowledge and skills and to shape appropriate social competences, included in the study programme. The concept of teaching and didactic content in the field of study is enriched with practical aspects to help graduates enter the labour market and function in it. Graduates have competences enabling them to take up professional work in positions requiring high qualifications. Educating students in this field of study includes two basic trends. The implementation of teaching in an international environment enriches graduates with key competences related to the labour market with the ability to function in such an environment. It also creates an opportunity to exchange experiences in the field of food production technology, and nutrition culture, including regional production.

The education quality in the field of study is monitored through regular visits to classes, analysis of the achieved learning outcomes of students, and the analysis of the results of student questionnaires.

12. Study programme

Field: **Food Science - Technology and Nutrition**

Studies stage: **1st level**

Form of studies: **intramural**

Profile of studies: **general academic**

Description of symbols:

Type of module I: basic classes - P, directional classes - K, humanistic and social classes - HS;

Type of module II: mandatory - O, electives - F

Type of module III: classes related to the scientific discipline / general academic profile/-N; practical classes/practical profile/-U

Symbols of hours of classes: L - lecture; C – auditorium classes; LC – laboratory classes; PC – project classes; TC – field classes; PP – professional practices

Number of hours of classes in semesters L – lecture, C - total classes (sum of hours for C, LC, PC, TC, PP)

ECTS_c - total ECTS points accumulated by the student during contact learning

Form of credit: if there is an exam as a form of verification of learning outcomes - E; credit with a grade - Z_o; credit -Z

No.	Number of sem.	Catalogue number	Course title	Type of module			Number of hours of classes					Total hours	Form of credit	ECTS	ECTS_c
				I	II	III	L	C	LC	PC	PP				
0	1		OHT training					4				4		0	0
1	1	FSTN_1_Z_01	Biology	P	O		30		15			45	Z_o	4	1.8
2	1	FSTN_1_Z_02	Mathematics	P	O		15	30				45	Z_o	4	1.8
3	1	FSTN_1_Z_03	General and organic chemistry	P	O	N	30		30			60	Z_o	4	2.4
4	1	FSTN_1_Z_04	Sustainable food systems	K	O	N	15	30				45	Z_o	3	1.8
5	1	FSTN_1_Z_05	Information technology	P	O		15		45			60	Z_o	4	2.4
6	1	FSTN_1_Z_06	Food raw materials	K	O	N	15		30			45	Z_o	4	1.8
7	1	FSTN_1_Z_07	Foreign language 1	P	F			60				60	Z_o	3	2.4
8	1	FSTN_1_Z_08	Humanities electives	HS	F		15	30				45	Z_o	4	1.8
							135		270		0	405		30	16.2
9	2	FSTN_1_L_09	Food chemistry	K	O	N	30		30			60	E	5	2.4
10	2	FSTN_1_L_10	General and food microbiology	K	O	N	30		30			60	E	5	2.4
11	2	FSTN_1_L_11	Introduction to food processing	K	O	N	15	40				55	Z_o	5	2.2
12	2	FSTN_1_L_12	Introduction to human nutrition	K	O	N	20		30			50	Z_o	4	2
13	2	FSTN_1_L_13	Basic statistics	P	O		15		30			45	Z_o	3	1.8
14	2	FSTN_1_L_14	Engineering graphics	K	O	N	15		45			60	Z_o	4	2.4
15	2	FSTN_1_L_15	Foreign language 2	P	F			60				60	E	4	2.4
16	2	FSTN_1_L_16	Physical education	P	O			30				30	Z	0	0
							125		295		0	420		30	15.6

17	3	FSTN_1_Z_17	Biochemistry & enzymology	P	O	N	30		30			60	E	4	2.4
18	3	FSTN_1_Z_18	Basics of human anatomy and physiology	K	O	N	30		30			60	E	5	2.4
19	3	FSTN_1_Z_19	General food technology	K	O	N	30		45			75	E	5	3
20	3	FSTN_1_Z_20	Plant-origin food technology	K	O	N	15		30			45	Z_o	4	1.8
21	3	FSTN_1_Z_21	Food production equipment	K	O	N	15		30			45	Z_o	4	1.8
22	3	FSTN_1_Z_22	Basics of food engineering	K	O	N	15		30			45	E	4	1.8
23	3	FSTN_1_Z_23	Instrumental methods of food analysis	K	O	N	15		45			60	Z_o	4	2.4
24	3	FSTN_1_Z_24	Physical education	P	O			30				30	Z	0	0
							150		270		0	420		30	15.6
25	4	FSTN_1_L_25	Advanced human nutrition	K	O	N	15		45			60	Z_o	5	2.4
26	4	FSTN_1_L_26	Animal-origin food technology	K	O	N	15		30			45	Z_o	3	1.8
27	4	FSTN_1_L_27	Food biotechnology	K	O	N	30		30			60	E	5	2.4
28	4	FSTN_1_L_28	Pathogens in water and food	K	O	N	15		30			45	Z_o	4	1.8
29	4	FSTN_1_L_29	New Food Products Development	K	O	N	30		15			45	Z_o	4	1.8
30	4	FSTN_1_L_30	Food additives and contaminants	K	O	N	25					25	E	1	1
31	4	FSTN_1_L_31	Sensory analysis	K	O	N	15		30			45	Z_o	4	1.8
32	4	FSTN_1_L_32	Consumer behavior	K	O	N	15			30		45	Z_o	4	1.8
							160		210		0	370		30	14.8
33	5	FSTN_1_Z_33	Food production hygiene	K	O	N	15		30			45	Z_o	3	1.8
34	5	FSTN_1_Z_34	Catering technology	K	O	N	15		30			45	Z_o	3	1.8
35	5	FSTN_1_Z_35	Food packaging and contact materials	K	O	N	15		30			45	Z_o	3	1.8
36	5	FSTN_1_Z_36	Basics of dietetics	K	O	N	15		30			45	Z_o	3	1.8
37	5	FSTN_1_Z_37	Nutrition of selected population groups	K	O	N	15		30			45	Z_o	3	1.8
38	5	FSTN_1_Z_38	Electives 1	K	F	N	150	75				225	Z_o	15	9
							225		225		0	450		30	18
39	6	FSTN_1_L_39	Technological design electives	K	F	N	15			45		60	Z_o	4	2.4
40	6	FSTN_1_L_40	Methodological electives	K	F	N		30				30	Z_o	2	1.2
41	6	FSTN_1_L_41	Food safety and quality management electives	K	F	N	15					15	Z_o	1	0.6
42	6	FSTN_1_L_42	Project electives	K	F	N				60		60	Z_o	5	2.4
43	6	FSTN_1_L_43	Seminar	K	F	N				30		30	Z_o	2	1.2
44	6	FSTN_1_L_44	Protection of intellectual property	HS	O		15					15	E	1	0.6
45	6	FSTN_1_L_45	Electives 2	K	F	N	150	75				225	Z_o	15	9
							195		240			435		30	17.4
			Total				990		1510			2500		180.0	97.6

Summary of the study programme

Description: P – basic classes; K – directional classes; HS – humanistic and social classes; O – mandatory classes; F – electives

Sem.	Hours			ECTS		
	P	K	HS	P	K	HS
Σ						
1	270	90	45	19	7	4
2	135	285	0	7	23	0
3	90	330	0	4	26	0
4	0	370	0	0	30	0
5	0	450	0	0	30	0
6	0	420	15	0	29	1
Total	495	1945	60	30	145	5

Sem.	Hours		ECTS	
	O	F	O	F
Σ				
1	300	105	23	7
2	360	60	26	4
3	420	0	30	0
4	370	0	30	0
5	225	225	15	15
6	15	420	1	29
Total	1690	810	125	55

Sem.	Hours	ECTS
1	405	30
2	420	30
3	420	30
4	370	30
5	450	30
6	435	30
Total	2500	180

13. List of electives:

No.	Number of sem.	Catalogue number	Course title	Type of module			Number of hours of classes					Total hour	Form of credit	ECTS	ECTS_c
				I	II	III	L	C	LC	PC	PP				
		FSTN_1_Z_07	Foreign language 1												
7	1	FSTN_1_Z_07_1	Polish for foreigners	P	F			60				60	Z_o	3	2.4
7	1	FSTN_1_Z_07_2	Foreign language	P	F			60				60	Z_o	3	2.4
		FSTN_1_Z_07	Humanities electives-open list												
8	1	FSTN_1_Z_08_1	Nutrition sociology	HS	F		15	30				45	Z_o	4	1.8
8	1	FSTN_1_Z_08_2	Polish culture	HS	F		15	30				45	Z_o	4	1.8
		FSTN_1_L_15	Foreign language 2												
15	2	FSTN_1_L_15_1	Polish for foreigners	P	F			60				60	E	4	2.4
15	2	FSTN_1_L_15_2	Foreign language	P	F			60				60	E	4	2.4
		FSTN_1_Z_38	Electives 1 – open list												
38	5	FSTN_1_Z_38_1	Alcoholic beverages and human being	K	F	N	30	15				45	Z_o	3	1.8
38	5	FSTN_1_Z_38_2	Contemporary methods of management	K	F	N	30	15				45	Z_o	3	1.8
38	5	FSTN_1_Z_38_3	Drugs, medicines and smart food components and additives	K	F	N	30	15				45	Z_o	3	1.8
38	5	FSTN_1_Z_38_4	Functional food	K	F	N	30	15				45	Z_o	3	1.8
38	5	FSTN_1_Z_38_5	Dietary prevention	K	F	N	30	15				45	Z_o	3	1.8
38	5	FSTN_1_Z_38_6	Trends in food and consumption	K	F	N	30	15				45	Z_o	3	1.8
38	5	FSTN_1_Z_38_7	Alternative diets	K	F	N	30	15				45	Z_o	3	1.8
38	5	FSTN_1_Z_38_8	Environment, diet and health	K	F	N	30	15				45	Z_o	3	1.8
		FSTN_1_L_39	Technological design electives												
39	6	FSTN_1_L_39_1	Technological design of food industry plants	K	F	N	15			45		60	Z_o	4	2.4
39	6	FSTN_1_L_39_2	Technological design of food gastronomy plants	K	F	N	15			45		60	Z_o	4	2.4

		FSTN_1_L_40	Methodological electives															
40	6	FSTN_1_L_40_1	Methodology in technological projects	K	F	N		30					30	Z_o	2	1.2		
40	6	FSTN_1_L_40_2	Methodology in nutritional projects	K	F	N		30					30	Z_o	2	1.2		
		FSTN_1_L_41	Food safety and quality management electives															
41	6	FSTN_1_L_41_1	Food safety and quality management in food production	K	F	N	15						15	Z_o	2	0.6		
41	6	FSTN_1_L_41_2	Food safety and quality management in gastronomy	K	F	N	15						15	Z_o	2	0.6		
		FSTN_1_L_42	Project electives															
42	6	FSTN_1_L_42_1	Technological project	K	F	N					60		60	Z_o	5	2.4		
42	6	FSTN_1_L_42_2	Nutritional project	K	F	N					60		60	Z_o	5	2.4		
		FSTN_1_L_43	Seminar															
43	6	FSTN_1_L_43_1	Seminar-food technology	K	F	N					30		30	Z_o	2	1.2		
43	6	FSTN_1_L_43_2	Seminar-human nutrition	K	F	N					30		30	Z_o	2	1.2		
		FSTN_1_L_45	Electives 2 – open list															
45	6	FSTN_1_L_45_1	Bioengineering in food industry	K	F	N	30	15					45	Z_o	3	1.8		
45	6	FSTN_1_L_45_2	Cutting-edge technologies in food industry	K	F	N	30	15					45	Z_o	3	1.8		
45	6	FSTN_1_L_45_3	Design thinking in food industry	K	F	N	30	15					45	Z_o	3	1.8		
45	6	FSTN_1_L_45_4	Drying	K	F	N	30	15					45	Z_o	3	1.8		
45	6	FSTN_1_L_45_6	Herbs, food and health	K	F	N	30	15					45	Z_o	3	1.8		
45	6	FSTN_1_L_45_7	Physical properties of food	K	F	N	30	15					45	Z_o	3	1.8		
45	6	FSTN_1_L_45_8	Prevention of food quality	K	F	N	30	15					45	Z_o	3	1.8		
45	6	FSTN_1_L_45_9	Public health nutrition	K	F	N	30	15					45	Z_o	3	1.8		

14. Matrix of learning outcomes

Description of symbols:

FSTN1 – Field of study FOOD SCIENCE - TECHNOLOGY AND NUTRITION first level

K (after underscore) – directional learning outcomes

W – knowledge category

U – skills category

K – competences category

01, 02, 03 and next – number of learning outcomes

Impact on the course outcomes:

3– significant and detailed, 2 – partial, 1 – basic

No.	Catalogue number	Course title	LEARNING OUTCOMES																Total									
			KNOWLEDGE												SKILLS					COMPETENCES								
			FSTN1_K_W01	FSTN1_K_W02	FSTN1_K_W03	FSTN1_K_W04	FSTN1_K_W05	FSTN1_K_W06	FSTN1_K_W07	FSTN1_K_W08	FSTN1_K_W09	FSTN1_K_W10	FSTN1_K_W11	FSTN1_K_W12	FSTN1_K_U01	FSTN1_K_U02	FSTN1_K_U03	FSTN1_K_U04		FSTN1_K_U05	FSTN1_K_U06	FSTN1_K_U07	FSTN1_K_U08	FSTN1_K_U09	FSTN1_K_K01	FSTN1_K_K02	FSTN1_K_K03	FSTN1_K_K04
1	FSTN_1_Z_01	Biology	2	2	2										2					2							2	12
2	FSTN_1_Z_02	Mathematics	1											1									1					3
3	FSTN_1_Z_03	General and organic chemistry	1											1					1					1	1			5
4	FSTN_1_Z_04	Sustainable food systems			2				2									2		2		1		2			11	
5	FSTN_1_Z_05	Information technology	1									2	1		2	2			2			2	2	2			14	
6	FSTN_1_Z_06	Food raw materials			3	2							3											2	1		11	
7	FSTN_1_Z_07	Foreign language 1										1	1			1	1	2		2		2					10	
8	FSTN_1_Z_08	Humanities electives																									0	
9	FSTN_1_L_09	Food chemistry	2		2	2	2			2				2				2	2	2		2					22	
10	FSTN_1_L_10	General and food microbiology	3					3			3			3		3					3				1		19	

Course code: **FSTN_1_Z_01**

Course title		Biology	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	theoretical issues regarding biological sciences as a basis for the description of the structure and functions of the human body in various stages of ontogenesis and in various health conditions	FSTN1_K_W01	2
	W2	selected processes in the human organism as a result of the interaction of food ingredients with genetic material in the cells and their significance for the normal functioning of the organism and health	FSTN1_K_W02	2
	W3	biological conditions for the use of selected raw materials of animal origin in the production of high pro-health quality foods	FSTN1_K_W03	2
Skills: (The graduate is able to)	U1	evaluate the suitability of selected animal organisms as a source of food for humans	FSTN1_K_U02	2
	U2	communicate using terminology related to biological issues	FSTN1_K_U07	2
Competences: (The graduate is ready to)	K1	fulfill the professional roles responsibly and to broaden his or her knowledge related to biological issues	FSTN1_K_K04	2
Programme contents ensuring the achievement of the learning outcomes:		Selected biological issues in relation to the structure and functioning of animal organisms at the molecular, cellular, tissue and individual levels at various stages of ontogenesis and the possibility of their use in the production of high pro-health quality foods, and in human nutrition. The subject is useful in studying subjects in the areas of biochemistry as well as human anatomy, physiology, and nutrition.		
Methods of the verification of the learning outcomes:		Lectures exam – written test; Classes –written reports, written colloquiums during classes/exercises, presentations W1, W2, W3: lecture exam, verification tests ; U1 i U2, K1 i K2: presentations, reports		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_02**

Course title		Mathematics	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the basic definitions, properties, criteria, and theorems concerning elementary functions, sequence limit, number series as well as function limit and continuity, knows and understands the basic definitions, properties, theorems, and interpretations of differential and integral calculus, knows and understands the basic definitions, properties and theorems concerning matrices, determinants, and systems of linear equations.	FSTN1_K_W01	1
Skills: (The graduate is able to)	U1	study the properties of simple elementary functions, calculate the limits of simple sequences, investigate the convergence of simple series, calculate the limits and study the continuity of simple functions, is able to calculate the derivatives of simple functions, study their properties with the help of derivatives, calculate simple indefinite, marked and incorrect integrals, calculate the areas and mean values of functions with the help of integrals, is able to perform arithmetic operations on matrices, calculate determinants and orders of matrices and solve systems of linear equations in simple cases.	FSTN1_K_U01	1
Competences: (The graduate is ready to)	K1	use the models and accounting techniques learned in the course in simple practical problems related to major subjects.	FSTN1_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		Matrices, numerical sets, general properties of functions, sequences, numerical series, limit and derivative of functions of one variable, indefinite integral, definite and improper integral, ordinary differential equations.		
Methods of the verification of the learning outcomes:		W1, U1, K1 - Lecture test and / or exercise test and / or activity		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_03**

Course title		General and organic chemistry	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	has an appropriate knowledge of inorganic and organic chemistry adjusted to study Food Science - Technology and Nutrition	FSTN1_K_W01	1
Skills: (The graduate is able to)	U1	write chemical equations taking place in water solutions, can calculate percent and molar concentration, is able to isolate and purify organic compounds, is able to synthesize an organic compound using an appropriate procedure.	FSTN1_K_U01	1
	U2	performs quantitative chemical analysis (such as titration, pH evaluation) using different analytical methods, carries out laboratory work necessary for doing simple experiments, can work both individually or as a part of a team, interprets the results of chemical experiments, communicates with others using the English language at B2 level.	FSTN1_K_U01 FSTN1_K_U07	1
Competences: (The graduate is ready to)	K1	fulfilling professional duties, being aware of major threats related to the work with chemical reagents, taking care of his own and others' safety	FSTN_K_K02 FSTN_K_K03	1
Programme contents ensuring the achievement of the learning outcomes:		The recollection and systematization of knowledge comprising the fundamentals of inorganic and organic chemistry within the scope necessary to study further. Students should know how to perform basic quantitative analysis, isolation and purification of organic compounds. Students should be able to do basic chemical calculations (concentration, pH, reaction yield), interpret the results of the experiments, and prepare a report.		
Methods of the verification of the learning outcomes:		W1 – final exam U1 – verifications tests during laboratory practicals U2 – reports of the conducted experiments with the interpretation of the obtained results K1 – observations during laboratory classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_04**

Course title		Sustainable food systems	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	Food production taking into account the principles of sustainable development and its impact on human health and the natural environment.	FSTN1_K_W03	2
	W2	Principles and methods of organizing food production and the food value chain in line with the Sustainable Development Goals.	FSTN1_K_W08	2
Skills: (The graduate is able to)	U1	obtain, analyze and synthesize information and draw conclusions taking into account various conditions related to the aspects of food production, including regional production, ecological aspects of food production and consumption, and ensuring quality and safety in the food chain and human nutrition.	FSTN1_K_U06	2
	U2	plan, organize, and execute, individually or in a team, simple project tasks related to selected aspects of sustainable food systems.	FSTN1_K_U08	2
Competences: (The graduate is ready to)	K1	contact and exchange experiences and knowledge with experts in order to search for the best solutions to specific problems related to the sustainability of food systems.	FSTN1_K_K01	1
	K2	take responsibility for the production of high-quality, health-promoting food, in accordance with the Sustainable Development Goals.	FSTN1_K_K03	2
Programme contents ensuring the achievement of the learning outcomes:		The programme contents ensuring the achievement of the learning outcomes include the basics and various aspects of sustainable food systems, including sustainable food production, processing, and consumption.		
Methods of the verification of the learning outcomes:		Exam (written test) on the lectures' content, students' presentations, and reports from the auditorium classes. W1 and W2: written test covering the lectures' content U1, U2, K1, and K2: students' presentations and reports from the auditorium classes.		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_05**

Course title		Information technology	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the terminology related to the use of computers, the operating system, various applications, including office suites and others used in professional work and private life	FSTN1_K_W01	1
	W2	Knows and understands digital techniques used for the purposes of collecting and basic data analysis and presentation and the functionalities of editors to achieve professional text properties	FSTN1_K_W01 FSTN1_K_W12	1 2
Skills: (The graduate is able to)	U1	use formulas and built-in spreadsheet functions to automate calculation and reporting activities	FSTN1_K_U03 FSTN1_K_U04	2 2
	U2	use the functionalities of editors to achieve professional text properties	FSTN1_K_U01 FSTN1_K_U07	1 2
Competences: (The graduate is ready to)	K1	cooperate with other people in order to carry out the assigned tasks, also with the use of distance learning methods, being aware of the use of modern software along with its updating, while being prepared for the consequences related to its improper use	FSTN1_K_K01 FSTN1_K_K02	2 2
Programme contents ensuring the achievement of the learning outcomes:		Formatting the layout of a multi-page document - styles, references and automatic lists, document review. Mail merge, form creation, and limiting document editing. Application of formulas and basic functions built into the worksheet, charts, and graphic elements. Use of advanced built-in functions: logical functions, date, and time. Designing and building/creating a database, relations between tables, forms. Data mining with the use of queries. Reporting and database management. Presenting the content / data / results (measurements, tests, and analyses) in an attractive way for the recipient, using a multimedia presentation		
Methods of the verification of the learning outcomes:		Execution and/or presentation of tasks related to specific issues (editing an MS Word document, MS PowerPoint presentation, MS Excel calculation, MS Access database). Quiz on general IT knowledge.		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_06**

Course title		Food raw materials	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the impact of production, storage and distribution conditions on the quality and usability of plant and animal raw materials;	FSTN1_K_W03	3
	W2	the importance of the energy value, nutrients, and bioactive compounds contained in food raw materials for the functioning of the human body;	FSTN1_K_W04	2
Skills: (The graduate is able to)	U1	acquire, process, and analyze information from various sources, including various aspects of the impact of production on the quality of food raw materials;	FSTN1_K_U01	3
	U2	analyze and interpret a read scientific and technical text and experimental facts in a language appropriate for a given discipline of knowledge;	FSTN1_K_U01	2
Competences: (The graduate is ready to)	K1	critically assess the effects of engineering activities in the production of food raw materials;	FSTN1_K_K03	2
	K2	take responsibility for the production of high-quality, pro-health food raw materials.	FSTN1_K_K04	1
Programme contents ensuring the achievement of the learning outcomes:		The subject is related to the provision of knowledge, competences, and skills in the field of knowledge of food raw materials of plant and animal origin, in particular with regard to origin, systematics, commodity aspects, pro-healthy properties of vegetables, fruit, and unprocessed animal raw materials.		
Methods of the verification of the learning outcomes:		Lectures: the test of the lecture content Classes (exercises): test during laboratory exercises, assessment of the correctness of the experiments performed during the classes, and their discussion W1, W2: examination and tests; U1, U, K1, K2: reports prepared by students		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_07_1**

Course title		Polish language for foreigners (1)	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the lexis and structures necessary for outcomes U1-U4	FSTN1_K_W11 FSTN1_K_W12	1 1
Skills: (The graduate is able to)	U1	understand spoken texts at the appropriate level on general and selected professional topics	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
	U2	talk about general and selected professional topics at the appropriate level	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
	U3	understand the sense of elaborations, articles, documents, correspondence at the appropriate level	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
	U4	exchange correspondence and prepare selected kinds of documents at the appropriate level	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
Competences: (The graduate is ready to)	K1	use foreign languages in their professional life and for gaining and disseminating knowledge	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		Vocabulary relating to education, work, science, technology, exchange of information, environment, and specific to the degree programme. Language functions: describing phenomena, processes, procedures, exchanging correspondence, conducting discussions, taking notes, preparing and giving presentations. Grammar: adequate use of word forms and sentence constructions, word formation. Practicing communication, pronunciation, and spelling.		
Methods of the verification of the learning outcomes:		outcomes W1, U1-U4, K1: coursework assessment, written test/presentation during classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_07_2**

Course title		Foreign language (English/Spanish/German/Russian) 1	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the lexis and structures necessary for outcomes U1-U4	FSTN1_K_W11 FSTN1_K_W12	1 1
Skills: (The graduate is able to)	U1	understand spoken texts in their foreign language of choice on general and selected professional topics	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
	U2	talk about general and selected professional topics	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
	U3	understand the sense of elaborations, articles, documents, correspondence	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
	U4	exchange correspondence and prepare selected kinds of documents	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 2 2
Competences: (The graduate is ready to)	K1	use foreign languages in their professional life and for gaining and disseminating knowledge	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		Vocabulary relating to education, work, science, technology, exchange of information, environment, and specific to the degree programme. Language functions: describing phenomena, processes, procedures, exchanging correspondence, conducting discussions, taking notes, preparing and giving presentations. Grammar: adequate use of word forms and sentence constructions, word formation. Practicing and perfecting communication, pronunciation, and spelling.		
Methods of the verification of the learning outcomes:		outcomes W1, U1-U4, K1: coursework assessment, written test/presentation during classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_09**

Course title		Food chemistry	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	structure, properties, and importance of food ingredients	FSTN1_K_W01 FSTN1_K_W03	2
	W2	the chemical and enzymatic transformations in food and the harmful substances that are formed in food during storage and processing	FSTN1_K_W04 FSTN1_K_W09	2
	W3	the methods and techniques of chemical analysis useful in determining the composition, structure of food ingredients and in assessing and forming food safety and quality	FSTN1_K_W05 FSTN1_K_W06	2
Skills: (The graduate is able to)	U1	interpret the obtained empirical data on the structure and properties of food ingredients	FSTN1_K_U01 FSTN1_K_U06	2
	U2	work in a team when planning and carrying out experiments in the field of food chemistry	FSTN1_K_U07 FSTN1_K_U08	2
Competences: (The graduate is ready to)	K1	exchange experiences and knowledge with experts in order to search for solutions to problems related to, inter alia, with the structure, properties, and meaning of food ingredients; chemical and enzymatic transformations in food as well as methods and techniques of chemical analysis useful in food research	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		Structure, properties, changes and chemical and enzymatic modifications of food ingredients, with particular emphasis on the processes affecting its safety, quality, and nutritional value. Knowledge about the interactions of individual ingredients during food processing and storage.		
Methods of the verification of the learning outcomes:		W1, W2 - written exam; W3 - written colloquiums during exercises; U1, U2 - written reports on exercises; K1- observation during classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_10**

Course title		General and food microbiology	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	understand the similarities and differences among microorganisms, demonstrate an understanding of their biological properties, adaptations, and habitats, understand the microbial growth and nutrient requirements and what factors influence it, appreciate the diversity of microorganisms and microbial communities in the environment, understand the microbial metabolisms and the impact of factors affecting the microbial food quality, paying particular attention to the microorganisms that affect the quality of microbiological and health security of raw materials and agri-food products in the food chain and the significance of microorganisms in food technology, human nutrition, and human health, characterize of pathogens transmitted by food and pathogenicity of specific microbes affect human health as well as the role of beneficial microorganisms in food fermentations	FSTN1_K_W01 FSTN1_K_W06 FSTN1_K_W09	3
Skills: (The graduate is able to)	U1	use proper methods in the assessment of isolation, identification, and growth of microorganisms, microbiological quality of raw materials and various types of food	FSTN1_K_U01 FSTN1_K_U03 FSTN1_K_U08	3
Competences: (The graduate is ready to)	K1	team analysis of a defined experiment	FSTN1_K_K03	2
Programme contents ensuring the achievement of the learning outcomes:		<ul style="list-style-type: none"> • History, microscopy, the overview of microbial cells, classification of microorganisms: prokaryotes, eukaryotes, viruses • Characteristic of bacteria (morphology, prokaryotic cell structure, physiology, reproduction, diversity, and ecology) • Characteristic of fungi (an overview of eucaryotic cell structure, morphological and physiological characteristic and reproduction) • Characteristic of viruses, bacteriophages, and plasmids • Microorganism interactions and microbial ecology • Microbial nutrition and microbial growth (the growth curve, the influence of environmental factors on growth, intrinsic and extrinsic factors parameters influencing microbial growth in food) • An overview of microbial molecular biology and genetics • Microbial metabolism: an overview of metabolism, enzymes, energy, regulations • The breakdown of glucose to tricarboxylic acid cycle, electron transport, and oxidative phosphorylation • Fermentations and anaerobic respiration, bacterial photosynthesis • Types and resources of microorganisms in food, microbial food spoilages • The role of microorganisms in disease, virulence factors, the basic characteristics of food-borne pathogens (intoxications and infections) • Principles in food preservation techniques as controlling food spoilage and food safety, concepts related to food safety and production process hygiene • Microflora of fermented food and biotechnological use of microorganisms 		
Methods of the verification of the learning outcomes:		W1: written Exam/ ON-LINE exam U1: written tests during lab-lessons K1: individual reports of defined experiments prepared		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_11**

Course title		Introduction to food processing	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the composition and properties of raw materials, auxiliaries, food additives, and food industry products, the possibilities and conditions of their use in food production, taking into account the principles of sustainable development	FSTN1_K_W03	3
	W2	methods and techniques used in food processing, preservation, storage, and testing	FSTN1_K_W06	3
Skills: (The graduate is able to)	U1	obtain, analyze and synthesize the obtained information and draw conclusions taking into account various conditions related to the aspects of food production, including regional production, food evaluation, consumer protection, technological, economic, ecological and ethical aspects of food production, and logistics, and ensuring quality and safety in the food chain	FSTN1_K_U06	2
Competences: (The graduate is ready to)	K1	contact and exchange of experiences and knowledge with experts in order to search for the best solutions to specific problems related to food production, supply chain, food storage	FSTN1_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		presentation of the raw material base for each branch of the food industry; presentation of production possibilities of each branch of the food industry; presentation of organizational structures of factories from each branch of the food industry		
Methods of the verification of the learning outcomes:		W1, W2 - test exam U1, K1 - exercise report and activity on classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_12**

Course title		Introduction to human nutrition	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the role of nutrients in the body, including the body needs	FSTN1_K_W02	2
	W2	energy content and nutritional values of foods, the main sources of nutrients in the diet, and their effect on health	FSTN1_K_W02 FSTN1_K_W03	2
Skills: (The graduate is able to)	U1	on basic level identify nutritional problems - deficiencies and excesses of ingredients in the diet and in the body; assess the composition, energy, and nutritional value of food products and diet in relation to nutritional recommendations	FSTN1_K_U02	1
	U2	plan and perform a simple task in the field of human nutrition individually and in a team	FSTN1_K_U08	1
Competences: (The graduate is ready to)	K1	recognizing the importance of knowledge related to human nutrition and health	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		<p>The basic characteristic of the course is basic concepts and definitions. The importance of nutrition for health. The composition of the human body. Human metabolism and energy, methods of its measurement; energy expenditure and balance. Macronutrients: proteins, fats, and carbohydrates, their division, functions in the body, digestibility and nutritional value; nutrition recommendations; major dietary sources. Vitamins and minerals: classification, role, symptoms of deficiencies and excesses, nutrition recommendations; major dietary sources. Water management in the body, electrolytes in human nutrition. Nutritional recommendations in different world regions.</p> <p>Food tables as a source of information about the nutritional value of food. Characteristics of nutritional recommendations in different world regions and their use. Energy values of food products and energy expenditure. Characteristics of the content of fat, fatty acids (including EFAs), and cholesterol in foods and diet. Food products as a source of dietary fibre in a diet. Water intake with different sources - its comparison to nutritional recommendations and individual needs. Determination of fluoride content in diet and water (laboratory class). Vitamin D content in meals for a chosen group of people and the prevention of its deficiency. The activity of catalase in the saliva as an indicator of the assessment of the antioxidant potential of the organism (laboratory class). Planning a menu on an individual level.</p>		
Methods of the verification of the learning outcomes:		<p>Exam from the lectures.</p> <p>Written tests from classes materials, reports from classes (in students' notebooks).</p> <p>Observation during classes and during the discussion of a defined problem.</p> <p>W1 and W2: exam, tests</p> <p>U1, U2 and K1: reports from classes (in students' notebooks), evaluation of the student's activity, and participation in the discussion</p>		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_13**

Course title		Basic statistics	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Realtion to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	basic statistical methods (in the range necessary for elementary applications).	FSTN1_K_W01	1
Skills: (The graduate is able to)	U1	use computational programs in analyzing natural phenomena and is able to demonstrate the skills of statistical analysis in relation to his biological knowledge, performing basic statistical analysis and presenting the resulting conclusions	FSTN1_K_U01	1
Competences: (The graduate is ready to)	K1	use and expand their knowledge based on statistical analysis	FSTN1_K_K01	1
Programme content ensuring the achievement of learning outcomes:		Types of random variables (categorical distribution or continuous distribution) and their distributions and cumulative distribution with the focus on the normal distribution and its standardization. Statistical population and the types of sampling. The estimation of distribution parameters: the point estimations and confidence intervals for the following population parameters: mean (expected value), fraction, variation, the difference between two means, two fraction difference, variances ratio. Principles of statistical inference. Substantive and statistical hypothesis. Testing the statistical hypothesis (Significance tests). Verification of the population hypothesis related to previously mentioned point estimators. Statistical analysis of data from factor experiments - a one-factor experiment in a completely random system. Method of analysis of variance. Multiple average value comparison procedures (object grouping). Chi-square test of compliance and independence. Relations between quantitative traits - correlation analysis and regression analysis.		
Methods of the verification of the learning outcomes:		W1, U1, K1 - lecture test and / or exercise test and / or activity		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_14**

Course title		Engineering graphics	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the principles used in technical drawing and distinguish between the basic types of construction materials used in the construction of machines and devices for the food industry	FSTN1_K_W05	2
Skills: (The graduate is able to)	U1	read technical drawing and apply the rules of technical drawing in practice	FSTN1_K_U05 FSTN1_K_U08	2
	U2	make sketches and diagrams of machines and devices using computer techniques	FSTN1_K_U05 FSTN1_K_U08	2
Competences: (The graduate is ready to)	K1	use the acquired knowledge and skills in technical drawing in fulfilling his professional duties with respect to professional traditions and intellectual property protection law	FSTN1_K_K02	2
Programme contents ensuring the achievement of the learning outcomes:		construction materials in the food industry - rules of their selection, consumption of construction materials, strength, corrosion in the food industry, anti-corrosion protection, introduction to design in AutoCAD, types of drawings, projection rules, sections, lines and their types, the accuracy of machine elements, dimensioning, connections elements of machine parts, machine parts, and assemblies, drive units.		
Methods of the verification of the learning outcomes:		W1, U1, U2, K1 effects – written work from lecture, tests during practical lessons, and reports from practical classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_15_1**

Course title		Polish language for foreigners (2)	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the lexis and structures necessary for outcomes U1-U4	FSTN1_K_W11 FSTN1_K_W12	1 1
Skills: (The graduate is able to)	U1	understand spoken texts at the appropriate level on general and selected professional topics	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
	U2	talk about general and selected professional topics at the appropriate level	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
	U3	understand the sense of elaborations, articles, documents, correspondence at the appropriate level	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
	U4	exchange correspondence and prepare selected kinds of documents at the appropriate level	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
Competences: (The graduate is ready to)	K1	use foreign languages in their professional life and for gaining and disseminating knowledge	FSTN1_K_K01	3
Programme contents ensuring the achievement of the learning outcomes:		Vocabulary relating to education, work, science, technology, exchange of information, environment, and specific to the degree programme. Language functions: describing phenomena, processes, procedures, exchanging correspondence, conducting discussions, taking notes, preparing and giving presentations. Grammar: adequate use of word forms and sentence constructions, word formation. Practicing communication, pronunciation, and spelling.		
Methods of the verification of the learning outcomes:		outcomes W1, U1-U4, K1: final exam		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_15_2**

Course title		English/Spanish/German/Russian as a foreign language 2	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	lexis and structures necessary for outcomes U1-U4	FSTN1_K_W11 FSTN1_K_W12	1 1
Skills: (The graduate is able to)	U1	understand spoken texts in their foreign language of choice on general and selected professional topics	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
	U2	talk about general and selected professional topics	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
	U3	understand elaborations, articles, documents, correspondence	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
	U4	exchange correspondence and prepare selected kinds of documents	FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U09	1 1 3 3
Competences: (The graduate is ready to)	K1	to use foreign languages in their professional life and for gaining and disseminating knowledge	FSTN1_K_K01	3
Programme contents ensuring the achievement of the learning outcomes:		Vocabulary relating to education, work, science, technology, exchange of information, environment, and specific to the degree programme. Language functions: describing phenomena, processes, procedures, exchanging correspondence, conducting discussions, taking notes, preparing and giving presentations. Grammar: adequate use of word forms and sentence constructions, word formation. Practicing and perfecting communication, pronunciation, and spelling.		
Methods of the verification of the learning outcomes:		outcomes W1, U1-U4, K1: final exam		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_16**

Course title		Physical education	ECTS:	0
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	The graduate knows about compliance with health and safety rules and understands the regulations of sports facilities and the rules for the safe use of sports facilities	FSTN_K_W02	1
	W2	The graduate knows how physical effort affects the development and functioning of the body	FSTN_K_W02	1
	W3	The graduate knows and understands the relationship between effort and systematic work and the effect obtained	FSTN_K_W02	1
Skills: (The graduate is able to)	U1	The graduate can analyze the level of their own physical fitness, correctly interpret and identify problems encountered during the execution of tasks and make the right decisions to solve them	FSTN_K_U02	1
	U2	The graduate can prepare the body for effort, control and assess the state of efficiency of the body, use acquired motor habits in the proper performance of daily motor activities	FSTN_K_U02	1
	U3	The graduate can use various forms of physical activity taking into account the current state of health, physical abilities, and age	FSTN_K_U02	1
Competences: (The graduate is ready to)	K1	The graduate is ready to correctly identify the body's needs and forms of physical activity to maintain health	FSTN_K_K01	1
	K2	The graduate is ready to participate in selected sports and recreational activities as one of the forms of self-fulfillment and rational spending of free time for the benefit of physical and mental health	FSTN_K_K01	1
	K3	The graduate is ready to take responsibility for his own health and that of others (including his own family in the future)	FSTN_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		Familiarizing students with the specificity and rules of a given sports discipline. Introducing students to the correct way to prepare for physical exertion. Preparing students to independently develop a basic training plan with the use of various instruments and utensils. Familiarizing students with the technique of exercises and the possibilities of using training in shaping motor skills on the example of various sports disciplines.		
Methods of the verification of the learning outcomes:		W1, W2, W3, U1, U2, U3, K1, K2 K3: Test of individual technical and practical skills systematic and active participation in classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_17**

Course title		Biochemistry & enzymology	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the structure and function of the organic components of the cell (proteins, lipids, carbohydrates, nucleic acids, and vitamins) with particular emphasis on enzymatic proteins, as well as the process and functions of selected metabolic pathways, including metabolic interdependencies and metabolism regulation mechanisms; understands enzymatic processes influencing the composition and properties of raw materials and food products	FSTN1_K_W01	3
	W2	rules of technological processes with the use of enzymes for food preservation and processing	FSTN1_K_W04	3
Skills: (The graduate is able to)	U1	conduct experiments and solve practical problems in the field of enzyme kinetics and their applications, and then implement them in activities in the field of food processing	FSTN1_K_U01	2
	U2	undertake activities related to the selection of materials, methods, techniques, tools, and technologies in the field of the use of enzymatic processes in the food industry	FSTN1_K_U03	2
Competences: (The graduate is ready to)	K1	critically evaluation the effects of enzymes used in the food industry, and use objective sources of scientific information and critically evaluate them	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		The course is related to provide of knowledge, competences, and skills in the field of the possibility of using enzymes in the food industry in order to obtain the desired raw material changes, improve the quality of the final product, or optimize production costs.		
Methods of the verification of the learning outcomes:		Written tests (laboratory classes) and written exams (lectures) W1, W2, exam, tests U1, U2, K1: reports		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_18**

Course title		Human anatomy and physiology	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	mechanisms governing the functioning of the human body and its systems and organs; understands the mutual functional relationships between organs and systems in the human body and the relationships between the structure of individual organs and their functions	FSTN1_K_W01	3
Skills: (The graduate is able to)	U1	study and evaluate the operation, efficiency and adaptive capacity of one's own organs and the systems they create	FSTN1_K_U01	2
	U2	interpret the results of basic tests: hematological, spirometric, hemodynamics, urine and glycemia tests, and the results of digestive fluids properties and digestive enzyme activity	FSTN1_K_U09	2
Competences: (The graduate is ready to)	K1	use the knowledge about the structure and function of organs and the systems they create to understand and solve the problems related to the functioning of the organism	FSTN1_K_K01	2
	K2	recognize the importance of knowledge in the field of human anatomy and physiology in shaping correct attitudes in the field of eating behaviors	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		The course provides of knowledge, competences and skills in the field of human anatomy and physiology, in particular, with regard to the structure and functioning of organs and the systems they create, as well as the mutual functional connections between them, the assessment of the functioning, efficiency and adaptive capacity of organs and systems included in composition of the human body		
Methods of the verification of the learning outcomes:		Lectures: written exam Classes: test, reports, presentation of the results W1: lectures exam U1, U2, K1, K2: reports, presentation of the results		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_19**

Course title		General food technology	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the basic characteristics and quality requirements of raw materials processed in the food industry	FSTN1_K_W03	2
	W2	the principles of operations and processes used in food technology and their impact on the quality of products	FSTN1_K_W04	2
	W3	the methods of food preservation	FSTN1_K_W06	2
Skills: (The graduate is able to)	U1	apply basic operations and processes and choose the appropriate method of food preservation depending on the specificity of the raw material	FSTN1_K_U03	2
Competences: (The graduate is ready to)	K1	is responsible for the reliability of the conducted experiments, the obtained results, their interpretation and transfer to the society	FSTN1_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		Basic definitions in food technology; food balance; the main tasks of the food industry; characteristics of raw materials with the requirements for food processing; contamination of the raw material and its purifying, operations and processes used in food technology: mechanical, thermal, diffusion type, physicochemical, chemical, biotechnological; methods of food preservation: freezing and cooling, heating, addition of osmoactive substances, drying, unconventional methods; auxiliary materials and techniques: food additives, washing and packaging devices, packaging, storage, control of the production process.		
Methods of the verification of the learning outcomes:		W1, W2, W3 - written exam U1, K1 - test during classes and evaluation of the conducted experiment		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_Z_20**

Course title		Plant-origin food technology	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the rules for the selection and organization of the use of fruit, vegetable, cereal raw materials and fatty raw materials (used in the production of food concentrates), including the technological processes and their impact on the properties of products	FSTN_1_K_W02 FSTN_1_K_W03	2
	W2	the processing processes and their influence on the characteristics of products of plant origin	FSTN_1_K_W04	2
Skills: (The graduate is able to)	U1	use knowledge when selecting methods, devices and tools as well as making observations, measurements and calculations in the field of phenomena occurring during the production, processing and testing of fruit and vegetable products, cereals, fat and food concentrates.	FSTN_1_K_U02	2
Competences: (The graduate is ready to)	K1	critically assess problems in the fruit and vegetable, cereals, fat and food concentrate field of industry.	FSTN_1_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		Technology of semi-finished products and fruit and vegetable products with various degrees of processing. Technology of milling, groats, baking and confectionery as well as pasta production. Technologies used in the processing of fats and food concentrates.		
Methods of the verification of the learning outcomes:		W1 - written or oral exam W2, U1, K1 - test and / or report on the exercises and / or activity during the exercises		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_Z_21**

Course title		Food production equipment	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the principles of action of equipment used for production, measurement, and detection in food processing	FSTN1_K_W05	3
Skills: (The graduate is able to)	U1	to measure, collect data and analyze it for critical evaluation of food processing equipment	FSTN1_K_U04 FSTN1_K_U08	3
Competences: (The graduate is ready to)	K1	make general selection of equipment for production of food considering its safety and high quality	FSTN1_K_K03	1
Programme contents ensuring the achievement of the learning outcomes:		<p>Measurement equipment in food engineering process: techniques for in-line/on-line measurement of temperature, moisture, flow, and level, with descriptions of some transducers adapted for particular applications in the food industry.</p> <p>Special devices for foreign body detection, dimension gauging, and viscosity measurement. Utility equipment.</p> <p>Equipment applied in preparation process and mechanical processing.</p> <p>Equipment applied in heat processing and preservations.</p> <p>Equipment applied in diffusion processes in food processing.</p> <p>Exercises will cover topics related to equipment used for food production and preservations at the different stages of its production.</p>		
Methods of the verification of the learning outcomes:		W1 – exam U1, K1 - reports		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_22**

Course title		Basics of food engineering	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the principles, applications and the impact on food quality of basic unit operations and processes in food technology	FSTN1_K_W06	3
Skills: (The graduate is able to)	U1	collect data, explain, compute, and evaluate the progress of basic unit operations, in particular in terms of their performance	FSTN1_K_U03 FSTN1_K_U08	3
Competences: (The graduate is ready to)	K1	critically discuss the effect of unit operations in relation to their impact on food quality and safety in a wide sense	FSTN1_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		Introduction to unit operations and processes used in food production. Characteristic of selected fluid flow, mechanical and thermodynamic processes. Characteristic of selected heat-transfer (thermal) processes. Characteristic of selected mass-transfer (diffusion) processes. Exercises will cover topics related to unit operations related to fluid flow, mechanical, heat- and mass-transfer based processes, with particular emphasis on solving problems.		
Methods of the verification of the learning outcomes:		W1 – exam U1, K1 - reports		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_Z_23**

Course title		Instrumental methods of food analysis	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	theoretical basis, measurement principles, apparatus construction, possibilities of using various instrumental techniques used in food analysis.	FSTN1_K_W04 FSN1_K_W05	2
Skills: (The graduate is able to)	U1	plan the experiment yourself, make calculations based on the results of instrumental measurements, prepare a report describing the experience.	FSTN1_K_U01 FSTN1_K_U03	2
Competences: (The graduate is ready to)	K1	exchange experiences with experts in the field enabling solutions to issues related to food analysis.	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		Acquainting with modern instrumental techniques used in food analysis: thermal methods (DSC, PDSC, DTA, TGA), UV-VIS and FTIR spectroscopy, chromatographic methods (GC, HPLC).		
Methods of the verification of the learning outcomes:		W1 - written exam, U1 - reports on the laboratory class performed, K1 - observation during laboratory classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_24**

Course title		Physical education	ECTS:	0
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	The graduate knows about compliance with health and safety rules and understands the regulations of sports facilities and the rules for the safe use of sports facilities	FSTN_K_W02	1
	W2	The graduate knows how physical effort affects the development and functioning of the body	FSTN_K_W02	1
	W3	The graduate knows and understands the relationship between effort and systematic work and the effect obtained	FSTN_K_W02	1
Skills: (The graduate is able to)	U1	The graduate can analyze the level of their own physical fitness, correctly interpret and identify problems encountered during the execution of tasks and make the right decisions to solve them	FSTN_K_U02	1
	U2	The graduate can prepare the body for effort, control and assess the state of efficiency of the body, use acquired motor habits in the proper performance of daily motor activities	FSTN_K_U02	1
	U3	The graduate can use various forms of physical activity taking into account the current state of health, physical abilities and age	FSTN_K_U02	1
Competences: (The graduate is ready to)	K1	The graduate is ready to correctly identifies the body's needs and forms of physical activity to maintain health	FSTN_K_K01	1
	K2	The graduate is ready to participate in selected sports and recreational activities as one of the forms of self-fulfillment and rational spending of free time for the benefit of physical and mental health	FSTN_K_K01	1
	K3	The graduate is ready to take responsibility for his own health and that of others (including his own family in the future)	FSTN_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		Familiarizing students with the specificity and rules of a given sport discipline. Introducing students to the correct way to prepare for physical exertion. Preparing students to independently develop a basic training plan with the use of various instruments and utensils. Familiarizing students with the technique of exercises and the possibilities of using training in shaping motor skills on the example of various sports disciplines.		
Methods of the verification of the learning outcomes:		W1, W2, W3, U1, U2, U3, K1, K2 K3: Test of individual technical and practical skills systematic and active participation in classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_25**

Course title		Advanced human nutrition	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the determinants of human nutrition	FSTN1_K_W02	3
	W2	the methods of assessing the diet and nutritional status of individuals and population groups	FSTN1_K_W10	3
Skills: (The graduate is able to)	U1	assess the consumption of total food and nutrients contained in it and interpret the obtained results in the context of the impact on human health	FSTN1_K_U01	3
	U2	assess the nutritional status of individuals and population groups using appropriate methods and reference values for their interpretation	FSTN1_K_U02	3
	U3	select methods and tools to make observations and measurements in the field of phenomena occurring during research in the field of human nutrition	FSTN1_K_U03; FSTN1_K_U08	3
Competences: (The graduate is ready to)	K1	improving knowledge in relation to the assessment of the effects of nutrient excess and deficiencies on human health	FSTN1_K_K01	3
	K2	follow professional ethics and expand knowledge in the field of human nutrition	FSTN1_K_K04	3
Programme contents ensuring the achievement of the learning outcomes:		Lectures: Introduction to the subject - goals and assumptions. Dietary reference values and nutritional recommendations. Methods of nutritional assessment. Anthropometric methods in the assessment of nutritional status. Biochemical methods in the assessment of nutritional status. Nutrition education. Bioassessment in nutritional research. Classes Tools used in the nutritional assessment. Nutrition planning principles for individuals in practice. Planning menus for selected population groups Nutritional assessment methods in practice (performance of 24-h dietary recall, dietary records, food frequency) Anthropometric measurement methodology in practice. Assessment of body composition (fat, muscle mass) by bioimpedance and plethysmography methods. Methods of hydration status assessment in practice. Children's nutritional status assessment. The use of somatic indicators to assess the nutritional status in different population groups. Nutrition education. Rationalization of nutrition - identification of a nutritional problem in the selected population and a proposal for changes (research project). Determinants in the world nutritional diversity Nutrition bioassay - study design. Verification of popular myths in human nutrition.		
Methods of the verification of the learning outcomes:		Lectures: written exam on the lecture content, Tutorials:, preparation of reports, presentation and projects on a given topic; checking the practical skills of carrying out measurements, assessment of diet and nutritional status (scoring); observation of activity during classes (scoring)		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_26**

Course title		Animal-origin food technology	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the technologies for obtaining, preserving and processing of meat raw materials and factors influencing the quality and safety of meat raw materials and products made of them	FSTN1_K_W03 FSTN1_K_W09	2
	W2	the technologies for obtaining, preserving and processing of milk and factors influencing the quality and safety of milk and its products	FSTN1_K_W03 FSTN1_K_W09	2
	W3	the processing processes and their influence on the characteristics of animal origin products	FSTN1_K_W04	2
Skills: (The graduate is able to)	U1	apply appropriate technologies for the processing of selected raw materials of animal origin and apply appropriate research methods to assess the quality of selected raw materials and products of animal origin	FSTN1_K_U03	2
	U2	work individually and / or in a team	FSTN1_K_U08	2
Competences: (The graduate is ready to)	K1	exchange of experiences with experts in the field enabling solutions to issues related to food technology of animal origin	FSTN1_K_K01	1
Programme contents ensuring the achievement of the learning outcomes:		Technology of production of meat and meat products. Technology and hygiene of production of milk and milk products. Selected aspects of production technology and quality assessment of animal origin raw materials and products, for example: structure and chemical composition of meat and the impact of post-slaughter changes on its technological properties, production technology and quality assessment of selected assortments of meat products (e.g. sausages, offal sausages, canned meat, convenient food from poultry meat), production technology and quality assessment of selected assortments of dairy products (e.g. raw milk assessment and food milk technology, rennet and cottage cheeses technology, butter and milk powder technology).		
Methods of the verification of the learning outcomes:		W1, W2 - written or oral exam W3, U1, U2, K1 - test and / or report on the laboratory classes and / or activity on the laboratory classes.		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course title		Food biotechnology	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	selected biotechnological processes used in food technology, the creation of novel foods, biosynthesis of technologically important food additives and functional food ingredients, including the benefits and risks of biotechnology in the food industry and the basic requirements for conducting industrial processes based on the use of microorganisms	FSTN1_K_W01 FSTN1_K_W02 FSTN1_K_W03 FSTN1_K_W04 FSTN1_K_W05 FSTN1_K_W06 FSTN1_K_W07 FSTN1_K_W09 FSTN1_K_W11	3 1 3 3 2 3 3 2 3
Skills: (The graduate is able to)	U1	characterize, implement in practice and evaluate the course of selected biotechnological processes and the properties of the obtained bioproducts, and use these processes in food production, creating new food, biosynthesis of food additives of technological importance and functional food ingredients, including operating the basic scientific and research equipment, and preparing a report on the conducted experiments, including a critical analysis of the results obtained as part of individual and group work	FSTN1_K_U01 FSTN1_K_U03 FSTN1_K_U04 FSTN1_K_U06 FSTN1_K_U08 FSTN1_K_U09	3 3 3 3 3 3
Competences: (The graduate is ready to)	K1	continuous self-education and use of the potential of biotechnological processes and bioproducts obtained in this way in the food industry	FSTN1_K_K01 FSTN1_K_K03 FSTN1_K_K04	2 2 3
Programme contents ensuring the achievement of the learning outcomes:		The syllabus contents implemented during the lectures and laboratory classes are appropriately characterized and used in practice of selected biotechnological processes based on biosynthesis, biotransformation, biohydrolysis and fermentation applied in food technology, the production of food ingredients and technologically functional additives.		
Methods of the verification of the learning outcomes:		W1 - written exam (open or test questions) U1 - individual laboratory class reports K1 - individual laboratory class reports		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_28**

Course title		Pathogens in water and food	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	harmful biological factors associated with water and food and the risk of their impact to human health and food safety	FSTN1_K_W01 FSTN1_K_W04 FSTN1_K_W07 FSTN1_K_W09	2 2 2 2
Skills: (The graduate is able to)	U1	select and characterize methods used to detect pathogens in water and food and also be the ones to interpret the results.	FSTN1_K_U01 FSTN1_K_U03 FSTN1_K_U06	2 2 2
Competences: (The graduate is ready to)	K1	applying the adequate procedures for assessment of the degree of food contamination	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		The harmful biological factors in water and food - bacteria, fungi (molds and yeasts), viruses and parasites. Pathways of microbiological contamination of water and food. Types of disease caused by water- and foodborne pathogens: intoxication, toxico-infection and infection. Endo- and exotoxins produced by bacteria and mycotoxins - molds metabolites. Morphological and physiological characteristics of pathogens that may grow in water and food. Influence of the environment and handling of food and water on the microbial growth.		
Methods of the verification of the learning outcomes:		W1 – written exam U1 – written tests performed during exercises K1 – written lab reports performed during exercises		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_29**

Course title		New food products development	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	research methods and techniques used in the development of new and existing food products	FSTN1_K_W04, FSTN1_K_W06, FSTN1_K_W11	2
	W2	types of product innovation and their role in modernising the food market	FSTN1_K_W08, FSTN1_K_W11	2
Skills: (The graduate is able to)	U1	plan and practically carry out the process of development and marketing of a food product, select recipe ingredients, the method of packaging and preservation of the food product and prepare the information necessary for unit labelling	FSTN1_K_U01, FSTN1_K_U02, FSTN1_K_U03, FSTN1_K_U04, FSTN1_K_U07, FSTN1_K_U08	3
	U2	obtain, analyse and interpret information from a variety of sources necessary for evaluating the chances and opportunities of launching a new product and identifying consumer needs in the food market	FSTN1_K_U03, FSTN1_K_U07, FSTN1_K_U08	3
Competences: (The graduate is ready to)	K1	exchange of knowledge and team/interdisciplinary work in the preparation and implementation of the project work	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		The subject is related to the provision of knowledge, competences and skills in the field of food product development.		
Methods of the verification of the learning outcomes:		Project assessment. Overall evaluation resulting from the assessment of projects taking into account the presentations - literature review, work results and their interpretation, summary and evaluation of active participation in class and timely completion of previously agreed tasks. W1, U1 and K1: the project and its presentation, active participation		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: FSTN_1_L_30

Course title		Food additives and contaminants	ECTS:	1
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the role of food additives, the meaning and origin of food contaminants in food production and their impact on health and safety of consumers	FSTN1_K_W03	3
Skills: (The graduate is able to)	U1	choose the appropriate food additives to achieve technological and nutritional benefits	FSTN1_K_U02	2
Competences: (The graduate is ready to)	K1	choose the appropriate food additives to achieve technological and nutritional benefits	FSTN1_K_U02	2
Programme contents ensuring the achievement of the learning outcomes:		Lectures will cover following aspects related to general overview of food additives utilization in regard: to their legal aspects, preservatives, antioxidants, acidity regulators, colouring and flavouring agents, sweeteners and hydrocolloids, pesticide residues in food and selected food contaminants.		
Methods of the verification of the learning outcomes:		W1, U1, K1 - exam		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_31**

Course title		Sensory analysis	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	specificity of sensory analysis as a field of analytics and methods used in sensory and consumer research	FSTN1_K_W06	2
Skills: (The graduate is able to)	U1	prepare and present samples of products for sensory evaluations, taking into account the conditions of evaluation and methodology	FSTN1_K_U01	2
	U2	select quality attributes and carry out assessments of selected product groups using various methods	FSTN1_K_U03	2
	U3	collate and present the results obtained from sensory research, as well as work as a team in the development and implementation of project	FSTN1_K_U06	2
Competences: (The graduate is ready to)	K1	consciously acting related to the evaluation of the sensory quality of food products	FSTN1_K_K01 FSTN1_K_K03	1
	K2	carrying out sensory and consumer testing of food products using various methods	FSTN1_K_K03 FSTN1_K_K04	1
Programme contents ensuring the achievement of the learning outcomes:		The subject is related to the provision of knowledge, competences and skills in the use of various methods in sensory and consumer research in food products, with particular emphasis on applicability in scientific projects and professional practice		
Methods of the verification of the learning outcomes:		W1: exam U1, U2, U3: presentation, other: observation of the student's work during laboratory classes, verification of the way of presenting and discussing the results; K1 and K2: presentation, exam		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_32**

Course title		Consumer behaviour	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	social and psychological determinants of consumer behaviour in the food market and their implications for development of the food product offer.	FSTN1_K_W10	2
Skills: (The graduate is able to)	U1	select methods and tools for observing, measuring, and calculating data in the field of consumer behaviour on the food market and critically analyze and interpret the obtained data, assess the credibility of selected actions.	FSTN1_K_U03	2
	U2	plan, organize and perform in a team simple project tasks related to consumer behaviour.	FSTN1_K_U08	2
Competences: (The graduate is ready to)	K1	contact and exchange of experiences and knowledge with experts to search for the best solutions to specific problems related to among others food production, supply chain, food storage and human nutrition.	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		consumer behaviour – core concepts and determinants; factors determining decision-making processes related to the choice of food, consumer attitudes and behaviour in relation to selected food categories, methods of studying consumer behaviour and using the results in marketing activities.		
Methods of the verification of the learning outcomes:		E-learning quiz on the content presented in the lectures, preparation, and presentation of a report of the team research project on consumer behaviour (research methods and techniques, development of measurement instrument, data collection, analysis of results and their interpretation, recommendations). W1: e-learning quiz. U1, U2 and K1: report on the implementation of a team research project on consumer behaviour.		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course title		Food production hygiene	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	methods and techniques used in food processing, preservation, storage and testing	FSTN1_K_W06	1
	W2	principles of Good Production and Hygiene Practice as well as systems, regulations and standards related to food quality and safety assurance	FSTN1_K_W07	3
	W3	factors determining the quality and health safety of food with various degrees of processing as well as health hazards related to food and methods of reducing the risk associated with these hazards	FSTN1_K_W09	3
Skills: (The graduate is able to)	U1	conduct experiments and solve practical issues in the field of basic sciences, and then implement them in activities carried out within the scope of directional issues in the field of food processing	FSTN1_K_U01	2
	U2	assess the risk of hazards in accordance with the applicable standards of Good Manufacturing and Hygiene Practice and food quality and safety systems with the use of various tools	FSTN1_K_U05	3
	U3	plan, organize and perform independently or in a team project tasks related to production hygiene and food and nutrition safety assessment	FSTN1_K_U08	3
Competences: (The graduate is ready to)	K1	to work in a group, contact and exchange experiences and knowledge with experts in order to search for the best solutions to specific problems, including with food production, supply chain, food storage and human nutrition	FSTN1_K_K01	2
	K2	taking responsibility for the production of high-quality, health-promoting food that meets quality standards and health safety requirements	FSTN1_K_K03	2
Programme contents ensuring the achievement of the learning outcomes:		The subject is related to the provision of knowledge, competences and skills in the field of hygiene in food production, understood as creating conditions for the production of food of adequate health quality, i.e. safe from the point of view of consumer health, health risks and their assessment, as well as mandatory health safety systems in food production.		
Methods of the verification of the learning outcomes:		W1, W2, W3 written exam of the lectures content U1 colloquium, preparation of reports on the assessment of the influence of disinfecting factors on microorganisms and assessment of the hygiene of the production environment U2 test - preparation of reports on predictive microbiology U3 colloquium, GMP / GHP / HACCP projects K1 - GMP / GHP / HACCP projects, multimedia presentation K2 - written exam on the lectures content		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_Z_34**

Course title		Catering technology	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	Methods and techniques used in the processing, storage and evaluation of food produced in catering establishments	FSTN1_K_W06	3
	W2	Knows and understands the principles of good manufacturing and good hygienic practice during preparation of various dishes.	FSTN1_K_W07	2
	W3	Principles of gastronomic production organization in accordance with the legal requirements for ensuring the quality and safety of food and the principles of sustainable development.	FSTN1_K_W08	1
Skills: (The graduate is able to)	U1	Conduct culinary experiments, select methods, and tools for observation, evolution and estimation during processing, storage, and food testing, as well as critically analyze and interpret the obtained data	FSTN1_K_U03	3
	U2	Individually or collaboratively plan, organize, and complete simple food production and evaluation' assignments.	FSTN1_K_U08	2
	U3	Communicate with the environment using specialized terminology appropriate for food/catering industry	FSTN1_K_U07	1
Competences: (The graduate is ready to)	K1	to take the responsibility for producing high-quality, healthy food that meets quality standards and health safety requirements	FSTN1_K_K03	2
	K2	to contact and exchange experiences and knowledge with experts in order to seek the best solutions to food production-related problem	FSTN1_K_K01	2
Programme contents ensuring the achievement of the learning outcomes:		The course provides knowledge on the effect of the culinary processes, selection of food raw materials, and the technological process on obtaining the optimal quality of dishes from various groups.		
Methods of the verification of the learning outcomes:		W1-W3 outcomes - short test during classes, written exam U1-U3 outcomes - evaluation of assignments performed during the laboratory classes, evaluation of written report on the exercises prepared as part of the student's own work, student activity. K1-K2 outcomes - observation of student activity during classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course title		Food packaging and contact materials	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the theoretical issues in the field of packaging and materials intended for contact with food	FSTN1_K_W01	2
	W2	the methods and techniques used to test packaging and materials intended for contact with food	FSTN1_K_W06	2
Skills: (The graduate is able to)	U1	communicate with the environment using specialized terminology appropriate for the field of study in the field of packaging and materials intended for contact with food and select packaging materials for contact with food in accordance with legal requirements	FSTN1_K_U07	2
Competences: (The graduate is ready to)	K1	recognizes the importance of knowledge in the field of packaging and materials intended for contact with food, as well as expanding its scope through the use of various literature sources	FSTN1_K_K01	1
	K2	fulfill his or her professional duties in a socially responsible, entrepreneurial, ethical manner, consistent with the public interest, as well as with respect for professional traditions and intellectual property protection law	FSTN1_K_K02	1
Programme contents ensuring the achievement of the learning outcomes:		Introduction to packaging - types and short characteristics, safety of packaging for contact with food, legal framework for FCM, declarations of compliance, methods of conducting overall migration from FCM and organoleptic assessment, FCM hazards, active and intelligent materials/packaging: colorimetric quality indicators, temperature indicators, smart solutions for opening the packaging, smart packaging, packaging enriched with active ingredients (antimicrobial compounds, antioxidants, etc.), emitters, absorbers and various new solutions in this field, modern and traditional packaging production technologies, new and innovative packaging: natural biopolymers derived from waste materials, biotechnological synthesis, polymerization of plant raw materials, as well as edible packaging and their properties.		
Methods of the verification of the learning outcomes:		W1, W2 - written test U1, K1, K2 - laboratory exercises report W1, W2, K1, K2 - written lecture exam		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course title		Basics of dietetics	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the role of different dietary patterns/diet and their impact on human functioning and health	FSTN1_K_W02	1
	W2	the methods of dietary intervention and the use of therapeutic diets in the management of selected diseases	FSTN1_K_W10	1
Skills: (The graduate is able to)	U1	plan menu and assess the nutritional value of therapeutic diets	FSTN1_K_U02	1
	U2	plan an adequate diet for patients suffering from different diseases	FSTN1_K_U06	1
Competences: (The graduate is ready to)	K1	provide nutritional counseling in an ethical manner and with respect for needs and desires of patients from different groups	FSTN1_K_K02	1
	K2	use library and/or web-based data for research, analysis and educational purposes	FSTN1_K_K04	1
Programme contents ensuring the achievement of the learning outcomes:		The course provides the basic knowledge of nutritional patterns in the prevention and treatment of non-communicable diseases and the relationship between certain macro- and micronutrients deficiencies and diet-related diseases.		
Methods of the verification of the learning outcomes:		Written exam and assessment of the realization of the task on a defined topic, solving problems and simple tasks individually and in groups, developing dietary recommendations for patients from different ethnic groups on the basis of case study analysis W1, W2: written exam, case study analysis U1, U2, K1, K2: tasks, solving problems, case study analysis		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course title		Nutrition of selected population groups	ECTS:	3
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	nutritional needs of different age groups of people including pregnancy and lactating women; understands the most frequency nutritional problems connecting with nutrition of different population groups	FSTN1_K_W02 FSTN1_K_W03	2
Skills: (The graduate is able to)	U1	plan and modify nutrition of different groups of people and use data about nutrition and nutritional status in nutritional rationalization	FSTN1_K_U02 FSTN1_K_U06	2
Competences: (The graduate is ready to)	K1	critical assessment of the effects of nutritional rationalization and continuous expansion of knowledge and improvement of professional competences	FSTN1_K_K04	2
Programme contents ensuring the achievement of the learning outcomes:		<p>Demographic phenomena related to nutrition and health of different age groups in various regions of the world. The specificity of nutrition with particular emphasis on the nutritional needs of selected population groups: infants, young children and adolescents, adults including pregnant and lactating women, menopausal women, and the elderly. Elements of rationalization of nutrition in various age population groups.</p> <p>Using of fortified products in nutrition of different population groups. Practical aspects of balancing a diet for pregnant and lactating women. Nutrition of infants and young children with particular emphasis on milk feeding and expansion of the diet. Practical aspects of balancing a diet children and adolescents. Premenstrual syndrome and analyzing lifestyle factors, including diet, associated with its occurrence. The specificity of male nutrition in the context of the proper functioning of the reproductive system. The role of phytoestrogens in diet of women in perimenopausal period. Food intake and nutritional status of elderly in practice. Comparison of vegetarian, vegan and traditional diet in relations to adherence of the planetary diet recommendations. Nutrition of people with high physical activity</p>		
Methods of the verification of the learning outcomes:		<p>Written exam from the lectures.</p> <p>Written test from classes materials, reports from classes (in students notebooks).</p> <p>W1: exam, test</p> <p>U1 and K1: reports from classes (in students notebooks)</p>		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_39_1**

Course title		Technological design of food industry plants	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	has consistent knowledge in the field of design and development of technological lines in the field of food processing	FSTN1_K_W04 FSTN1_K_W05 FSTN1_K_W06 FSTN1_K_W08	2
Skills: (The graduate is able to)	U1	make a simple technological project / technological line with the use of computer programme supporting the design, eg AutoCAD	FSTN1_K_U04 FSTN1_K_U05 FSTN1_K_U08	2
Competences: (The graduate is ready to)	K1	organizing work in a team and assuming various functions as well as plan and improve his own work and the work of team members	FSTN1_K_K01 FSTN1_K_K04	2
Programme contents ensuring the achievement of the learning outcomes:		Knowledge of issues related to technical aspects and principles of designing processes in food technology, taking into account the formal requirements contained in regulations, standards and other applicable documents, and with the use of computer support. Team written studies or presentation of prepared studies, discussion, argumentation.		
Methods of the verification of the learning outcomes:		W1 - written work, U1 - evaluation of the prepared project, K1 - observation of work during classes / discussion and activity during classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course title		Technological design of food gastronomy plants	ECTS:	4
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	technical standards and norms in technological design	FSTN1_K_W05 FSTN1_K_W04 FSTN1_K_W06	1
	W2	rules on methods, techniques, tools and technologies used for the technological design of food service establishments	FSTN1_K_W08	2
Skills: (The graduate is able to)	U1	acquire and analyze information necessary to prepare a technological project of food service establishments	FSTN1_K_U04, FSTN1_K_U06	2
	U2	plan and realize practical activities related to technological and functional design of food service establishments	FSTN1_K_U05 FSTN1_K_U08	2
Competences: (The graduate is ready to)	K1	organizing individual or team work when technological designing of food service establishments	FSTN1_K_K01 FSTN1_K_K04	2
Programme contents ensuring the achievement of the learning outcomes:		The course is related to provision of knowledge, competences and skills in term of proper organization a facilities of food service establishments taking into account such aspects like: organizational and functional, hygienic, technical and technological as well as the selection and proper setting of technological equipment, implementation of basic design calculations and use of software supporting the design process - AutoCAD programme.		
Methods of the verification of the learning outcomes:		On the basis of practical implementation of the referred task (project documentation) and on the basis of a written test (exam) W1 and W2: exam U1, U2 and K1: technological design of the selected food service establishment together with the descriptive part of the project documentation		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_40_1**

Course title		Methodology in technological projects	ECTS:	2
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	has in-depth theoretical knowledge in the field of research methodology used to solve a defined related problem with food production and shaping its quality and safety	FSTN1_K_W01 FSTN1_K_W02 FSTN1_K_W03 FSTN1_K_W04 FSTN1_K_W05 FSTN1_K_W06 FSTN1_K_W07 FSTN1_K_W08 FSTN1_K_W09 FSTN1_K_W10 FSTN1_K_W11 FSTN1_K_W12	3 1 2 2 2 3 1 1 3 1 1 1
Skills: (The graduate is able to)	U1	define the goal, develop a literature review and design the methodological assumptions of the technological project, review and assess the current state of methodological solutions in the field of the project being implemented and adapt the available methodological solutions for the needs of the project being implemented, critically analyze the results of the experiments taking into account the advantages and disadvantages of the methods and research procedures, correctly apply, among others thanks to the ability to collaborate, be creative and communicate in a group	FSTN1_K_U01 FSTN1_K_U02 FSTN1_K_U03 FSTN1_K_U04 FSTN1_K_U05 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U08 FSTN1_K_U09	3 3 3 3 1 3 2 3 3
Competences: (The graduate is ready to)	K1	continuous deepening of knowledge, searching for research solutions and solving methodological problems in professional life	FSTN1_K_K01 FSTN1_K_K02 FSTN1_K_K03 FSTN1_K_K04	3 3 3 3
Programme contents ensuring the achievement of the learning outcomes:		The selection of the topics of technological projects and the related need for students to develop methodological assumptions take into account the learning outcomes achieved so far in the field of knowledge, skills and social competences assumed within the various modules and subjects included in the study plan. Preparation of the research methodology verifies the practical use of learning outcomes related to the field of study. The learning outcomes specific to the research methodology being developed are deepened and implemented under the substantive supervision of academic teachers.		
Methods of the verification of the learning outcomes:		W1, U1, K1: substantive evaluation of the developed methodological concept and its presentation as well as evaluation of the student's involvement in the preparation of this concept		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course title		Methodology in nutritional projects	ECTS:	2
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	has in-depth theoretical knowledge in the field of research methodology used to solve a defined problem related to the assessment of food and nutrition in order to formulate nutritional recommendations leading to the rationalization of nutrition of individuals and various population groups	FSTN1_K_W01 FSTN1_K_W02 FSTN1_K_W03 FSTN1_K_W04 FSTN1_K_W05 FSTN1_K_W06 FSTN1_K_W07 FSTN1_K_W08 FSTN1_K_W09 FSTN1_K_W10 FSTN1_K_W11 FSTN1_K_W12	3 3 3 1 1 1 1 1 1 2 3 1 1
Skills: (The graduate is able to)	U1	define the goal, develop a literature review and design the methodological assumptions of the nutritional project, review and assess the current state of methodological solutions in the field of the project being implemented and adapt the available methodological solutions for the needs of the project being implemented, critically analyze the results of the experiments taking into account the advantages and disadvantages of the methods and research procedures, correctly apply, among others thanks to the ability to collaborate, be creative and communicate in a group	FSTN1_K_U01 FSTN1_K_U02 FSTN1_K_U03 FSTN1_K_U04 FSTN1_K_U05 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U08 FSTN1_K_U09	3 3 3 3 1 3 2 3 3
Competences: (The graduate is ready to)	K1	continuous deepening of knowledge, searching for research solutions and solving methodological problems in professional life	FSTN1_K_K01 FSTN1_K_K02 FSTN1_K_K03 FSTN1_K_K04	3 3 1 3
Programme contents ensuring the achievement of the learning outcomes:		The selection of the topics of nutritional projects and the related need for students to develop methodological assumptions take into account the learning outcomes achieved so far in the field of knowledge, skills and social competences assumed within the various modules and subjects included in the study plan. Preparation of the research methodology verifies the practical use of learning outcomes related to the field of study. The learning outcomes specific to the research methodology being developed are deepened and implemented under the substantive supervision of academic teachers.		
Methods of the verification of the learning outcomes:		W1, U1, K1: substantive evaluation of the developed methodological concept and its presentation as well as evaluation of the student's involvement in the preparation of this concept		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_41_1**

Course title		Food safety and quality management in food production	ECTS:	1
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	internal food safety and quality management systems in food production plants	FSTN1_K_W07	1
	W2	factors influencing the food quality and safety	FSTN1_K_W09	1
Skills: (The graduate is able to)	U1	evaluate the implementation and functioning of quality management systems in food production plants	FSTN1_K_U04 FSTN1_K_U05 FSTN1_K_U06	1
Competences: (The graduate is ready to)	K1	take responsibility for the safety and quality of products in food production plants	FSTN1_K_K03	1
	K2	improve knowledge related to ensuring food safety	FSTN1_K_K04	1
Programme contents ensuring the achievement of the learning outcomes:		Control of cleaning and disinfection processes, powers and obligations of employees and employers in the field of production hygiene, sample hygiene plan, control of physical, chemical and microbiological threats in food production, food legislation in the field of production hygiene, technical and hygienic-sanitary requirements GHP, GMP and HACCP for plants, organization of sanitary supervision over food production, internal security and food quality management systems in food production plants, GHP, GMP and HACCP Audits, auditors, Quality Management Systems: TQM, QMS (ISO 9000, 14000, 22000, ETC.), AQAP, IFS, BRC, etc.		
Methods of the verification of the learning outcomes:		W1, W2, U1, K1, K2 - Written exam (possibility to use credit in a distance system in cases necessary, for example, pandemic)		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_41_2**

Course title		Food safety and quality management in gastronomy	ECTS:	1
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	HACCP principles and quality management requirements	FSTN_K_W07	3
	W2	audit process	FSTN_K_W07 FSTN_K_W09	2
Skills: (The graduate is able to)	U1	evaluate the implementation and functioning of quality management systems in gastronomy	FSTN_K_U04 FSTN_K_U05 FSTN_K_U06	2
Competences: (The graduate is ready to)	K1	to be responsible for the safety and quality of products in gastronomy	FSTN_K_K03	2
Programme contents ensuring the achievement of the learning outcomes:		The concept of food quality and safety and their importance in gastronomy. Basic food safety requirements, EU regulations. Hazards in gastronomy, sources of origin and ways of prevention, elimination or minimization to acceptable levels. HACCP principles within the framework of ensuring food safety. HACCP procedures and records. Critical Control Points (CCPs) in gastronomy. Methods of monitoring CCP in gastronomy. Difficulties and benefits of implementing HACCP principles in gastronomy. ISO 9001. Guidelines for auditing management systems. Verification - the role of audit in ensuring food safety and quality. Guidelines for the audit of management systems according to ISO 19011: preparation, performance and documentation of an audit in gastronomy		
Methods of the verification of the learning outcomes:		W1, W2, U1, K1: Test		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_42_1**

Course title		Technological project	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	has in-depth theoretical knowledge of the subject of the prepared project and understands the possibility of patent protection of the prepared solution.	FSTN1_K_W01 FSTN1_K_W02 FSTN1_K_W03 FSTN1_K_W04 FSTN1_K_W05 FSTN1_K_W06 FSTN1_K_W07 FSTN1_K_W08 FSTN1_K_W09 FSTN1_K_W10 FSTN1_K_W11 FSTN1_K_W12	3 1 3 3 2 3 2 1 3 1 2 1
Skills: (The graduate is able to)	U1	correctly carry out experiments using the available material resources and technical or theoretical or other, aimed at achieving the assumed design goal, and an appropriate research methodology; synthesizes the obtained results, formulating conclusions and recommendations for practical use, prepares a written study in the form of a draft and correctly presents the project to the group.	FSTN1_K_U01 FSTN1_K_U02 FSTN1_K_U03 FSTN1_K_U04 FSTN1_K_U05 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U08 FSTN1_K_U09	3 1 3 3 3 3 3 3 3
Competences: (The graduate is ready to)	K1	ready to constantly expand knowledge and skills related to professional life and search for its reliable sources in the era of digital civilization, and is committed to the reliable preparation of the project	FSTN1_K_K01 FSTN1_K_K02 FSTN1_K_K03 FSTN1_K_K04	3 3 3 3
Programme contents ensuring the achievement of the learning outcomes:		The selection of the subject of the project takes into account the learning outcomes achieved by the student so far in terms of knowledge, skills and social competences assumed in the various modules and subjects included in the study curricula. The preparation of the project verifies the practical use of learning outcomes related to the field of study. At the same time, the learning outcomes specific to the subject of the project are deepened and implemented under the substantive supervision of academic teachers.		
Methods of the verification of the learning outcomes:		W1, U1, K1: substantive evaluation of the technological project and its presentation, and evaluation of the student's involvement in the preparation of the project		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic,

Course code: **FSTN_1_L_42_2**

Course title		Nutritional project	ECTS:	5
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	has in-depth theoretical knowledge of the subject of the prepared project and understands the importance of proper nutrition for ensuring health and reducing the incidence of non-communicable diseases.	FSTN1_K_W01 FSTN1_K_W02 FSTN1_K_W03 FSTN1_K_W04 FSTN1_K_W05 FSTN1_K_W06 FSTN1_K_W07 FSTN1_K_W08 FSTN1_K_W09 FSTN1_K_W10 FSTN1_K_W11 FSTN1_K_W12	3 3 3 1 1 1 1 1 1 1 1 1 1
Skills: (The graduate is able to)	U1	correctly carry out experiments using the available material resources and technical or theoretical or other, aimed at achieving the assumed design goal, and an appropriate research methodology; synthesizes the obtained results, formulating conclusions and recommendations for practical use, prepares a written study in the form of a draft and correctly presents the project to the group.	FSTN1_K_U01 FSTN1_K_U02 FSTN1_K_U03 FSTN1_K_U04 FSTN1_K_U05 FSTN1_K_U06 FSTN1_K_U07 FSTN1_K_U08 FSTN1_K_U09	3 3 3 1 1 3 3 3 3
Competences: (The graduate is ready to)	K1	ready to constantly expand knowledge and skills related to professional life and search for its reliable sources in the era of digital civilization, and is involved in the reliable preparation of the project	FSTN1_K_K01 FSTN1_K_K02 FSTN1_K_K03 FSTN1_K_K04	3 3 1 3
Programme contents ensuring the achievement of the learning outcomes:		The selection of the subject of the project takes into account the learning outcomes achieved by the student so far in terms of knowledge, skills and social competences assumed in the various modules and subjects included in the study curricula. The preparation of the project verifies the practical use of learning outcomes related to the field of study. At the same time, the learning outcomes specific to the subject of the project are deepened and implemented under the substantive supervision of academic teachers.		
Methods of the verification of the learning outcomes:		W1, U1, K1: substantive evaluation of the nutritional project and its presentation, and evaluation of the student's involvement in the preparation of the project		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_43_1**

Course title		Seminar (food technology)	ECTS:	2
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	issues related to food science, with particular emphasis on the contemporary aspects of food processing and quality	FSTN1_K_W02	1
			FSTN1_K_W03	3
			FSTN1_K_W04	2
			FSTN1_K_W06	3
			FSTN1_K_W08	2
			FSTN1_K_W09	3
			FSTN1_K_W010	1
FSTN1_K_W011	3			
Skills: (The graduate is able to)	U1	acquire literature data in order to develop a specific issue, using the knowledge resources consciously, critically assess the available information and synthesize it	FSTN1_K_U06 FSTN1_K_U09	3 3
	U2	prepare and deliver presentations on a given topic	FSTN1_K_U07	3
	U3	discuss using appropriate argumentation and evaluate the statements of other participants of the diploma seminar, as well as take into account various points of view in the discussion	FSTN1_K_U07	3
Competences: (The graduate is ready to)	K1	constant deepening of acquired knowledge and skills in the era of scientific and technological progress	FSTN1_K_K01	2
	K2	recognition of the importance of ethical issues in professional life and the need to protect intellectual property and the social responsibility of conducting professional activity	FSTN1_K_K02 FSTN1_K_K03 FSTN1_K_K04	3 2 2
Programme contents ensuring the achievement of the learning outcomes:		<ul style="list-style-type: none"> • review and discussion of the content of a selected publication related to food processing and quality, • presentation of a selected issue expanding the knowledge base in the field of food processing, taking into account areas that arouse scientific and/or social controversy, • presentation of the planned path of the student's professional development. 		
Methods of the verification of the learning outcomes:		Each student prepares and presents presentations, and their detailed thematic scope, form and number of points possible to obtain are defined by the lecturer. W1, U1 and U2: oral presentations prepared and delivered during the seminar, U3, K1 and K2: assessment of student activity and participation in discussions during seminars.		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: **FSTN_1_L_43_2**

Course title		Seminar (human nutrition)	ECTS:	2
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	issues related to food science, with particular emphasis on contemporary aspects of human nutrition	FSTN1_K_W02	3
			FSTN1_K_W03	2
			FSTN1_K_W04	1
			FSTN1_K_W06	1
			FSTN1_K_W08	2
			FSTN1_K_W09	2
			FSTN1_K_W010	3
Skills: (The graduate is able to)	U1	acquire literature data in order to develop a specific issue, using the knowledge resources consciously, critically assess the available information and synthesize it	FSTN1_K_U06 FSTN1_K_U09	3 3
	U2	prepare and deliver presentations on a given topic	FSTN1_K_U07	3
	U3	discuss using appropriate argumentation and evaluate the statements of other participants of the diploma seminar, as well as take into account various points of view in the discussion	FSTN1_K_U07	3
Competences: (The graduate is ready to)	K1	constant deepening of acquired knowledge and skills in the era of scientific and technological progress	FSTN1_K_K01	2
	K2	recognition of the importance of ethical issues in professional life and the need to protect intellectual property and the social responsibility of conducting professional activity	FSTN1_K_K02 FSTN1_K_K03 FSTN1_K_K04	3 2 2
Programme contents ensuring the achievement of the learning outcomes:		<ul style="list-style-type: none"> • review and discussion of the content of a selected publication related to human nutrition, • presentation of a selected issue expanding the knowledge base in the field of human nutrition, taking into account areas that arouse scientific and / or social controversy, • presentation of the planned path of the student's professional development. 		
Methods of the verification of the learning outcomes:		Each student prepares and presents presentations, and their detailed thematic scope, form and number of points possible to obtain are defined by the lecturer. W1, U1 and U2: oral presentations prepared and delivered during the seminar, U3, K1 and K2: assessment of student activity and participation in discussions during seminars.		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

Course code: FSTN_1_L_44

Course title		Protection of intellectual property	ECTS:	1
Learning outcomes:		The content of the effect assigned to the course:	Relation to the course outcomes	Impact on the course outcomes *
Knowledge: (The graduate knows and understands)	W1	the theoretical issues in the field of protection of intellectual property	FSTN1_K_W01	2
	W2	the economic, social, environmental, ethical and legal conditions of food production and the principles of new product development, distribution and offering food to consumers, including the basic concepts and principles of industrial property protection and copyright	FSTN1_K_W11	2
Skills: (The graduate is able to)	U1	communicate with the environment using specialized terminology	FSTN1_K_U07	1
Competences: (The graduate is ready to)	K1	recognizes the importance of knowledge in the field of protection of intellectual property, as well as expanding its scope through the use of various sources	FSTN1_K_K01	1
	K2	fulfill his or her professional duties in a socially responsible, entrepreneurial, ethical manner, consistent with the public interest, as well as with respect for professional traditions and intellectual property protection law	FSTN1_K_K02	1
Programme contents ensuring the achievement of the learning outcomes:		W1, W2, U1, K1, K2 – lecture exam		
Methods of the verification of the learning outcomes:		W1 - written exam, U1 - reports on the laboratory class performed, K1 - observation during laboratory classes		

*) 3 – Significant and detailed, 2 – Partial, 1 – Basic

15. Quantitative indicators

- 1) The programme of studies provides for 5 ECTS points to be obtained by the student for courses in the field of humanities and social sciences - therefore the condition of at least 5 ECTS points for these courses is met.

Realization of courses in the field of humanities and / or social sciences in individual terms:

semester 1 – 4 ECTS points

semester 6 – 1 ECTS points

In total – 5 ECTS points

- 2) The study programme allows the student to choose 55 ECTS points, which is 30.6% of the total number of ECTS points - therefore the condition of at least 30% of elective courses in terms of ECTS credits is met.

Possibility to choose courses to which the total number of ECTS points was assigned for each individual term:

semester 1 – 7 ECTS points

semester 2 – 4 ECTS points

semester 5 – 15 ECTS points

semester 6 – 29 ECTS points

In total – 55 ECTS points, i.e. 30.6% of the total number of ECTS points

- 3) The study programme enables the student to achieve at least 50% of the number of ECTS points specified for the programme of these studies carried out as part of courses conducted with the direct participation of academic teachers or other persons conducting courses.

In total – 97.6 ECTS contact learning points, i.e. 54.2 % of total number of ECTS points

- 4) The study programme includes courses related to the research activities conducted at WULS in the discipline of food technology and human nutrition, to which a field of the study is assigned in the amount of 145 ECTS points, which constitutes 80.6% of the total number of ECTS points for first-stage studies with a general academic profile - therefore the condition with more than 50% share of activities related to the conducted research activity is met.

In total – 145 ECTS points, i.e. 80.6% of total number of ECTS points

- 5) The study programme provides for 7 ECTS points to be obtained by the student for the courses leading to the achievement of learning outcomes in the field of foreign language proficiency at the B2 level of the European Framework of Reference for Language.

Realization of foreign language courses in individual terms:

semester 1 – 3 ECTS points

semester 2 – 4 ECTS points

In total – 7 ECTS points

- 6) The student achieves learning outcomes in the field of intellectual property protection in the courses Protection of intellectual property in term of 1 ECTS point - therefore the condition of at least 1 ECTS point for courses of this type is met.

Realization of courses in the field of intellectual property protection in individual terms:

semester 6 – 1 ECTS point

In total – 1 ECTS point