



Lodz University
of Technology

Study programme

Faculty:	Faculty of Biotechnology and Food Sciences
Major:	Food Technology and Human Nutrition
Level of study:	second-cycle programme (magister)
Form of study:	full-time studies
Academic year:	2025/26

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Basic information

Name of the field of study:	Food Technology and Human Nutrition
Level of study:	second-cycle programme (magister)
Study profile:	general academic
Form of studies:	full-time studies
Duration of studies (number of semesters):	3
The number of ECTS points required to complete studies:	90
Total number of hours of classes:	1150
The number of ECTS points a student obtains as part of classes conducted with the direct participation of academic teachers or other persons conducting classes:	46
Professional title awarded to graduates:	magister
ISCED code:	0721
Language of study:	polish

Assigning the course to the disciplines to which the learning outcomes relate

Discipline	Percentage share
Food technology and nutrition	100%

Learning outcomes (in relation to the PQF)

No.	Learning outcome code	Learning Outcome Content	Reference to the universal characteristics of the first level of PRK	Reference to the second-level characteristics of the PRK, taking into account the second-level characteristics enabling the acquisition of engineering competences
1	2TZZ1	Knows and understands at an in-depth level advanced, key and detailed issues in the field of food and nutrition technology and analysis, as well as the main development trends in this discipline.	P7U_W	P7S_WG
2	2TZZ10	Is ready to responsibly develop the achievements of the profession and the principles of professional ethics, in line with changing social conditions and needs and technological progress, thinking and acting in an entrepreneurial manner.	P7U_K	P7S_KO, P7S_KR
3	2TZZ2	Knows and understands the fundamental dilemmas of modern civilization related to food production, preservation, storage, distribution and control of quality and authenticity, as well as nutrition, including the principles of the circular economy.	P7U_W	P7S_WK
4	2TZZ3	Knows and understands the economic, legal, normative, ethical and environmental conditions of various types of professional activities related to food technology and nutrition, including the principles of intellectual property protection law, as well as the basic principles of creating and developing various forms of entrepreneurship.	P7U_W	P7S_WK
5	2TZZ4	Is able to use his/her knowledge to identify, formulate and innovatively solve complex and unusual problems related to food technology and nutrition, as well as to formulate and test hypotheses related to implementation problems, through the appropriate selection of sources and information as well as advanced methods and tools, including advanced information and communication techniques.	P7U_U	P7S_UW
6	2TZZ5	Is able to critically analyze the functioning of existing technical solutions and tools, adapt and develop new methods and tools in order to design systems, processes and procedures in the food production and distribution chain, taking into account legal, economic, ethical and environmental aspects.	P7U_U	P7S_UW
7	2TZZ6	Can use appropriately selected techniques, tools, and materials to plan and conduct experiments, including measurements and computer simulations, and critically analyze, synthesize, and creatively interpret obtained results, as well as present and discuss them. They can lead a debate on a given topic.	P7U_U	P7S_UK
8	2TZZ7	Is able to function effectively in teams (including interdisciplinary ones) and lead teams that set goals, plan tasks and analyze risks and uncertainty, as well as communicate with the environment using terminology related to food technology and nutrition, including in a foreign language at the B2+ level.	P7U_U	P7S_UK, P7S_UO
9	2TZZ8	Is able to independently plan and implement their own learning and development and inspire the development of others.	P7U_U	P7S_UU

No.	Learning outcome code	Learning Outcome Content	Reference to the universal characteristics of the first level of PRK	Reference to the second-level characteristics of the PRK, taking into account the second-level characteristics enabling the acquisition of engineering competences
10	2TZZ9	Is ready to critically evaluate his/her knowledge, seek expert opinions, recognize the importance and use of knowledge in solving cognitive and practical problems related to food technology and nutrition, and inspire and organize activities for the benefit of the social environment and the public interest.	P7U_K	P7S_KK, P7S_KO

Matrix of course modules in relation to learning outcomes and curriculum content

No.	Course name	Program content	2TZZ1	2TZZ10	2TZZ2	2TZZ3	2TZZ4	2TZZ5	2TZZ6	2TZZ7	2TZZ8	2TZZ9
1	Studenckie praktyki zawodowe (produkcyjne)			x						x	x	
2	Genetically modified food		x		x			x			x	
3	Designing a new generation of food		x	x	x					x		
4	Modern trends in fermentation technology		x	x	x					x		
5	Nutrigenomics		x		x			x			x	
6	Studenckie praktyki zawodowe (badawcze)			x						x	x	
7	Transformations of food ingredients		x		x				x			
8	Nutrition of healthy and sick people		x		x		x				x	
9	Shaping food quality, authenticity and safety		x				x		x			x
10	Integrated quality and food safety management systems			x		x		x		x		
11	Smart technologies in food production		x		x		x	x				
12	Innovation methods of food preservation and storage				x		x	x		x		
13	Innovations in confectionery and sugar industry				x		x	x		x		
14	Sustainable development of food economy				x	x		x				x
15	Research methodology and design					x			x	x	x	
16	Food business management				x	x		x				x
17	Functional food		x				x			x		x
18	Innovative systems and production lines in food technology		x	x			x		x			
19	Foreign Language for Specialist Purposes	Foreign language course at B2+ level; developing the ability to communicate effectively in speech and writing, using specialist terminology from the field of study.						x	x	x		

No.	Course name	Program content	2TZZ1	2TZZ10	2TZZ2	2TZZ3	2TZZ4	2TZZ5	2TZZ6	2TZZ7	2TZZ8	2TZZ9
20	Communication within the business and project team					x		x		x	x	
21	Practical aspects of entrepreneurship			x	x	x				x		
22	Diploma Seminar		x					x	x		x	
23	Scientist in the modern world					x		x		x	x	
24	Final Project				x		x		x			x
25	Ultra-processed food			x	x			x				x

ECTS - subjects

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
1	Studenckie praktyki zawodowe (produkcyjne)	4		4		
2	Genetically modified food	2		2	2	
3	Designing a new generation of food	4		4	4	4
4	Modern trends in fermentation technology	4		4	4	4
5	Nutrigenomics	2		2	2	
6	Studenckie praktyki zawodowe (badawcze)	4		4		
7	Transformations of food ingredients	4			4	
8	Nutrition of healthy and sick people	4			4	
9	Shaping food quality, authenticity and safety	9			9	
10	Integrated quality and food safety management systems	3			3	
11	Smart technologies in food production	7			7	
12	Innovation methods of food preservation and storage	5		5	5	
13	Innovations in confectionery and sugar industry	5		5	5	
14	Sustainable development of food economy	3		3	3	3
15	Research methodology and design	3			3	
16	Food business management	3		3	3	3
17	Functional food	4			4	
18	Innovative systems and production lines in food technology	6			6	
19	Foreign Language for Specialist Purposes	2				
20	Communication within the business and project team	3	3	3		
21	Practical aspects of entrepreneurship	2	2			

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
22	Diploma Seminar	3			3	
23	Scientist in the modern world	3	3	3		
24	Final Project	20		20	20	
25	Ultra-processed food	2			2	

ECTS indicators

Name	Value
The total number of ECTS credits that a student must obtain through elective courses (amounting to no less than 30% of the total ECTS credits required to obtain the qualification corresponding to the given level of study).	41/90 (45.56%)
The total number of ECTS credits to be earned by a student through courses in the fields of humanities or social sciences	5
The total number of ECTS credits that a student must obtain from courses related to research conducted at the university, amounting to more than 50% of the total ECTS credits required to graduate from a given level of study	79/90 (87.78%)

Methods of verifying and assessing learning outcomes

Verification of achieved learning outcomes requires the use of diverse forms of student assessment, appropriate to the categories of knowledge, skills, and social competencies to which these outcomes relate. The selection of suitable tools also depends on the specifics of the subject and the form of classes, and is described in the syllabi of individual courses. The achievement of the required learning outcomes is verified through:

1. Written work (exams, tests, reports, essays, projects, posters, thesis, etc.);
2. Oral statements (oral knowledge checks, public presentations such as delivering a paper, presentation, etc.);
3. Practical and/or project tasks (both group and individual);
4. Observation and evaluation of student activity during classes;
5. Self-assessment and peer assessment (especially in the case of group projects);
6. Competency exam and diploma exam.

Verification may be formative (partial, repeated during classes) and/or summative (final assessment). The final verification result is given according to the currently applicable grading scale.

The course coordinator or instructor is obliged, during the first class, to discuss the course syllabus and to formulate and provide documented information to students regarding the methods of verification and the conditions for conducting assessments of learning outcomes.

Professional internships

Duration: 4 weeks

ECTS credits obtained: 4

\Internships are carried out in accordance with the study program, in a form adapted to the profile and specifics of the field of study, and according to the rules established by the faculty and the University.

Characteristics of the course

Graduate profile

Graduates of the second-cycle program in Food Technology and Human Nutrition obtain a master's degree and possess in-depth knowledge and skills in modern technologies and systems used in food production. They also possess competencies in human nutrition and food quality and safety, including unconventional production techniques. Graduates understand the economic, legal, and social aspects of food industry operations, including the principles of industrial property protection, copyright and patent law, and the commercialization of scientific research. Graduates understand, organize, and supervise the production of consumer-safe food consistent with sustainable development principles and the Industry 4.0 model. Knowledge of legal, economic, and management sciences will prepare graduates to start and run their own businesses. Graduates are prepared to plan and implement research experiments using modern analytical methods, techniques, technologies, and mathematical and IT tools. They can develop, interpret, and present experimental results, including in a foreign language. The acquired social competencies will enable graduates to lead, collaborate, and communicate within business and project teams, even in crisis situations. Graduates are theoretically and practically prepared to work in the food industry in management positions related to production, quality control, and the marketing of innovative foods. They can also find employment in food research laboratories and research institutions specializing in food technology and nutrition. Graduates are also prepared to pursue doctoral or postgraduate studies.

The relationship between the field of study and the university's strategy

The Food Technology and Human Nutrition study programme, based on advanced knowledge, practical skills, and social competencies, aligns with Lodz University of Technology's mission, as outlined in the university's strategy for 2025-2030. The guiding principle is collaboration that engages both staff and students, as well as representatives of the business community. This program aligns with TUL's mission to build a sustainable research university that develops innovations for the benefit of society, the economy, and the world, promoting the concept of lifelong learning. At the same time, this program supports scientific research that addresses key socio-economic issues, such as food safety, public health, and technological innovations, which is consistent with the assumptions of the impact area.

The Food Technology and Human Nutrition program aligns perfectly with the goals of interdisciplinary research, promoting, based on the latest trends, technologies that support a modern, knowledge-based economy consistent with the principles of sustainable development and respect for the natural environment. In line with its educational goal, this program continually refines its teaching offerings in response to environmental challenges, increasing student participation in research and intensifying their practical experience outside of the university, thus ensuring graduates achieve key competencies aligned with labor market expectations. Modern forms of education and active collaboration with businesses enable students to acquire valuable practical skills and prepare them for work in highly specialized sectors of the knowledge-based economy.

Educational objectives and employment and continuing education opportunities

The Food Technology and Human Nutrition field of study at Lodz University of Technology aims to educate graduates who combine interdisciplinary knowledge with practical skills. The goal of the program is to develop entrepreneurship and impart knowledge and skills in innovative food production systems that leverage the achievements of digitalization and sustainable development in line with the Industry 4.0 model, including artificial intelligence (AI), the Internet of Things (IoT), automation, and robotics. Students acquire skills in modern food production, the analysis and assessment of food quality and authenticity, and ensuring safety. The curriculum prepares specialists who can implement innovative, applied, socially and environmentally responsible solutions in the food industry. Graduates have a wide range of employment opportunities in the industry, where they can work as technologists, quality controllers, production managers, or food analysis specialists. They are prepared to take on management positions in companies and institutions involved in food trade, food control, and human nutrition. They can also work in companies in other industries, such as pharmaceuticals, chemicals, analytical laboratories, research centers, and scientific institutions. Graduates can develop their professional skills through postgraduate studies and training, both in Poland and abroad. They have the opportunity to continue their education and develop their scientific careers in third-cycle programs at doctoral schools, including the Interdisciplinary Doctoral School at Lodz University of Technology. The Food Technology and Human Nutrition curriculum enables students to prepare for research, both methodologically and organizationally, by completing the following courses: Research Methodology and Design, Scientist in the Modern World, and by completing a thesis, which provides an independent, comprehensive solution to a complex research problem. Students, in the Foreign Language for Specialized Purposes course, acquire foreign language skills at a B2+ level, including specialized terminology, enabling them to critically analyze and interpret scientific materials and texts, as well as prepare a coherent scientific article or presentation on the results of research and/or scientific projects.

Description of the process and outcome of consultations on the proposed study program with the socio-economic environment

The Food Technology and Human Nutrition study programme has been comprehensively adapted to the requirements of the digital and green transformation, focusing on innovative technologies and products, while also taking into account the sustainable development of the food economy. While completing courses such as "Innovative Systems and Production Lines in Food Technology," "Smart Technologies in Food Production," and "Innovations in the Confectionery and Sugar Industry," students will become familiar with modern unit processes and trends in the development of technological equipment, incorporating digitization and automation. The programs cover, among other things, the use of Artificial Intelligence (AI), the Internet of Things (IoT), computer, cyberphysical, and cloud systems, molecular techniques, and 3D printing in food production. Adaptation to the needs of the green transformation is primarily achieved through the "Sustainable Development of the Food Economy" course, which discusses the "farm to fork" strategy, the "zero waste" concept, the green deal, the circular economy, the environmental footprint of a product, and the principles of sustainable food processing. The curriculum also addresses aspects related to energy efficiency and carbon footprint reduction. The above-mentioned activities are key in the Industry 4.0 manufacturing model.

Description of competencies expected from a candidate applying for admission to studies

In accordance with the recruitment resolution in force for a given academic year.

The unit organizing education

Faculty of Biotechnology and Food Sciences

Education program

Semester 1

Course	Number of hours	ECTS points	Form of verification	Obligatory
Transformations of food ingredients	Tutorials: 15 Laboratory classes: 30 Lecture: 10	4	Graded assignment	Obligatory
Nutrition of healthy and sick people	Tutorials: 20 Project work: 20 Lecture: 15	4	Graded assignment	Obligatory
Shaping food quality, authenticity and safety	Tutorials: 15 Laboratory classes: 105 Project work: 15 Lecture: 20	9	Exam	Obligatory
Integrated quality and food safety management systems	Tutorials: 15 Project work: 15 Lecture: 10	3	Graded assignment	Obligatory
Elective Courses		6	Graded assignment	Obligatory group
Student wybiera po jednym przedmiocie z obu bloków				
Elective Course 1		4	Graded assignment	Obligatory group
Student wybiera 1 przedmiot				
Designing a new generation of food	Laboratory classes: 10 Project work: 10 Lecture: 5	4	Graded assignment	Optional
Modern trends in fermentation technology	Laboratory classes: 10 Project work: 10 Lecture: 5	4	Graded assignment	Optional
Elective Courses 2		2	Graded assignment	Obligatory group
Student wybiera 1 przedmiot				

Course	Number of hours	ECTS points	Form of verification	Obligatory
Genetically modified food	Project work: 10 Lecture: 10	2	Graded assignment	Optional
Nutrigenomics	Project work: 10 Lecture: 10	2	Graded assignment	Optional
Elective Student Internships		4	Pass	Obligatory subjects to choose from
Student wybiera 1 przedmiot				
Studenckie praktyki zawodowe (produkcyjne)	Internship: 0	4	Pass	Obligatory subjects to choose from
Studenckie praktyki zawodowe (badawcze)	Internship: 0	4	Pass	Obligatory subjects to choose from
Sum	350	30		

Semester 2

Course	Number of hours	ECTS points	Form of verification	Obligatory
Smart technologies in food production	Tutorials: 15 Laboratory classes: 50 Project work: 10 Lecture: 15	7	Exam	Obligatory
Research methodology and design	Laboratory classes: 10 Lecture: 5	3	Exam	Obligatory
Functional food	Laboratory classes: 30 Project work: 15 Lecture: 15	4	Graded assignment	Obligatory
Innovative systems and production lines in food technology	Laboratory classes: 55 Project work: 15 Lecture: 15	6	Exam	Obligatory

Course	Number of hours	ECTS points	Form of verification	Obligatory
Foreign Language for Specialist Purposes	Tutorials: 45	2	Graded assignment	Obligatory
Elective Courses		8	Graded assignment	Obligatory group
Student wybiera po jednym przedmiocie z obu bloków				
Elective Courses 3		5	Graded assignment	Obligatory group
Student wybiera 1 przedmiot				
Innovation methods of food preservation and storage	Laboratory classes: 15 Project work: 15 Lecture: 10	5	Graded assignment	Optional
Innovations in confectionery and sugar industry	Laboratory classes: 15 Project work: 15 Lecture: 10	5	Graded assignment	Optional
Elective Courses 4		3	Graded assignment	Obligatory group
Student wybiera 1 przedmiot				
Sustainable development of food economy	Tutorials: 15	3	Graded assignment	Optional
Food business management	Tutorials: 15	3	Graded assignment	Optional
Sum	350	30		

Semester 3

Course	Number of hours	ECTS points	Form of verification	Obligatory
Practical aspects of entrepreneurship	Laboratory classes: 10 Project work: 15 Lecture: 5	2	Graded assignment	Obligatory
Diploma Seminar	Seminar: 30	3	Exam	Obligatory
Final Project	Diploma Thesis: 0	20	Pass	Obligatory subjects to choose from

Course	Number of hours	ECTS points	Form of verification	Obligatory
Ultra-processed food	Tutorials: 10 Project work: 10 Lecture: 10	2	Graded assignment	Obligatory
Elective Courses 5		3	Graded assignment	Obligatory group
Student wybiera 1 przedmiot				
Communication within the business and project team	Laboratory classes: 15 Project work: 15 Lecture: 5	3	Graded assignment	Optional
Scientist in the modern world	Laboratory classes: 15 Project work: 15 Lecture: 5	3	Graded assignment	Optional
Sum	125	30		