



# **ASIIN Seal & EQAS Food Label**

## **Accreditation Report**

**Bachelor's Degree Programme**  
*Food Science and Technology*

**Master's Degree Programme**  
*Food Science and Nutrition*  
*Food Technology and Innovation*

Provided by  
**Kaunas University of Technology**

Version: 07 April 2025

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## A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for <sup>1</sup>	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) <sup>2</sup>
Maisto mokslas ir technologija	Food Science and Technology	ASIIN, EQAS Food		08
Maisto mokslas ir mityba	Food Science and Nutrition	ASIIN, EQAS Food		08
Maisto technologijos ir inovacijos	Food Technology and Innovation	ASIIN, EQAS Food		08
<p><b>Date of the contract:</b> 09.02.2023</p> <p><b>Submission of the final version of the self-assessment report:</b> 02.08.2024</p> <p><b>Date of the onsite visit:</b> 25./26.11.2024</p> <p><b>at:</b> Kaunas University of Technology</p>				
<p><b>Expert panel:</b></p> <p>Prof. Dr. Elvyra Jarienė, Vytautas Magnus University</p> <p>Prof. Dr.-Ing. Thomas John, Hochschule Neubrandenburg University of Applied Science</p> <p>Dipl.-Ing. Alexander Piek, GEA Westfalia Separator Group GmbH</p> <p>Emilis Radvila, Lithuanian University of Health Sciences</p>				
<p><b>Representative of the ASIIN headquarter:</b> Sascha Warnke</p>				
<p><b>Responsible decision-making committee:</b> Accreditation Commission for Degree Programmes</p>				
<p><b>Criteria used:</b></p>				

<sup>1</sup> ASIIN Seal for degree programmes

<sup>2</sup> TC: Technical Committee for the following subject areas: TC 08 - Agriculture, Forestry, Food Sciences, and Landscape Architecture.

## **A About the Accreditation Process**

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European Standards and Guidelines as of May 15, 2015 ASIIN General Criteria, as of December 10, 2015 Subject-Specific Criteria of Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture as of March 27, 2015 EQAS-Food Award Procedures, Criteria and Standards of 16 January 2018 <sup>3</sup>	
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<sup>3</sup> [https://www.iseki-food.net/sites/iseki-food.net/files/download/96/framework\\_doc\\_edit\\_rc\\_16.01.18.pdf](https://www.iseki-food.net/sites/iseki-food.net/files/download/96/framework_doc_edit_rc_16.01.18.pdf)

## B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF <sup>4</sup>	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Maisto mokslas ir technologija	Bachelor of Technological Sciences	/	06	Full time	/	8 semester	240 ECTS	19 May 1997, annually
Maisto mokslas ir mityba	Master of Technological Sciences	/	07	Full time	/	4 semester	120 ECTS	19 May 1997, annually
Maisto technologijos ir inovacijos	Master of Technological Sciences	/	07	Full time	/	3 semesters	90 ECTS	17 June 2002, annually

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<sup>4</sup> EQF = The European Qualifications Framework for lifelong learning

## C Expert Report for the ASIIN Seal<sup>5</sup>

### 1. The Degree Programme: Concept, Content & Implementation

<b>Criterion 1.1 Objectives and Learning Outcomes of a Degree Programme (Intended Qualifications Profile)</b>
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**Evidence:**

- Alignment between learning outcomes and the standards and subject specific criteria
- Self-assessment report
- Discussion during the audit

**Preliminary assessment and analysis of the experts:**

Kaunas University of Technology (KTU) is a state higher education institution based in the Lithuanian city of Kaunas. Originally part of the University of Lithuania it became an independent university in 1922. There are more than 7000 students enrolled at a total of nine faculties. The degree programmes under review here – the Bachelor’s degree programme Food Science and Technology, and the two Master’s degree programmes Food Science and Nutrition, and Food Technology and Innovation – are a part of the Faculty of Chemical Technology at the department of Food Science and Technology.

The department seeks to align the learning outcomes of the three study programmes under review with the vision and mission of the university as well as those of the Faculty of Chemical Technology. These include international-level research, training of highly skilled specialists and creation of high-value knowledge. The learning outcomes can be found in the annex of this report. The curricula of the study programmes are structured in a way that clusters certain skillsets in specific semesters.

The curriculum for the Ba Food Science and Technology follows a progressive structure, beginning with foundational knowledge and essential personal and social skills in Year 1,

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<sup>5</sup> This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

including independent work planning, teamwork, and basic research skills. In Year 2, students deepen their understanding of various chemistry disciplines, integrating theoretical knowledge with practical applications in technological analysis. Years 3 and 4 place greater emphasis on the practical application of food science and technology, focusing on quality and safety assurance, scientific research, and engineering practices. Through independent analysis, laboratory work, and professional placements, students develop competencies in food product development, production technology design, and innovation in the food sector. The programme also equips students to address challenges in the food supply chain and explore sustainable business opportunities, ensuring a smooth transition into professional roles.

The programme develops key competencies specific to the food business sector, including the characterisation of raw materials and products within the food supply chain, as well as an understanding of biological systems, nutrient transport processes in the gastrointestinal tract, and metabolism. Students learn to apply physical, chemical, microbiological, and sensory methods, along with laboratory and analytical equipment, to address challenges in the food supply chain. They also gain expertise in designing food technologies by incorporating appropriate unit operations, processes, and production organisation methods. Additionally, the curriculum emphasises the assessment and assurance of food product quality and safety, the fundamentals of scientific research and new product development in food science, technology, and nutrition, and the ability to generate sustainable food business ideas. A strong focus is placed on socially responsible decision-making, ensuring the conservation of natural resources, energy, and human health.

For the Ma Food Science and Nutrition, semester 1 focuses on deepening knowledge gained during bachelor's studies while developing subject-specific expertise. Students engage in technological analysis, investigations, and engineering practice, applying analytical methods and reviewing scientific and technical literature to address complex challenges in food science, technology, quality, safety management, and nutrition. Semesters 2 and 3 place greater emphasis on practical activities essential for scientific research, with modules designed to develop competencies in experimental design, research methodologies, statistical analysis, and critical evaluation of results. During this period, students also build a strong knowledge base in dietetics, personalised nutrition, functional food products, food supplements, and food toxicology. Semester 4 is dedicated to further developing investigative and engineering practice skills, enabling students to critically assess scientific data, draw well-founded conclusions, and effectively communicate complex information to diverse audiences. By the end of the programme, students are expected to have advanced expertise in food science and nutrition, with the ability to develop innovative food products that address contemporary challenges on both national and international levels.

For the Ma Food Technology and Innovation, semester 1 focuses on acquiring knowledge of innovative food processing, manufacturing, and packaging methods, as well as new product development and market introduction. Students enhance their personal and technological analysis skills by addressing non-standard challenges in food technology, quality, and safety management. In Semester 2, they integrate this knowledge into practical applications, critically evaluating innovations in food science and technology to solve complex problems. Emphasis is placed on independent work planning, analytical studies, and assessing potential applications. Semester 3 encourages scientifically relevant and socially responsible decision-making in the development and design of sustainable food technologies. By the end of the programme, students are equipped to independently address complex challenges in the food industry, develop new products using sustainable technologies, and implement innovative solutions.

During the audit the assessors discuss the learning outcomes as they are presented and come to the conclusion that their formulation clearly shows the categorisation according to the respective European Qualifications Framework 06 (for the Bachelor's programme) or 07 (for the Master's degree programmes). They learn that the curricula, along with the learning outcomes, are reviewed annually with a bigger restructuring taking place every three years. The review of the curricula involves several stakeholder groups, among them students and industrial partners. In the interview, the industrial partners confirm that they took part in the curricular overhaul in 2021. They generally give feedback to the university or approach the department with challenges and changes in the labour market. This way, it is ensured that the learning outcomes remain up-to-date.

During the perusal of the document the assessors find that the learning outcomes of the three study programmes are neither anchored nor published, e.g. on the KTU website or the diploma supplement. The expert team is certain that the programme coordinators are aware of how crucial this information is as the learning outcomes for each course are publicly available. They argue that the learning outcomes of the study programmes should be equally available to interested parties.

<b>Criterion 1.2 Name of the Degree Programme</b>
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**Evidence:**

- Student surveys about the naming scheme
- Self-assessment report
- Discussion during the audit

**Preliminary assessment and analysis of the experts:**

The titles of all three study programmes under review clearly express their relation to food science. In its long history the names of the programmes have changed several times depending on needs and trends. While the Bachelor's degree programme is unproblematic, the learning outcomes and content of the two Master's degree programmes must clearly be differentiated by third parties. The programme coordinators describe during the audit that between 2021 and 2022, the MSc programme titles in the Food Technology study field were updated to better reflect their curricular focus. "Food Product Technology" was renamed "Food Technology and Innovation" (September 2021), and "Food Science and Safety" became "Food Science and Nutrition" (September 2022). These changes, prompted by expert recommendations and accreditation evaluations, aimed to clearly differentiate the two programmes and align them with industry needs. This includes, for example, the rise of functional foods, dietary supplements, and personalised nutrition has created a demand for professionals capable of developing innovative food products. Feedback from Lithuanian food industry representatives underscored the regional shortage of such specialists. A student survey showed strong support for the changes, with 87.5% and 81.3% approval for the new programme titles, respectively. Students also agreed that integrating subjects like new product marketing and nutrition would further enhance programme value.

In the documentation presented to the audit team, the names of the study programmes are used consistently. The study programmes are available to be studied in either Lithuanian or English, which is reflected in the names.

<b>Criterion 1.3 Curriculum</b>
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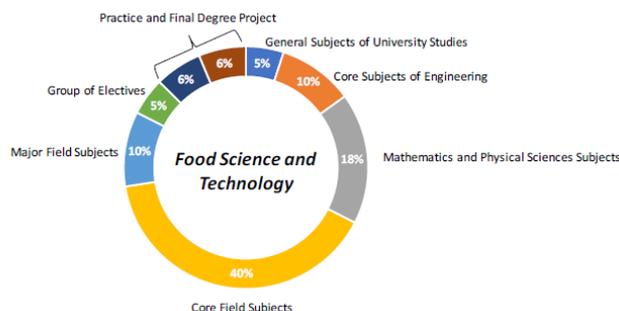
**Evidence:**

- Module handbooks
- Alignment between course learning outcomes and programme learning outcomes
- Statistics on student mobility
- Academic guidelines
- Evaluation results
- Self-assessment report
- Discussion during the audit

## Preliminary assessment and analysis of the experts:

### Content and structure of the programmes

The Ba Food Science and Technology is a full-time study programme of eight semesters. Students acquire 240 ECTS during the course of their studies. Structurally it consists of the following groups of study subjects:



*1 Groups of study subjects of the Ba Food Science and Technology, taken from the self-assessment report (p. 24)*

In the first four semesters, students cover general university subjects, along with mathematics and physical sciences, which provide the foundation for chemistry, engineering principles, and food science and technology. Core engineering subjects focus on process engineering and information technologies, equipping students with both theoretical knowledge and practical skills. In the first year, students take introductory courses in food science and technology, mathematics, physics, chemistry, information technologies, and cell and tissue biology. The second year builds on this foundation with microbiology, bioorganic chemistry, biochemistry, physical and colloid chemistry, and chemical and instrumental analysis, preparing students for advanced food technology courses. Core food technology subjects are introduced from the second to fifth semesters, while specialised field subjects are covered from the sixth to eighth semesters. The third year emphasises food and catering technologies, packaging materials and technologies, process engineering, engineering graphics, and nutrition and metabolism. The final year focuses on food quality and safety, food system sustainability, food technology design and production organization, toxicology and human safety. Lastly, in the final semester students take part in an internship and prepare and defend their Bachelor's thesis.

The internship in the last year is divided in two stages: In the seventh semester students are supposed to conduct a review of scientific and technical literature and research to get familiar with current issues and methodologies in food science and technology. Then, in the eighth semester students move to food business enterprises where they apply their theoretical knowledge.

During the audit, assessors discuss the structure of the study programme and conclude that it is well-structured and comprehensive, progressing from fundamental courses to more specialised subjects. Students also express satisfaction with the programme. The module handbook reflects a clear alignment between teaching and learning, ensuring that each module effectively develops the intended knowledge, skills, and competencies. Additionally, the number of elective courses was increased in response to student feedback, allowing for greater flexibility in individual study paths, which further contributes to student satisfaction.

The Ma Food Science and Nutrition is a full-time study programme of four semesters in which students acquire a total of 120 ECTS. Subjects (72 ECTS), Competence Electives (18 ECTS), and the Final Degree Project (30 ECTS). The curriculum is designed to equip students with essential competencies in food science, technology, and nutrition. This includes analysing chemical and biochemical changes in food constituents during processing, evaluating ingredient functionality, managing quality and safety, and applying analytical methodologies to solve complex food system challenges. Additionally, students engage in research activities focused on developing innovative food ingredients, products, and sustainable technologies. A substantial portion of the programme—54 ECTS (45% of total credits)—is dedicated to research-based study modules. These include Research Project 1 (6 ECTS, 2nd semester), Research Project 2 (12 ECTS, 3rd semester), and the Master's Final Degree Project (30 ECTS, 4th semester).

The Ma Food Technology and Innovation, on the other hand, is a full-time study programme of only three semesters, which 90 ECTS to acquire in total. It is structured into four module groups: Core and Compulsory Subjects (45 ECTS), Electives of the Major Field Subjects (6 ECTS), Practice (9 ECTS), and the Final Degree Project (30 ECTS). Students develop key competencies in innovative food processes and technologies, quality and safety management, new product development and marketing, sustainable food technologies, and food waste management. Additionally, they gain expertise in the hygienic design of food industry enterprises and the implementation of food innovation and sustainable business projects. A crucial component of the programme is the Research Project and Practice module (2nd semester, 9 ECTS), which focuses on developing food product prototypes and analysing innovative processing technologies. Students undertake individual research projects and complete internships at food-business enterprises, gaining hands-on experience in testing new food products and evaluating emerging technologies.

This shows that the focus of the two Master's degree programmes differs quite heavily: The Ma Food Science and Nutrition is more research and science-focused, preparing students for roles in food analysis, safety, and nutrition, while the Ma Food Technology and

Innovation is more industry- and innovation-driven, equipping graduates to develop and implement new food technologies and business strategies.

Upon closer inspection the assessors find that, just with the Bachelor's degree programme, the modules of the two Master's degree programmes are clearly structured and comprehensive. The module handbooks, which are published on the website, contain information about the learning outcomes of each course and their alignment to the programme learning outcomes is sensible.

During the audit, the assessors note that the three programmes have a strong international presence, with students from various countries. They find that many international students express interest in taking Lithuanian language courses offered by the university. However, multiple reports indicate that scheduling conflicts often prevent them from enrolling. The assessors acknowledge that coordinating schedules, particularly across different faculties or departments, is inherently challenging. Nevertheless, they recommend that programme coordinators explore possible solutions to enable international students to participate in Lithuanian language courses. This is especially important in the context of KTU's internationalisation strategy, which emphasises the integration and engagement of international students within the study programmes.

#### Student mobility

KTU offers several mobility programmes to its students, among them study semesters abroad (by means of Erasmus+), internships and Blended-Intensive Programmes (BIPs). The internships, too can be performed by the Erasmus+ network or through other programmes, such as placements in Lithuanian schools and communities, the Vulcanus in Japan initiative, and more. With the Vice-Rector's approval, students may extend internships for up to a year with an academic leave of absence. The programme coordinators note that the BIPs have increased in popularity since they integrate physical and virtual components. They are designed to offer short study or training stays abroad as part of jointly organised events. These programmes support the development of short-term collaborative courses, ideally integrated into the curricula of partnering universities. A key element of BIPs is the mandatory virtual component, which allows for content preparation, support, and follow-up during the brief mobility phase. The scope and frequency of the virtual component are determined by the host universities, depending on the learning objectives of the specific programme. Programmes like these at universities in Portugal and Italy have gained some traction among the students.

The University promotes mobility opportunities for KTU students under the brand "KTU DISCOVERed International Student Exchange." Information about these opportunities is shared on the university website, newsletters, publications, and events. Several annual

events, such as the "Go Abroad Fair" and the seminar "How to Find an Internship Place Abroad," help raise awareness of study and internship opportunities abroad. Additionally, students share their exchange experiences during faculty-level events. The university also offers monthly activities like "Discovered Info Point" for individual consultations and "Café Erasmus," where past and future exchange students discuss their experiences and challenges in an informal setting. Information is further distributed through KTU's mentorship programmes, the Doctoral School, and media platforms. KTU encourages student mobility through the "Intercultural Learning" module, introduced in 2020, and organises regular information days and personal support on a faculty level. Collaborative research opportunities with foreign researchers are also available to enhance students' international research experience. During the audit, the students corroborate that these offers take place and it appears to be commonplace knowledge.

Despite the available opportunities, the number of outgoing students remains relatively low, with only 31 students going abroad between 2018 and 2024. The university attributes the COVID-19 pandemic as the primary limiting factor, but more recently, financial constraints have been identified as a potential barrier. For students of the Master's degree programmes, research and internship commitments may also limit the ability to study abroad, though during the audit, no Master's student expresses a strong interest in international mobility. Generally, they prefer to complete their studies quickly, often balancing their academic work with part-time jobs. On the other hand, students of the Bachelor's degree programme are aware of the available opportunities but feel that the options available do not suffice. The assessors note that while the Erasmus+ offerings may not be ideal for the curriculum, it would be beneficial for the department to explore potential partnerships with other universities. Establishing a partnership with a university that has a curriculum closely aligned with the programme could significantly increase the number of students participating in international mobility.

#### Periodic Review of the Curricula

As was said before, the curricula for all study programmes are reviewed regularly with greater changes to be implemented every three years. For the Ba Food Science and Technology the programme coordinators give the following examples of changes for the programme: The students' study load was reduced to a maximum of 4-5 modules per semester; the materials across modules was aligned to prevent doubling; introduction of new modules to equip students with additional knowledge and competencies required to address contemporary societal problems and challenges. The Ma Food Science and Nutrition introduced new content in the curriculum in 2020, acknowledging the changing landscape of nutritional sciences.

During the audit the assessors assert that the review of the curricula involves various stakeholders. The industrial partners report that their feedback is valued and that they exchange ideas and challenges in the landscape of food sciences, which can lead to adaptations to the curricula (e.g. insect products for human consumption) or research projects. All in all, the assessors can see that KTU applies a comprehensive review process in which the curricula are kept up-to-date and the requests of the stakeholders are taken to heart.

#### **Criterion 1.4 Admission Requirements**

##### **Evidence:**

- Minimum entry requirements
- Website of the university
- Statistical data on admission
- Recognition of learning outcomes
- Self-assessment report
- Discussion during the audit

##### **Preliminary assessment and analysis of the experts:**

Admission to the study programmes in the Food Technology study field at Kaunas University of Technology takes place annually, with deadlines set by the Rector and published on the University's website. The centralised admission for the Ba Food Science and Technology is managed by the Lithuanian Association of Higher Education Schools (LAMA BPO), which forms the competition queue for secondary education graduates. The competition score for the study programme is based on a combination of examination grades and entrance exam results. For applicants with foreign qualifications, the admission process is centralised, and applicants must apply to the Centre for Quality Assessment in Higher Education for the recognition of foreign education and grade conversion. Non-EU applicants for state non-funded positions in the BSc-FST programme apply via the Dream Apply system, with the University's International Relations Department handling the evaluation and recognition of foreign academic qualifications.

For the Ma Food Science and Nutrition the university defines the following minimum requirements:

1. For university graduates: bachelor's qualification degree in Engineering, Technology, Physical, Life, Health, Veterinary or Agricultural Sciences study fields; and  $\geq 18$  ECTS completed in the Food Technology or Nutrition study field subjects;

2. For college graduates: professional bachelor's qualification degree in Engineering, Technology, Physical, Life, Health, Veterinary or Agricultural Sciences study fields; and  $\geq 18$  ECTS completed in the Food Technology or Nutrition study field subjects; and 60 ECTS of additional studies (or up to 30 ECTS of additional studies, plus  $\geq 1$  year of work experience relevant to the Food technology study field);
3. English proficiency at a B2 level at least.

For the Ma Food Technology and Innovation the following minimal requirements are defined:

1. For university graduates: bachelor's qualification degree in Engineering, Technology, Physical, Life, Health, Veterinary or Agricultural Sciences study fields; and  $\geq 18$  ECTS completed in the Food Technology study field subjects;
2. For college graduates: professional bachelor's qualification degree in Engineering, Technology, Physical, Life, Health, Veterinary or Agricultural Sciences study fields; and  $\geq 18$  ECTS completed in the Food Technology study field subjects; and 60 ECTS of additional studies (or up to 30 ECTS of additional studies, plus  $\geq 1$  year of work experience relevant to the Food technology study field);
3. English language knowledge at least at level B2.

The assessors find that the admission requirements are sensible and help students to graduate from the respective programmes. The assessor note that they are transparently published on the website. Students during the audit report that they had no difficulty understanding the process or the reasoning behind the admission requirements.

<b>Criterion 1.5 Workload and Credits</b>
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**Evidence:**

- Module handbooks
- Curricular overviews
- Information on study organisations
- Student evaluation
- Self-assessment report
- Discussion during the audit

**Preliminary assessment and analysis of the experts:**

The credit system of the three study programmes under review here is based on ECTS, whereas 26.67 hours of on-campus and individual work are defined as 1 ECTS credit. Each module has a dedicated amount of credits that is reflected in the module handbook. The handbook also contains information on how the amount of ECTS is calculated as well as a detailed syllabus that contains information on the work to be performed throughout the semester.

The Ba Food Science and Technology is a 240 ECTS programme of four years that allocates 30 ECTS for each semester. As was said earlier, the programme was recently changed to avoid structural peaks in workload, thereby evening out the amount of modules to be taken per semester to four or five. It should be said that the study programme consisting of eight semesters is a requirement by the Lithuanian government.

The Ma Food Science and Nutrition is a programme of 120 ECTS to be acquired in four semesters. The Ma Food Technology and Innovation, on the other hand, has 90 ECTS to be acquired in three semesters. For both study programmes the credits to be acquired per semester amounts to 30 ECTS.

During the audit, students are asked about their workload. The general consensus is that while the programme requires a significant amount of self-study, students have sufficient free time. This is supported by the fact that many students are able to balance part-time jobs alongside their coursework. Students particularly appreciate the well-organised structure of the programme, which effectively links theoretical knowledge with laboratory courses. They also highlighted that clear expectations are set, which contributes to a better understanding of the demands of the programme.

The learning outcomes, content, credits, and on-campus work for the three study programmes are reviewed annually, or at least once every three years, by the faculty. To evaluate whether the credits align with the actual student workload, several methods are employed. Regular surveys and feedback sessions are conducted to gather student input on the workload, ensuring it matches the credit allocation. Teaching staff periodically review course content, assignments, and assessment methods to confirm they align with the expected workload, making adjustments where necessary. Additionally, comparisons are made with similar programmes at other universities to maintain consistency. Continuous monitoring of student performance helps identify any discrepancies between the intended and actual workload, prompting adjustments to the curriculum or credit allocation.

<b>Criterion 1.6 Didactic and Teaching Methodology</b>
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**Evidence:**

- Module handbooks
- Student satisfaction surveys
- Self-assessment report
- Discussion during the audit

**Preliminary assessment and analysis of the experts:**

All study programmes under review here are full-time study programmes that include lectures, practice and laboratory works, seminars, visits to enterprises and others in addition to individual work. To foster active participation and creativity among students, a range of modern and interactive learning methods are employed, including project activities, design thinking, challenge-based learning, problem-based learning, creative workshops, teamwork, study visits, discussions, interviews, problem-solving sessions, activity reflection, and idea mapping. In 2020, KTU has introduced the methodological tool "Methods and Feedback for Student Achievement Assessment," developed by the EDU\_Lab team. This resource helps teachers assess student achievements in a qualitative and objective manner, using diverse assessment methods. It links the assessment process to learning outcomes and the overall learning experience, providing practical guidance on effective assessment. Additionally, the tool includes assessment rubrics with clear criteria, which can be adapted to specific module LOs, study methods, and contexts.

In the Ba Food Science and Technology, 75% of the learning is conducted on-campus, while 25% is delivered through distance learning. Both Ma study programmes are offered as blended-learning daytime studies. This format combines physical and virtual learning spaces, allowing students in the same group to participate in study activities simultaneously, whether in person or online.

During the audit the assessors peruse the module handbooks and can see that several teaching methods, both traditional and modern, are to be employ throughout the curricula of the three study programmes.

## 2. Exams: System, Concept and Organisation

<b>Criterion 2 Exams: System, Concept and Organisation</b>
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### **Evidence:**

- Regulations on the Assessment of Study Modules
- Guidelines for the organisation and performance of the assessment of study modules
- Module handbooks
- Student satisfaction surveys
- Statistical data about the progress of students
- Exemplary exams and theses
- Self-assessment report
- Discussion during the audit

### **Preliminary assessment and analysis of the experts:**

The general rules for assessment of student learning outcomes for all study programmes are outlined in the Regulations on the assessment of Study Modules on a university level. Guidelines provided by the university regulate how written, oral, and other types of examinations are to be executed. Overall, each module concludes with a final examination. The study programmes themselves conclude with a final thesis, i.e. an independent scientific work.

In the three study programmes, the most common type of examination is the oral exam, followed by written or a combination of the two. In addition to traditional evaluation methods such as the defence of laboratory work, task solving, laboratory reports, or project reports, alternative assessment methods are also employed. These include portfolios of works or competencies, problem-solving tasks, engineering projects, activity reflection, and self-evaluation. The following table shows an overview of assessment methods used across the three study programmes:

Types of the final assessments	Number of modules		
	<i>Food Science and Technology</i>	<i>Food Science and Nutrition</i>	<i>Food Technology and Innovation</i>
Examination:			
Oral	18	13	11
Written	11	-	1
Written and oral	5	3	2
Examination at committee	1	-	-
Computer-based exam	6	-	1
Project report	1	2	1
Individual work	-	1	1
Test	1	-	-
Internship report	2	-	-
Oral presentation	-	2	-
Final degree project and it's defence	1	1	1

*2The assessment methods for the final exams across the three study programmes, taken from the self-assessment report (p. 52).*

Grading of assignments is performed according to transparent criteria using evaluation rubrics, which outline the teacher's expectations, assessment requirements, and grading criteria. These rubrics define high-quality work and the standards students must meet. They are published in the module syllabus within the AIS and Moodle platforms. Since 2021, written assignments submitted via Turnitin can also be assessed using the Turnitin Feedback Studio for enhanced evaluation and feedback.

First-year dropout rates stand at below 33% for the Bachelor's degree programme and below 25% for Master's degree programmes, with higher rates among bachelor's students primarily due to difficulties in passing key first-year modules, particularly mathematics and inorganic chemistry. Some students also struggle with balancing work and studies or find that their chosen programme does not align with their interests or abilities. On-time completion rates range from 59% to 73% for BSc and 50% to 89% for MSc students. The main academic challenges include failing courses and delays in thesis preparation. Additionally, some students take academic leave due to personal issues, among them job commitments, further impacting completion rates. To minimise student dropout and improve on-time completion rates, the University has implemented several initiatives. These include bridging courses in core subjects (mathematics, IT, chemistry, physics, and English) for bachelor's students, additional attendance requirements, and an early warning system to identify students struggling with coursework. Differentiated education methods are applied without compromising quality, alongside increased individual work and enhanced independent learning skills. Mentorship and career counselling are available to support students, while the faculty and thesis supervisors conduct regular formal and informal progress checks to ensure students remain on track with their research and thesis preparation.

KTU upholds the principles of inclusive education, ensuring equal opportunities for all students regardless of personal characteristics, including gender, nationality, disability, or so-

cial status. The university enforces its Equal Opportunities and Diversity and Violence Prevention Policy, fostering a respectful and open environment for both students and staff. The university supports students with disabilities or individual educational needs by offering study adaptations, including flexible assessment methods and accessible learning environments. Requests for adjustments are processed through the social welfare coordinator, who collaborates with faculties to implement necessary accommodations. A dedicated emotional and social well-being policy ensures a supportive study and work environment, free from discrimination or harassment. Additionally, a survey on emotional and physical health helps identify students' needs, enabling timely support and study process modifications. To foster an inclusive academic culture, the Department of Student Affairs conducts regular training for staff on disability awareness, ethics, and universal design. Social events and community education initiatives, in collaboration with the KTU Students' Association, further enhance equal opportunities within the university.

During the audit the assessors discuss the examinations with the programme coordinators, lecturers, and students. The students report that their most favoured type of examination is the oral exam. Having that many oral examinations throughout the study programmes is commendable since performing these exams is time-consuming when compared to written exams, especially in classes with a high number of students. The assessors peruse samples of theses and examinations during the on-site visit and come to the conclusion that the questions and scientific work is on par with the European Qualifications Framework of 06 or 07, respectively.

### 3. Resources

<b>Criterion 3.1 Staff and Staff Development</b>
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**Evidence:**

- Teaching capacities
- CVs of teachers of the department
- Self-assessment report
- Discussion during the audit

**Preliminary assessment and analysis of the experts:**

The academic and auxiliary staff responsible for the three study programmes under review here are presented in a list to the assessors. According to the self-assessment report, the University's academic staff meet national and institutional qualification requirements, with performance, certification, and recruitment governed by KTU's competency evaluation guidelines.

As of 2023, The Department of Food Science and Technology employs 18 academic staff, including 3 professors, 13 associate professors, and 2 senior researchers. Seven non-academic staff (3 engineers, 3 lab assistants, 1 administrator) support lab operations. The student-to-professor ratio has steadily declined in recent years, currently at 7.45 (measured by full-time equivalents of teaching staff). This reduction is due to both new faculty hires and a decreasing student body. However, this demonstrates the university's capacity to accommodate current students while also being prepared for the planned internationalisation of the programmes.

Teachers and researchers at the department conduct scientific research in chemistry and chemical engineering, actively participating in international projects and professional development. The department hosts three research groups: Functional Food Materials, Food Structure Investigation and Design, and Bioprocesses in Food Systems. Their research covers emerging topics, including functional ingredient development, biorefining processes, novel phytochemicals, bioactive compound encapsulation, probiotic microcapsules, special dietary products, bioactive bioproducts, and innovative non-contact food safety methods.

KTU encourages staff participation in the Erasmus+ mobility programme for teaching and training, fostering international cooperation with research and academic institutions. The programme allows KTU teachers to teach at partner institutions and welcomes foreign lecturers to KTU, supporting exchanges across Europe and beyond. Teaching visits range from 2 days to 2 months, requiring a minimum of 8 academic hours. Staff training opportunities, including job shadowing and workshops, are also available. From 2019 to 2024, 48 academic staff from the Department of Food Science and Technology participated in Erasmus+ at institutions across Europe and beyond, while over 40 foreign lecturers visited the department.

KTU enhances teaching competencies through national and university-approved guidelines, with a focus on didactic, research, and subject-specific skills. The EDU\_Lab, active for five years, provides training in innovative teaching methods (e.g., problem-based learning, design thinking) and supports faculty in refining their study modules. Teachers applying innovations are recognized annually. From 2017 to 2024, 50 staff of the department completed EDU\_Lab training, though participation declined during COVID-19 (2019-2021).

Post-pandemic, engagement has risen, with 80% now skilled in problem-based learning and 40% in digital teaching.

During the audit, the assessors interview the lecturers at the department about their workload and opportunities to commit to research projects and further education. The lecturers state that the EDU\_Lab centre at KTU plays a crucial role in the continuous professional development of academic staff, offering a wide range of courses tailored to individual needs. Each year, teachers can choose from various training programmes, including basic didactics, problem-based learning, and challenge-based learning, helping them design and refine their study modules. The centre also supports young academics through specialised courses that prepare them for teaching, which many describe as highly valuable. Additionally, new teachers report that they are paired with experienced mentors who provide guidance and support during their initial teaching years.

Beyond EDU\_Lab, training opportunities extend to international networks such as the ECIU, where faculty members can participate in specialised programmes. A current focus area, according to the lecturers, is integrating sustainability topics into curricula, reflecting the growing importance of environmental and social responsibility in education. Teachers are also encouraged to explore diverse learning types, including microcredits, to enhance flexible and personalised learning pathways.

English proficiency is an important factor at KTU, as the internationalisation of the university and the increasing number of international students encourage the use of English as the primary language of instruction. Lecturers are generally eager to improve their English skills, with up to 20 teachers participating annually in a free "Teaching in English" course offered by the university. Management reports that approximately 60% of KTU lecturers have achieved a C1 proficiency level in English.

The assessors prove very content with the opportunities of the lecturers regarding the further education, research and teaching workload.

<b>Criterion 3.2 Funds and equipment</b>
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**Evidence:**

- Self-assessment report
- Discussion during the audit
- Tour of the laboratories

**Preliminary assessment and analysis of the experts:**

The university has 493 well-equipped spaces, including amphitheatre classrooms, computer labs, and meeting rooms, with capacities of up to 225 students. Classrooms are allocated based on group size, study methods, and technological requirements. Continuous investments are made to enhance active learning spaces, with 26 classrooms renovated for challenge-based and problem-based learning in 2020 to 2021. Additionally, KTU provides six teamwork rooms, six independent study areas, and 55 computer labs, with some accommodating up to 60 workstations.

KTU has established the interdisciplinary prototyping laboratory centre, "KTU M-Lab", providing open access to experimental, prototyping, and testing facilities. This space fosters innovation by bringing together researchers from various fields, including biomedical and informatics engineering, AI, electronics, environmental science, biochemistry, and industrial design. The centre focuses on developing future technologies and improving human life through new solutions. Nine thematic laboratories are planned, covering areas such as sustainable cities, personalised nutrition, telehealth management, robotic assistants, and non-contact health monitoring.

Additionally, the KTU Library plays a crucial role in supporting study and research by providing access to global information resources. It facilitates open research by ensuring the availability of essential academic materials and fostering knowledge sharing throughout the research process and offers both physical books as well as access to many e-journals.

The faculty building houses auditoriums, laboratories, and computerised classrooms for both basic and specialised subjects. Theoretical, practical, and laboratory classes are conducted in large auditoriums (over 100 students) and smaller workshop auditoriums (over 25 students). More precisely, theoretical lectures accommodate 100/50 students, practical work with less direct teacher-student interaction (e.g. seminars) is limited to 20 students, while hands-on practical sessions (e.g. laboratory work) have 10/8 students per group.

The department has a sufficient infrastructure for food component and product design, including the Food Science and Technology Competence Center and the Biorefinery Laboratory for Plant Raw Materials. It also has specialised laboratories for analysing structures, properties, and functionality, such as Chemical, Rheology, Mass Spectrometry, Chromatography, and Digestibility Research Laboratories. Most of these facilities have been renovated in the past five years and are systematically upgraded. Established in 2010, the Food Science and Technology Competence Center plays a key role in advancing knowledge and skills in food technology. As part of the Nemunas Valley Integrated Science, Business, and Study Centre, it features modern pilot plants for producing various food products, making it the

first such centre in the Baltic region. Additionally, microbiology research and education laboratories were renovated in 2017-2018 with a €60,000 investment, enhancing practical training in microbiology, cell and tissue biology, applied microbiology, and biotechnology.

During the audit, the assessors are given a tour of the participating laboratories and other facilities. They acknowledge that the equipment across the various sites is functional and meets international standards. However, it is important to note that the faculty laboratories are located in a heritage building that once served as a laboratory during wartime. As a result, much of the old infrastructure remains intact, including copper pipes, aged sinks, and wooden fume hoods. The assessors highlight that these historical elements may pose challenges in meeting modern safety standards. Therefore, regular checks on ventilation and other essential systems are crucial to ensuring a safe environment for staff and students conducting experiments.

During the interviews, students indicate that, in the past, there have been shortages of minor laboratory equipment, such as magnetic stirrers and pipettes. They also report instances of broken equipment, including a fermentation machine that can no longer be maintained due to the manufacturer having gone out of business. Additionally, they mention that disposable items are sometimes reused multiple times beyond their intended lifespan. However, the assessors are unable to verify these claims, as they find the laboratories to be well-equipped. They suggest that any past shortages may have been influenced by supply chain disruptions, possibly exacerbated by the COVID-19 pandemic.

## 4. Transparency and Documentation

<b>Criterion 4.1 Module Descriptions</b>
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**Evidence:**

- Module handbooks

**Preliminary assessment and analysis of the experts:**

The module descriptions, accessible to all students and teaching staff, include essential details such as the module title, responsible lecturer(s), teaching methods, credits and workload, intended learning outcomes, module content, admission and examination requirements, assessment methods with an explanation of grade calculation, recommended literature, and the date of the last amendment.

#### Criterion 4.2 Diploma and Diploma Supplement

**Evidence:**

- Exemplary diploma
- Exemplary diploma supplement
- Exemplary transcript

**Preliminary assessment and analysis of the experts:**

Graduates receive a diploma, a diploma supplement, and a transcript of their academic achievements shortly after graduation, with the latter two provided bilingually in Lithuanian and English. The diploma supplement contains several key pieces of information; however, two crucial elements are missing. As noted in Chapter 1.1, the diploma supplement does not include the learning outcomes, and it also lacks the statistical data outlined in the ECTS User's Guide. Both of these elements should be incorporated into the diploma supplement.

#### Criterion 4.3 Relevant Rules

**Evidence:**

- Academic guidelines
- KTU website

**Preliminary assessment and analysis of the experts:**

KTU provides transparent rules and regulations that are uploaded to the intranet accessible to students. Certain regulations are also publicly available on the KTU website and thus accessible to prospective students as well.

During the audit the students report that they know about the rules and regulations and where to find them.

## 5. Quality management: quality assessment and development

#### Criterion 5 Quality management: quality assessment and development

**Evidence:**

- Regulations about quality management systems
- Statistics about student satisfaction
- Self-assessment report
- Discussion during the audit

**Preliminary assessment and analysis of the experts:**

The University has implemented a quality policy aimed at making it an attractive institution for students, teachers, and administration, while ensuring that its study programme portfolio is internationally competitive and aligned with market expectations, national priorities, and trends. This policy is executed through the development of a study quality culture, responsible management, and quality assurance practices, which are in line with the University's vision, mission, and strategic objectives.

Internal quality assurance is a core component of the University's overall quality assurance system, which is based on European Union standards and higher education policies, as well as Lithuanian regulations. The system outlines processes, procedures, tools, and activities to meet both internal and external quality requirements and support the University's development goals. It focuses on six key areas: study management, student-centred learning, teacher development, student success, monitoring study quality, and societal impact. The system operates under principles such as alignment with the University's strategic goals, the integration of research and studies, active stakeholder involvement, and a commitment to ongoing improvement. Quality assurance is designed to be a continuous, collaborative process that ensures flexibility, innovation, and equal opportunities for all students. Responsibility for maintaining and enhancing teaching and learning quality is shared across the academic community, including students, teachers, programme coordinators, and faculty leadership, with input from external partners.

The University ensures the quality assurance of its studies through continuous improvement processes. The PDCA model (Plan, Do, Check, Adjust) is applied for the ongoing review of study activities. Quality assurance activities take place at all levels of the University, including the University, faculty, study field and programme, and study module levels.

The University uses a study management model that facilitates the effective management of its study programme portfolio, quality assurance, and activation of key committees, including the University Study Quality Committee, Faculty Study Committee, and the Field's Study Programme Committees. The Senate plays a central role in determining the study policy, approving study and research programmes, assessing study quality, and overseeing

the internal quality assurance system. It also sets qualification requirements for teachers and researchers and monitors the implementation of the study policy.

The faculty coordinates and oversees the implementation of the Food Technology study field, managing human resources and ensuring alignment with the University's research and study policies. The Faculty Study Committee advises on study programme development and quality assurance, helping to foster a culture of quality in studies. It consists of various faculty members, student representatives, and social partners, with its composition annually approved by the Rector. In collaboration with the head of the study programme, the Study Committee is responsible for the quality and management of programmes in the Food Technology field. They work with social partners from industry to ensure the programmes comply with both internal and external regulations, continually improve, and achieve their goals. They also oversee the approval and quality of study modules, ensuring they meet the objectives and intended learning outcomes of the programmes, align with the latest research, and use effective teaching methods.

Study programmes and modules are reviewed and improved annually based on student feedback, social partner input, expert recommendations, and analysis of programme indicators. The evaluation process ensures that the sequencing of modules allows students to complete their studies within the standard timeframe. All academic staff involved in the study process are responsible for maintaining the quality of the programmes.

To assess the quality of study programmes, quantitative and qualitative criteria are applied during monitoring meetings held by various University committees. These meetings discuss the current state of study fields and identify actions for improvement, using data from annual plans, reports, feedback surveys, and self-evaluations.

The quality management system of the university is described by the assessors as robust. It takes into account opinions of several stakeholders, is regularly conducted, and transparent to all persons involved. During the audit the assessors learn from the students that they take part in student satisfaction surveys. The surveys can be filled out online before the exam grades become visible. If students choose to not fill out the surveys they must wait a little longer for the access to their grade. It appears that students receive feedback on their surveys but there seems to be a lack of systemisation. A systematised way for students to evaluate how their feedback influences the study programmes would be much important.

A final, minor point of concern to mention here is that international students, that are accepted from all over the world, receive extensive help from the department and fellow students. This is a significant strain on the lecturers, since the systematisation of foreign students has not progressed far. It would be advisable to work on this.

## **Additional Documents**

No additional documents needed.

## **D Comment of the Higher Education Institution**

The institution did not comment on the report.

## E Summary: Expert recommendations (10.03.2025)

The experts summarize their analysis and **final assessment** for the award of the seals as follows:

<b>Degree Programme</b>	<b>ASIIN Seal</b>	<b>Maximum duration of accreditation</b>	<b>Subject-specific label</b>	<b>Maximum duration of accreditation</b>
Ba Food Science and Technology	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030
Ma Food Science and Nutrition	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030
Ma Food Technology and Innovation	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030

### Requirements

- A 1. (ASIIN 1.1) The information about the learning outcomes must be publicly available.
- A 2. (ASIIN 3.2) Make sure that the laboratories in the older building are up to safety standards.
- A 3. (ASIIN 4.2) The diploma supplement must include the learning outcomes and the statistical data.
- A 4. (ASIIN 5) Make sure that the feedback loops of student evaluations are closed in a systematic way.

### Recommendations

For all degree programmes

- E 1. (ASIIN 1.3) It is recommended to schedule Lithuanian language classes for international students in a way that they do not clash with other courses.

- E 2. (ASIIN 1.3) It is recommended to enhance the mobility programmes with more universities.
- E 3. (ASIIN 1.4 / 5) It is recommended to systematize the support of international students.

## F Comment of the Technical Committee 08 – Agriculture, Forestry and Food Sciences (17.03.2024)

*Assessment and analysis for the award of the ASIIN seal:*

The Technical Committee discusses the procedure and comes to the conclusion that they can follow the assessment of the expert team.

*Assessment and analysis for the award of the EQAS-Food Label:*

The Technical Committee deems that the intended learning outcomes of the degree programmes do comply with the Subject-Specific Criteria of the Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture.

The Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Food Science and Technology	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030
Ma Food Science and Nutrition	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030
Ma Food Technology and Innovation	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030

### Requirements

- A 1. (ASIIN 1.1) The information about the learning outcomes must be publicly available.
- A 2. (ASIIN 3.2) Make sure that the laboratories in the older building are up to safety standards.

- A 3. (ASIIN 4.2) The diploma supplement must include the learning outcomes and the statistical data.
- A 4. (ASIIN 5) Make sure that the feedback loops of student evaluations are closed in a systematic way.

## **Recommendations**

For all degree programmes

- E 1. (ASIIN 1.3) It is recommended to schedule Lithuanian language classes for international students in a way that they do not clash with other courses.
- E 2. (ASIIN 1.3) It is recommended to enhance the mobility programmes with more universities.
- E 3. (ASIIN 1.4 / 5) It is recommended to systematize the support of international students.

## **G Decision of the Accreditation Commission (25.03.2025)**

*Assessment and analysis for the award of the subject-specific ASIIN seal:*

The Accreditation Commission reviews the procedure and concludes that Requirement A 2, which pertains to laboratory safety standards, is not a justified proposal. During the audit, the experts observed that the laboratories already comply with the required safety standards, indicating that the requirement may have been influenced more by general concerns about the complexities of maintaining heritage buildings than by specific deficiencies. While the Commission acknowledges the importance of exercising caution, they decide that A 2 be reclassified as a recommendation, provided it is appropriately worded. Additionally, the term “older laboratories” is revised to “heritage building” to better reflect the historical significance of the structures and the associated challenges of aligning them with modern safety standards.

*Assessment and analysis for the award of the EQAS-Food Label:*

The Accreditation Commission deems that the intended learning outcomes of the degree programmes do comply with the Subject-Specific Criteria of the Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture.

The Accreditation Commission decides to award the following seals:

<b>Degree Programme</b>	<b>ASIIN Seal</b>	<b>Maximum duration of accreditation</b>	<b>Subject-specific label</b>	<b>Maximum duration of accreditation</b>
Ba Food Science and Technology	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030
Ma Food Science and Nutrition	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030
Ma Food Technology and Innovation	With requirements for one year	30.09.2030	EQAS-Food	30.09.2030

### **Requirements**

- A 1. (ASIIN 1.1) The information about the learning outcomes must be publicly available.
- A 2. (ASIIN 4.2) The diploma supplement must include the learning outcomes and the statistical data.
- A 3. (ASIIN 5) Make sure that the feedback loops of student evaluations are closed in a systematic way.

### **Recommendations**

For all degree programmes

- E 1. (ASIIN 1.3) It is recommended to schedule Lithuanian language classes for international students in a way that they do not clash with other courses.
- E 2. (ASIIN 1.3) It is recommended to enhance the mobility programmes with more universities.
- E 3. (ASIIN 1.4 / 5) It is recommended to systematize the support of international students.
- E 1. (ASIIN 3.3) It is recommended to continuously monitor the compliance with safety standards of the laboratories in the heritage building.

# Appendix: Programme Learning Outcomes and Curricula

According to the State Study Programme Register the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Food Science and Technology:

## **Knowledge and Understanding:**

A1 Is able to combine knowledge of inorganic, organic, physical, colloidal, analytical and food chemistry, as well as instrumental and sensory analysis to characterize raw materials and products of the food supply chain, their nature, composition, properties and research methods

A2 Is able to systematically integrate fundamental knowledge of mathematics, statistics, physics, information technology and engineering in the analysis of food and catering product manufacturing processes, and changes in composition and properties thereof

A3 Is able to describe the structure, properties, functions, processes and research methods of biological systems, explaining the microbiological aspects of food and catering product manufacturing production processes, the principles of digestibility and assimilation of nutrients and health-promoting nutrition

A4 Is able to explain the operating principles, advantages and disadvantages of various food processing and packaging methods and equipment, the physical, chemical and biochemical aspects of production processes and the features of technology design and development, emphasizing their potential impact on humans and the environment

A5 Is able to select advanced food quality and safety assurance methods, necessary to manage and improve production processes and to develop health-promoting food and catering products, based on the latest achievements in food science and technology

## **Technological Analysis:**

B1 Is able to analyze and evaluate the applicability and potential for improvement of food raw materials, processing methods, production processes and technological equipment, using knowledge, methods and methodologies of food chemistry, microbiology, process engineering and technology design

B2 Is able to analyze food science, technology and nutrition innovations, and to identify and formulate relevant problems in the food supply chain, solving challenges in the field of food science and technology

**Technological Design:**

C1 Is able to solve relevant problems in the food supply chain in accordance with the legislative requirements and the healthy nutrition principles, and by applying advanced methods of designing food and catering product technologies and organizing their production

C2 Is able to generate ideas in line with the principles of sustainable food business and to implement food technology design and development projects, assessing the interactions between the various process chains and the link between technological solutions and their social, economic and environmental implications

**Research:**

D1 Is able to find and analyse relevant scientific and professional literature on the composition and properties of food raw materials and products, production technologies and the specifics of their application in the development and production of health-promoting products by using databases and other sources of information

D2 Is able to select appropriate physical, chemical, microbiological and sensory analytical and mathematical statistical methods to determine the composition, properties, quality and safety parameters of food and catering products and to assess the reliability of data

D3 Is able to carry out scientific research independently in accordance to the defined goal, statistically process, analyse and critically evaluate obtained results, and draw sound conclusions about the composition, properties, quality and safety of food products, as well as provide recommendations for their improvement

**Practical Activities:**

E1 Is able to work independently with laboratory equipment for research of chemical compounds, materials and biological systems

E2 Is able to independently perform physical, chemical, microbiological and sensory analysis of food products and their raw materials using appropriate methods, laboratory and analytical equipment and tools

E3 Is able to use suitable raw materials and modern equipment developing food and catering products and designing their production technologies

E4 Is able to carry out, organize and manage the food and catering product manufacturing processes in food business enterprises, evaluating the ethical, occupational safety, environmental and commercial aspects of these activities

**Personal Skills:**

F1 Is able to responsibly plan and organize independent work in compliance with good laboratory and production practices, professional ethics, scientific, technological and engineering activity norms

F2 Is able to work effectively and responsibly in a team in compliance with academic and professional ethics norms, making socially responsible, natural resources and energy preserving, and human health-orientated decisions

F3 Is able to present the results of one's work to food science, technology and engineering, quality and safety and nutrition specialists, and the general public in written and oral forms in the national and at least one foreign language

F4 By advancing the competences of professional activities, is able to continue individual lifelong learning and improve in the fields of food science and technology, responding to the needs and challenges of modern society on a national and international scale

The following **curriculum** is presented:

## 0 Appendix: Programme Learning Outcomes and Curricula

Code	F	Course	Cr.	Contact hrs	Semester								Coordinating Teacher
					1	2	3	4	5	6	7	8	
<b>General Subjects of University Studies</b>													
Electives of Philosophy and Sustainable Development:			6		x								
H120B111	1	Media Philosophy <sup>A</sup>	6	64									Assoc. Prof. N. Čepulis
S183B001	1	Sustainable Development <sup>A</sup>	6	64									Prof. E. Staniškienė, Assoc. Prof. I. Gorauskienė, Prof. A. Telešienė, Prof. L. Šeduikytė, Prof. L. Kliučininkas, Prof. R. Valušytė
Foreign Language Electives (Level C1):			6			x							
H570B104	1	Academic and Technical Communication in English (Level C1) <sup>B</sup>	6	64									Prof. S. Petronienė
H460B104	1	Academic and Technical Communication in French (Level C1) <sup>B</sup>	6	64									Lect. A. Kuzmickienė
H530B130	1	Academic and Technical Communication in German (Level C1) <sup>B</sup>	6	64									Assist. Prof. J. Maksvytytė
<b>Total of Credits:</b>			<b>12</b>		<b>6</b>	<b>6</b>							
<b>Core Subjects of Engineering</b>													
P175B168	1	Information Technologies 1	6	48	x								Prof. E. Bareiša
T350B141	1	Process Engineering 1	6	84				x					Assoc. Prof. Z. Valančius
T230B219	1	Engineering Graphics	6	64					x				Assoc. Prof. J. Šadauskienė
T350B142	1	Process Engineering 2	6	96					x				Assoc. Prof. Z. Valančius
<b>Total of Credits:</b>			<b>24</b>		<b>6</b>		<b>6</b>	<b>12</b>					
<b>Mathematics and Physical Sciences Subjects</b>													
P130B001	1	Mathematics 1	6	80	x								Assoc. Prof. L. Saunorienė, Assoc. Prof. K. Lukšys
P360B101	1	Inorganic Chemistry	6	80	x								Assoc. Prof. R. Ivanauskas
P130B002	1	Mathematics 2	6	80		x							Assoc. Prof. S. Petraitiienė, Prof. E. Valakevičius
P190B101	1	Physics 1	6	80		x							Prof. G. Laukaitis
P390B105	1	General Organic Chemistry	6	80		x							Prof. V. Martynaitis
P160B003	1	Theory of Probability and Statistics	6	64			x						Assoc. Prof. J. Dabulytė-Bagdonavičienė, Prof. E. Valakevičius
P390B104	1	Bioorganic chemistry	6	80			x						Prof. V. Martynaitis
<b>Total of Credits:</b>			<b>42</b>		<b>12</b>	<b>18</b>	<b>12</b>						
<b>Core Field Subjects</b>													
T000B238	1	Introduction to Food Science and Technologies	6	68	x								Assoc. Prof. V. Kitrytė-Syrpa, Assoc. Prof. J. Mikelionienė
B200B010	1	Cell and Tissue Biology	6	64		x							Assoc. Prof. M. Pukalskienė
B230B104	1	Microbiology	6	80			x						Prof. A. Šipailienė
P300B101	1	Chemical and Instrumental Analysis	6	80			x						Assoc. Prof. V. Krylova
P400B601	1	Physical and Colloid Chemistry	6	80			x						Prof. E. Valatka
P004B001	1	Principles of Biochemistry	6	80				x					Assoc. Prof. R. Degutyte
T430B109	1	Food Sensory Evaluation	3	32				x					Assoc. Prof. L. Bašinskienė
T430B143	1	Food Microbiology and Hygiene	6	64				x					Prof. A. Šipailienė
T430B144	1	Food Chemistry and Analysis	9	120				x					Prof. D. Leskauskaitė
B420B103	1	Nutrition and Metabolism	6	64					x				Assoc. Prof. I. Jasutienė
T430B145	1	Food Technology 1	12	160					x				Assoc. Prof. L. Bašinskienė
T430B146	1	Food Technology 2	12	160						x			Assoc. Prof. R. Vinauskienė
B740B010	1	Toxicology and Human Safety	6	64							x		Assoc. Prof. L. Bašinskienė, Assoc. Prof. D. Nizevičienė
T430B140	1	Food Quality and Safety	6	64								x	Assoc. Prof. I. Jasutienė
<b>Total of Credits:</b>			<b>96</b>		<b>6</b>	<b>6</b>	<b>18</b>	<b>24</b>	<b>18</b>	<b>12</b>	<b>6</b>	<b>6</b>	

## 0 Appendix: Programme Learning Outcomes and Curricula

Major Field Subjects												
T430B147	1	Catering Technology	3	34						x	Assoc. Prof. M. Keršienė	
T430B148	1	Packaging Materials and Technologies	3	32						x	Assoc. Prof. M. Pukalskienė	
T430B149	1	Food Technology Design and Production Organization	6	48						x	Assoc. Prof. R. Vinauskienė	
T430B150	1	Sustainable Food Systems	6	64						x	Assoc. Prof. V. Kitrytė-Syrpa, Assoc. Prof. V. Kaunelienė	
Electives 1:			6							x		
T430B151	1	Principles of Molecular Gastronomy <sup>c</sup>	6	72							Assoc. Prof. M. Keršienė	
T430B152	1	Future Foods and Technologies <sup>c</sup>	6	64							Assoc. Prof. V. Eisinaitė	
<b>Total of Credits:</b>			<b>24</b>							<b>6</b>	<b>18</b>	
Group of Electives												
Group of electives:			12							x		
Optional Subjects 2024 <sup>D</sup>			6									
S180B103	1	Engineering Economics <sup>D</sup>	6	64							Assoc. Prof. V. Gižienė	
S190B377	1	Fundamentals of Enterprises Management <sup>D</sup>	6	64							Assoc. Prof. K. Duoba	
S191B017	1	Marketing <sup>D</sup>	6	64							Lect. J. Maščinskienė	
PR00B251	1	Product Development Project <sup>D</sup>	12	94							Assoc. Prof. K. Jankauskas, Assoc. Prof. G. Dervinis, Prof. R. Kasperė, Lect. J. Maščinskienė, Prof. L. Šeduikytė, Assoc. Prof. K. Lukšys, Assoc. Prof. D. Eidukynas	
S192B114	1	Fundamentals of Enterprises Accounting and Financial Management <sup>D</sup>	6	64							Assoc. Prof. Š. Leitonienė	
S000B177	1	Technology Entrepreneurship <sup>D</sup>	6	64							Prof. R. Vaitkienė, Prof. A. Liutkevičius, Assoc. Prof. S. Japertas, Prof. D. Martuzevičius, Assoc. Prof. A. Domeika	
<b>Total of Credits:</b>			<b>12</b>							<b>12</b>		
Practice												
PR00B107	1	Professional Internship 1	6	6						x	Assoc. Prof. V. Kitrytė-Syrpa	
PR00B106	1	Professional Internship 2	9							x	Assoc. Prof. V. Kitrytė-Syrpa	
<b>Total of Credits:</b>			<b>15</b>							<b>6</b>	<b>9</b>	
Final Degree Project												
PR00B237	1	Bachelor's Degree Final Project	15							x	Assoc. Prof. V. Kitrytė-Syrpa, Prof. S. Petronienė	
<b>Total of Credits:</b>			<b>15</b>							<b>15</b>		
Total of Credits												
Per Study Programme and per Semester			<b>240</b>		<b>30</b>	<b>30</b>						

According to the State Study Programme Register the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Food Science and Nutrition:

**Knowledge and Understanding:**

A1 Is able to integrate the knowledge in applied food chemistry, microbiology and biotechnology, food toxicology, quality and safety management, and food technologies to analyze food systems, develop and improve products and technologies and ensure their quality and safety

A2 Is able to assemble knowledge of dietetics and personalized nutrition, functional food products, food supplements and ingredients functional assessment and toxicology in solving relevant problems of proper nutrition for various groups of society

A3 Is able to compare the advantages and disadvantages of various methods, methodologies and analytical equipment, assessing application possibilities thereof for targeted studies of the composition, quality and safety, nutritional value and functionality of food ingredients and products

A4 Is able to assemble the latest achievements and development trends in the fields of food science and technology, safety and nutrition for the development of new products that meet consumer needs and nutritional recommendations, and design of sustainable production technologies

**Technological Analysis:**

B1 Is able to identify and analyze multiple non-standard and undefined food science, technology, quality and safety management and nutrition problems throughout the food system

B2 Is able to draw reasoned conclusions about the applicability of newly emerging research methods and tools to implement tasks in the fields of food science, technology and nutrition

B3 Is able to critically evaluate food science and nutrition innovations and compliance thereof with social, health, environmental and ethical requirements throughout the food system

**Technological Design:**

C1 Is able to solve multiple non-standard and undefined problems of new product and sustainable production technologies' development in the entire food system, making socially-

responsible, natural resources and energy preserving, and consumer health-orientated decisions

C2 Is able to create and develop research-based original and innovative ideas and methods to improve the quality, safety, nutrition and functionality of food ingredients and products

**Research:**

D1 Is able to find and analyze scientific and technical literature necessary for fundamental and applied research in the fields of food science and nutrition, using databases and other sources of information

D2 Is able to select and adapt analytical, modeling and mathematical statistics methods and methodologies for targeted studies of the composition, quality and safety, nutritional value and functionality of food ingredients and products

D3 Is able to independently formulate the goal of fundamental and applied scientific research, conduct and organize experiments according to the drawn up plan, statistically process, analyze and critically evaluate the obtained results and present reasonable conclusions when solving relevant tasks and problems in the fields of food and nutrition sciences

D4 Is able to scientifically justify the applicability and compliance of new food ingredients, products and technologies with the principles of sustainable production, food quality and safety requirements, consumer needs and the latest nutritional science recommendations

**Practical Activities:**

E1 Is able to use practical skills from different fields to solve current challenges and problems in the fields of food and nutrition sciences throughout the food system

E2 Is able to select and manage laboratory, analytical and technological equipment for targeted studies of food composition, quality and safety, nutritional value and functionality, for the development and characterization of new products and ingredients

E3 Is able to implement scientific research and experimental development projects to study food systems, develop ingredients, products and technologies, improve their quality and safety, nutritional value and functionality

**Personal Skills:**

F1 Is able to responsibly plan and organize independent work in compliance with good laboratory and production practices, professional ethics, scientific and technological activity norms

## 0 Appendix: Programme Learning Outcomes and Curricula

F2 Is able to communicate in written and oral forms in the national and at least one foreign language to various audiences food science and technology, quality, safety and modern nutrition issues, as well advanced solutions thereof by integrating technological progress and scientific research results

F3 Is able to take responsibility for the activities of the interdisciplinary food product and technology development and implementation teams, associating technological solutions with the achievements, development trends and challenges of food and nutrition sciences

F4 By advancing the competences of professional activities, is able to continue individual lifelong learning and improve in the fields of food science, technology and nutrition, responding to the needs and challenges of modern society on a national and international scale

The following **curriculum** is presented:

Code	F	Course	Cr.	Contact hrs	Semester				Coordinating Teacher
					1	2	3	4	
<b>Core and Compulsory Field Subjects</b>									
T000M246	1	Modern Methods in Food Analysis and Quality Control	6	64	x				Assoc. Prof. M. Syrpas
T430M102	1	Food Quality and Safety Management	6	64	x				Assoc. Prof. I. Jasutienė
T430M133	1	Applied Food Chemistry	6	64	x				Prof. P. R. Venskutonis
T430M141	1	Dietetics	6	64	x				Assoc. Prof. M. Keršienė
B230M100	1	Applied Microbiology and Biotechnology	6	64		x			Prof. A. Šipailienė
T000M258	1	Research Project 1	12	12		x			Assoc. Prof. L. Bašinskienė
T430M126	1	Functional Foods and Food Supplements	6	64		x			Prof. P. R. Venskutonis
T000M197	1	Research Project 2	12	12			x		Assoc. Prof. L. Bašinskienė
T430M134	1	Assessment of Functionality of Food Ingredients	6	64			x		Prof. D. Leskauskaitė
T430M142	1	Personalized Nutrition	6	64			x		Assoc. Prof. V. Kitrytė-Syrpa
<b>Total of Credits:</b>			<b>72</b>			<b>24</b>	<b>24</b>	<b>24</b>	
<b>Competence Electives</b>									
Competence electives:			18			x	x	x	
<b>I. Expert's competence: Sustainable Food Product Technologies</b>									
T430M136	1	New Food Product Development	6	64		x			Assoc. Prof. L. Bašinskienė
T430M137	1	Modern Food Toxicology	6	48			x		Assoc. Prof. L. Bašinskienė
Expert's competence Electives:			6			x			
T430M109	1	Fruit and Vegetable Science and Technology	6	64					Assoc. Prof. M. Pukalskienė
T430M114	1	Cereal and Confectionery Science and Technology	6	64					Assoc. Prof. D. Žadeikė
T430M116	1	Science and Technology of Oils and Fats	6	64					Assoc. Prof. L. Bašinskienė
T430M120	1	Meat Products Science and Technology	6	64					Assoc. Prof. R. Vinauskienė
T430M121	1	Sugar and Starch Science and Technology	6	64					Assoc. Prof. I. Jasutienė
T430M122	1	Fisheries Science and Technology	6	64					Assoc. Prof. V. Eisinaitė
T430M124	1	Fermentation Science and Technology	6	64					Assoc. Prof. V. Kitrytė-Syrpa
T430M125	1	Dairy Science and Technology	6	64					Sr. Res. L. Jūrienė
T430M139	1	Catering Science and Technology	6	64					Assoc. Prof. M. Keršienė
<b>II. Optional Competence of MA+</b>									
<b>Total of Credits:</b>			<b>18</b>			<b>6</b>	<b>6</b>	<b>6</b>	
<b>Final Degree Project</b>									
PRO0M124	1	Master's Degree Final Project	30					x	Assoc. Prof. V. Kitrytė-Syrpa, Prof. S. Petronienė
<b>Total of Credits:</b>			<b>30</b>					<b>30</b>	
<b>Total of Credits</b>									
Per Study Programme and per Semester			<b>120</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>

According to the State Study Programme Register the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Food Technology and Innovation:

### **Knowledge and Understanding**

A1 Are able to reasonably justify the impact of innovative food processing, manufacturing and packaging methods on changes in the composition, nutritional value, quality and safety of food products

A2 Are able to integrate the knowledge of food technology, food law, quality and safety management, assessing the possibilities of developing, designing, implementing and managing sustainable production technology

A3 Are able to assemble knowledge of production processes, hygienic design of food factories, as well as principles and methods of economic project evaluation to solve the design and reconstruction tasks of food business enterprises

A4 Are able associate the knowledge of new product development and launch to the market with the latest achievements and trends in the fields of food science and technology carrying out food innovation development and implementation projects

### **Technological Analysis**

B1 Are able to identify and analyze multiple non-standard and undefined food technology, quality and safety management issues throughout the food system

B2 Are able to reasonably justify the importance of social, health, environmental and commercial requirements in carrying out food innovation and sustainable food business development and implementation projects

B3 Are able to critically evaluate food science and technology innovations in order to select appropriate methods and tools to implement solutions of problems in the thematic areas of food technology

### **Technological Design**

C1 Are able to solve multiple non-standard and undefined design and reconstruction problems of food business enterprises

C2 Are able to generate and advance ideas for the development of new food products and the design and implementation of innovative technology by integrating the latest scientific achievements and technological innovations

C3 Are able to make socially responsible, natural resources and energy preserving and consumer health-orientated decisions in developing, designing, advancing and implementing sustainable food technology

**Research:**

D1 Are able to find and analyze scientific and technical literature in subscribed databases and other informational sources that are necessary for conducting applied scientific research and implementing food innovations

D2 Are able to independently formulate the aim of the applied scientific research, conduct and organize experiments according to the devised plan, statistically process, analyze and critically evaluate the obtained results and present reasonable conclusions when solving the tasks of developing, improving and implementing food product and technology innovations

D3 Are able to scientifically substantiate the applicability and compliance of innovative food products and technology with consumer needs, food quality and safety requirements, and the principles of sustainable food production

**Practical Activities:**

E1 Are able to apply appropriate methods, laboratory and technological equipment, and materials in search of advanced ways to solve food chemical composition and nutritional value improvement, quality and safety assurance, new product development and production tasks

E2 Are able to use different fields-related practical skills to solve food product development, technology design, implementation and control tasks throughout the food system

E3 Are able to implement sustainable food production and development, and innovation implementation projects, combining technological and engineering activities, food safety, human nutrition, occupational safety, environmental protection, economic and ethical requirements

**Personal Skills:**

F1 Are able to responsibly plan and organize independent work in compliance with good laboratory and production practices, professional ethics, scientific, technological and engineering activity norms

F2 Are able to communicate in written and oral forms in the national and at least one foreign language to various audiences food technology, quality, safety and innovation issues

## 0 Appendix: Programme Learning Outcomes and Curricula

and advanced solutions thereof by integrating technological progress and scientific research results

F3 Are able to take responsibility for the activities of the interdisciplinary food product and technology development and implementation teams, associating technological solutions with their economic-social consequences and aspects of food business management

F4 By advancing the competences of professional activities, are able to continue individual lifelong learning and improve in the fields of food technology and innovation, responding to the needs and challenges of modern society on a national and international scale

The following **curriculum** is presented:

Code	F	Course	Cr.	Contact hrs	Semester			Coordinating Teacher
					1	2	3	
<b>Core and Compulsory Field Subjects</b>								
S185M111	1	Innovation Economics	6	64	x			Prof. I. Pekarskienė
T430M102	1	Food Quality and Safety Management	6	64	x			Assoc. Prof. I. Jasutienė
T430M135	1	Food Law	6	64	x			Prof. D. Leskauskaitė
T430M138	1	Innovative Food Processing and Packaging Methods	6	64	x			Assoc. Prof. M. Pukalskienė
S191M016	1	Launching of New Products to the Market	6	64		x		Prof. A. Rūtelionė
T430M136	1	New Food Product Development	6	64		x		Assoc. Prof. L. Bašinskienė
T430M140	1	Food Factory Design	9	96		x		Assoc. Prof. R. Vinauskienė
<b>Total of Credits:</b>			<b>45</b>		<b>24</b>	<b>21</b>		
<b>Major Field Subjects</b>								
Electives:			6		x			
T430M109	1	Fruit and Vegetable Science and Technology	6	64				Assoc. Prof. M. Pukalskienė
T430M114	1	Cereal and Confectionery Science and Technology	6	64				Assoc. Prof. D. Žadeikė
T430M116	1	Science and Technology of Oils and Fats	6	64				Assoc. Prof. L. Bašinskienė
T430M120	1	Meat Products Science and Technology	6	64				Assoc. Prof. R. Vinauskienė
T430M121	1	Sugar and Starch Science and Technology	6	64				Assoc. Prof. I. Jasutienė
T430M122	1	Fisheries Science and Technology	6	64				Assoc. Prof. V. Eisinaitė
T430M124	1	Fermentation Science and Technology	6	64				Assoc. Prof. V. Kitrytė-Syrpa
T430M125	1	Dairy Science and Technology	6	64				Sr. Res. L. Jūrienė
T430M139	1	Catering Science and Technology	6	64				Assoc. Prof. M. Keršienė
<b>Total of Credits:</b>			<b>6</b>		<b>6</b>			
<b>Practice</b>								
T000M259	1	Research Project and Practice	9	12		x		Assoc. Prof. L. Bašinskienė
<b>Total of Credits:</b>			<b>9</b>			<b>9</b>		
<b>Final Degree Project</b>								
T000M170	1	Master's Degree Final Project	30				x	Assoc. Prof. V. Kitrytė-Syrpa, Lect. O. Viliūnienė, Prof. S. Petronienė, Prof. I. Pekarskienė
<b>Total of Credits:</b>			<b>30</b>				<b>30</b>	
<b>Total of Credits</b>								
Per Study Programme and per Semester			<b>90</b>		<b>30</b>	<b>30</b>	<b>30</b>	