



**UNIVERSITA' DEGLI STUDI DI MILANO**  
**PROGRAMME DESCRIPTION - ACADEMIC YEAR 2026/27**  
**MASTER DEGREE**  
**FOOD SCIENCE AND TECHNOLOGY (Classe LM-70 R)**  
**Enrolled in the 2026/2027 academic year**

### **HEADING**

<b>Degree classification - Denomination and code:</b>	LM-70 R
<b>Degree title:</b>	Dottore Magistrale
<b>Curricula currently available:</b>	INNOVATION AND DEVELOPMENT OF THE FOOD SYSTEM / QUALITY AND MANAGEMENT OF THE FOOD SYSTEM
<b>Length of course:</b>	2 years
<b>Credits required for admission:</b>	180
<b>Total number of credits required to complete programme:</b>	120
<b>Years of course currently available:</b>	1st
<b>Access procedures:</b>	Open, subject to entry requirements
<b>Course code:</b>	GBB

### **PERSONS/ROLES**

#### **Head of Study Programme**

Prof. Francesco Enzo Molinari

#### **Tutors - Faculty**

Tutor per i piani di studio:

lettera iniziale cognome studenti A-C: Prof.ssa Stefania Arioli

lettera iniziale cognome studenti D-G: Prof.ssa Silvia Grassi

lettera iniziale cognome studenti H-O: Prof.ssa Stefania Iametti

lettera iniziale cognome studenti P-Z: Prof.ssa Manuela Silvia Rollini

Tutor per la mobilità internazionale e l'Erasmus:

Prof. Alberto Giuseppe Barbiroli

#### **Degree Course website**

<https://scienzealimentari-lm.cdl.unimi.it/>

#### **Course management for the Faculty of Agricultural and Food Sciences (Science and Technology area)**

via Celoria 2 - Milano Città Studi Phone 0250316511 Orario di apertura al pubblico: lunedì dalle 10 alle 12 e dalle 14 alle 16

Contatto: <https://informastudenti.unimi.it/saw/ess?AUTH=SAML>

#### **Degree programme head**

Phone 0250319148 Email: [presidenza-stal@unimi.it](mailto:presidenza-stal@unimi.it)

#### **Student registrar**

via Celoria 18 - Milano Città Studi Phone 0250325032 <https://www.unimi.it/it/node/360> <https://www.unimi.it/it/node/359>

### **CHARACTERISTICS OF DEGREE PROGRAMME**

#### **General and specific learning objectives**

The Master's degree in Food Science and Technology (STAL), in line with the educational objectives set by the program, aims to train specialists in the field of food science and technology with in-depth interdisciplinary knowledge. Graduates will be able to perform complex tasks to effectively respond to the demographic, cultural, and technological changes that continually challenge the food production context. Educational priorities include areas such as food safety, quality, integrity, and sustainability, in line with the bioeconomy principles established by the United Nations. These are integrated with the efficiency and productivity of the food sector, in line with the application of automation and digital technologies characteristic of Industry 4.0.

The program provides the theoretical, methodological, and practical foundations to prepare graduates, on the one hand, to support the resilience and optimization of traditional high-quality food production, and, on the other hand, to design and develop innovative food products. The education received will allow graduates to perform managerial tasks in the food

industry and in companies related to the production, processing, preservation, and distribution of food products, packaging, and auxiliary products. This includes work in large-scale retail, public and private bodies conducting analysis, control, certification activities, as well as those involved in scientific investigations to protect and enhance food products, training institutions, and freelance work in the field of Food Technologists. The program also provides access to PhD programs in food science and technology, both nationally and internationally.

The program develops, in particular, solid knowledge and skills in the following areas and sectors:

- food production, packaging, preservation, and distribution processes;
- food safety, integrity, and quality;
- integration of tradition and innovation in food production;
- development of new food products considering consumer needs and preferences;
- chemistry, biochemistry, and human nutrition with an applied focus on the food sector;
- communication in interdisciplinary settings, including economic contexts;
- management and use of microbial resources in various food and nutritional applications.

#### Ability to Apply Knowledge and Understanding

The core knowledge and understanding that the graduate in Food Science and Technology will acquire include:

- chemical, physical, and structural properties of food;
- theoretical and applied knowledge of European legislation on food hygiene and safety;
- knowledge of voluntary standards in food quality and safety certification;
- knowledge of new processing technologies that are alternatives to traditional ones, with a focus on innovative features and potential applications;
- knowledge of methods for sizing and analyzing production plants;
- knowledge of techniques and equipment for food and beverage packaging;
- in-depth knowledge of product and process design, optimization, and quality control strategies using digital innovation, industrial automation, and Quality by Design;
- understanding of the relationship between structure and formulation/production of food products;
- knowledge of statistical tools necessary for the design, optimization, and monitoring of products and processes;
- understanding of national and international regulatory frameworks governing packaging machinery and equipment;
- understanding the role of consumers in the design and optimization of food and processes;
- knowledge of traditional and emerging sensory methods for evaluating acceptability and preference;
- economic, political, and managerial knowledge of the food sector, from both a system-wide and company perspective, with a particular focus on innovation;
- knowledge of the structural peculiarities of macromolecules and the properties of micromolecules in food matrices;
- understanding the biochemical and chemical aspects of the main food transformation processes and the changes that occur in the final product, particularly concerning potential impacts on food quality in terms of nutritional and health-related aspects;
- ability to understand the use of food to meet the nutritional needs of consumers;
- understanding common nutritional issues related to food consumption;
- knowledge of nutritional and biochemical aspects of food in the context of the daily diet, essential for defining new formulations that contribute to maintaining health, especially for sensitive consumers;
- understanding regulations and directives related to the use of food in the nutritional sector;
- knowledge of conventional and innovative technological and biotechnological processes;
- knowledge of methods for evaluating and controlling food shelf life;
- knowledge of analytical methods and techniques (chemical and physical) for evaluating the composition and structure of food;
- knowledge of the complexity and diversity of microbial resources involved in ensuring food safety, quality, health, and sustainability in the agri-food system;
- knowledge and understanding of methodological approaches necessary for studying microbiomes associated with food, food production environments, and the human microbiota;
- knowledge and understanding of managing microbial resources to improve food processes and products, including enhancing biological value and extending shelf life through predictive microbiology approaches;
- knowledge and understanding of recovering by-products for the enhancement of components with biological activity of interest in the food sector.

#### Expected learning outcomes

These results are primarily achieved and assessed through the completion of fundamental exams in the fields of food technology, food microbiology, food chemistry and biochemistry, nutrition, and economics.

The graduate in Food Science and Technology will be able to analyze and solve practical problems related to food quality concerning ingredients, additives, processing aids, packaging materials, and the technology applied across the entire food supply chain, including economic sustainability, from the preservation and transformation of raw materials to the distribution of finished products. They will also be able to collaborate on food innovation and technology development projects in response to the challenges posed by sustainable development goals.

Graduates in Food Science and Technology will be able to apply the knowledge acquired to practical aspects of food science and technology, thanks to the interdisciplinary approach of the program. The ability to apply knowledge and understanding will be encouraged and assessed through laboratory activities and practical work during the preparation of the thesis.

Students will also develop the ability to apply knowledge and understanding through internships/mentorships in collaboration with agri-food companies, institutions, and specialized public or private laboratories.

#### Judgment Autonomy

By the end of their studies, graduates will possess awareness and autonomy in judgment, enabling them to analyze various situations in a production and market context, plan actions, and manage interventions to improve the quality and efficiency of food and beverage production and all related activities, including environmental sustainability and eco-compatibility. This judgment autonomy and awareness of professional roles are primarily developed through classroom activities where professors encourage students to immerse themselves in possible professional situations and propose individual interpretations of both technical-scientific results and specific events related to the production and distribution of food products. This learning outcome is assessed by faculty members responsible for the educational activities, including through written reports assigned to students as outlined in the program's regulations.

Two key moments for developing judgment autonomy are the internship/mentorship period and the thesis, where students will be encouraged to independently evaluate practical aspects and find appropriate solutions to encountered problems.

#### Communication Skills

By the end of the program, graduates will have developed personal communication skills, the ability to work in multidisciplinary teams, and judgment skills on both technical and economic levels, as well as on human and ethical levels. They will be able to use at least one language of the European Union, besides Italian (particularly English), with specific reference to discipline-specific terminology. These skills will allow them to responsibly carry out their professional activities in contexts where it is necessary to relate to different competencies and levels of expertise, including international environments.

These communication skills are developed by encouraging students to present their work both orally and in writing, including group activities. Participation in internships, workshops, seminars, and international activities provides further tools to enhance students' communication skills. The quality and effectiveness of communication are key elements in evaluating individual assignments, exams, and final evaluations.

#### Learning Skills

The program provides cognitive tools and logical elements that ensure graduates can continuously update their knowledge in the specific professional field of food and beverage production, preservation, distribution, and related scientific and technological research. Special attention is given to the use of new information technologies, both for communication and data processing and information research.

Both core and complementary courses, including institutional and supplementary seminars, provide ample opportunities for students to acquire methodologies and skills for personal development. The primary tool for assessing this learning outcome is the evaluation of the student by their thesis advisor. It is during the preparation of an original scientific project that students can best demonstrate their ability to access new opportunities for knowledge and personal development.

### **Professional profile and employment opportunities**

**Professional Profile:** Food Technologist (a profession established by Italian Law No. 59, 1994, and subsequent implementing decrees, also referencing the Ministry of Health Circular dated December 6, 2000, regarding the mandatory registration in the professional registers of the relevant professional orders). The food technologist is capable of managing, organizing, and designing the production, preservation, and distribution of food while ensuring the sustainability and eco-compatibility of industrial activities. They play a key role in adopting and proposing innovations within the various professional activities of the sector.

The graduate of the Master's degree in Food Science and Technology carries out activities related to planning, management, control, coordination, and training concerning the production, preservation, distribution, and service of food. They are able to solve complex problems and independently plan and develop innovative solutions.

A primary objective of the training for the Master's graduate in Food Science and Technology is the management of professional functions aimed at the continuous improvement of food products, ensuring the sustainability and eco-compatibility of industrial activities, while adopting and proposing innovations related to the various professional tasks in the sector.

The broad range of advanced knowledge acquired defines a professional who can assume all necessary roles in the food industry and related production activities, such as:

- coordinating and managing processes related to food transformation and commercialization, as well as selecting suppliers of raw materials, additives, processing aids, packaging materials, and equipment;
- studying, designing, and optimizing food processing systems: from modeling to pilot trials to scaling-up, with a particular focus on environmental issues and economic sustainability;
- integrated quality management across the entire production chain, aimed at achieving food safety, product quality, authenticity, social responsibility, and environmental protection;
- developing innovative analytical protocols for safety control, identifying emerging risks, and assessing the quality and integrity of food production;
- expert and arbitration functions related to the responsibilities listed above;
- market research, consumer surveys, and benchmarking in relation to food production.

Skills Associated with the Role:

- management and design of food production plants;
- food design and optimization, formulation, and development of new food products (functional foods, novel foods);
- integrated management of the food process;
- expertise in food quality and safety: regulatory activities and management systems;
- skills in emerging transformation technologies, preservation, conditioning, and methods for optimizing processes and products;
- nutritional and biochemical expertise in the relationship between food and nutrition;
- expertise in microbial resources for the food system;
- knowledge in economics and innovation management within the food industry and marketing;
- management of food quality assurance/certification systems, including aspects such as traceability and recall systems.

#### Career Opportunities

The professional activities of a graduate with a Master's degree in Food Science and Technology are primarily carried out in food industries and all companies involved in the production, transformation, packaging, and commercialization of food products. Other areas of employment include large-scale retail companies, public and private organizations conducting research, planning, analysis, control, certification, communication, and scientific investigations for the protection and enhancement of food products. Graduates can also work in training institutions and in freelance professions.

#### Initial knowledge required

To be admitted to the degree program, applicants must hold a degree from the L-26 class (or the corresponding class under Ministerial Decree 509/1999), or another foreign qualification recognized as equivalent, or a three-year university diploma. The university independently evaluates foreign academic qualifications in accordance with Articles 2 and 3 of Law 148/02 to issue the corresponding Italian degrees.

Graduates from other classes can also access the Master's degree program, provided they meet the following minimum requirements: at least 50 ECTS (CFU) in the following Scientific Disciplinary Sectors (SSD):

MAT/01-09  
 FIS/01-08  
 CHIM/01, CHIM/02, CHIM/03, CHIM/06, CHIM/10  
 AGR/01  
 AGR/15  
 AGR/16  
 BIO/10  
 BIO/09, MED/49

#### Admission Requirements

Among these, the candidate must have acquired at least:

- 9 CFU (ECTS) in SSD AGR/15
- 6 CFU in SSD AGR/16
- 6 CFU in SSD MED/49 or BIO/09

If the candidate does not meet these specific curricular requirements, they may, upon recommendation from the Academic Board, attend individual courses offered by the University before undergoing the evaluation of their academic preparation.

Proficiency in English at level B1 or higher according to the Common European Framework of Reference for Languages (CEFR) is required for admission.

The B1-level requirement will be ascertained by the University Language Centre (SLAM) upon admission as follows:

- Valid language certificate at B1 level or higher, issued no more than three years before the application date. The list of language certificates recognized by the University is available at <https://www.unimi.it/en/node/39322>. The certificate must be uploaded when submitting the online application;
- English level achieved during a University of Milan degree programme and certified by the University Language Centre (SLAM) no more than four years before the application date, including levels based on language certificates submitted by the applicant during their Bachelor's degree at the University of Milan. Verification will be carried out automatically, no documents need to be uploaded.
- Entry test administered by the University Language Centre (SLAM) according to the calendar published on the website: (<https://www.unimi.it/en/node/39267/>)

Applicants who fail to submit a valid certificate or do not meet the required proficiency level will be instructed during the admission procedure to take the Entry test.

Applicants who do not take or pass the Entry test will be required to obtain a language proficiency certificate recognized by the University (see <https://www.unimi.it/en/node/39322>) and submit it to SLAM via the InformaStudenti service by the deadline set by the master's degree programme (<https://www.unimi.it/en/node/39267/>).

Applicants who fail to meet the requirement by said deadline will not be admitted to the master's degree programme and may not sit any further tests.

#### Verification of Academic Preparation

Graduates from the Bachelor's Degree in Food Science and Technology (L-26 class) with a final grade of 80/110 or higher (or a weighted average of 21/30 in case the candidate has not graduated) are admitted directly to the Master's program.

For graduates in L-26 with grades below 80/110 or from other degree classes, the adequacy of their academic preparation will be assessed through an exam or interview (including online formats) conducted by a commission appointed by the Academic Board.

Core Knowledge for Adequacy Assessment

- General and Food Microbiology: Basic knowledge of the role of microorganisms in food processing and preservation.
- Food Technologies: Knowledge of fundamental unit operations and processes for the preservation and transformation of raw materials of plant and animal origin.
- Food Processing Equipment: Basic knowledge of machinery for food transformation and preservation.
- Economics and Marketing Principles.
- Food Chemistry and Analysis: Basic understanding of food composition, analytical techniques, and consumer protection considerations.
- Nutrition and Human Nutrition Fundamentals.

If the candidate lacks the specific curricular requirements, they may attend individual courses offered by the University upon the Academic Board's recommendation. Once the required preparation is achieved, the candidate can proceed to the adequacy verification exam.

For organizational details regarding enrollment, visit Unimi Enrollment Information.

### **Compulsory attendance**

Attendance is strongly recommended for all training activities.

### **Degree programme final exams**

The Master's Degree in Food Science and Technology is awarded upon successful completion of a final examination, which consists of the presentation and defense of a thesis, written by the student under the supervision of a faculty advisor. Passing the final exam grants 22 ECTS credits.

The thesis is a written dissertation in which the student applies, using a scientific approach, the knowledge and research/study methodologies acquired throughout the academic program, focusing on a specific topic that aligns with the educational objectives of the degree program. The dissertation includes a detailed description of a scientific research project, or part of it, in which the student has actively participated.

The research activity may involve the production and analysis of experimental data and/or the critical processing of data collected by the student. Alternatively, the thesis may consist of a bibliographic and documentary review, through which the student develops a critical synthesis and explores future perspectives related to the chosen topic.

The writing of the thesis represents the culmination of the student's academic journey, during which they are expected to demonstrate the ability to reflect, analyze, and elaborate on the theoretical and professional knowledge acquired during their studies.

The final examination (Master's thesis) involves conducting experimental work and/or data or textual analysis under the supervision of a faculty member (advisor), resulting in the production of an original written work (thesis), which is then defended before a committee of faculty members.

The thesis advisor must be a faculty member affiliated with the degree program or with the Faculty of Agricultural and Food Sciences. A second advisor (co-advisor) may also be indicated—this role can be filled by another faculty member, a PhD student, a research fellow, or an external expert.

Students may begin working on their thesis only after submitting a signed internal thesis proposal, countersigned by the advisor and sent to the Informastudenti. For external theses, the student must follow all the procedures established by the University before beginning the work.

The thesis title and timeframe must always be agreed upon with the advisor. Any activity (e.g., internships at companies or external labs) undertaken without prior approval from a faculty advisor will not be recognized for the final examination. Students are strongly discouraged from independently initiating contact with companies or organizations without first confirming the availability of a university faculty member who will act as the official supervisor of the activities carried out outside the university.

To be admitted to the final thesis defense before the examination committee, the student must have successfully completed all required coursework listed in their study plan and obtained a total of 98 ECTS credits.

### **Notes**

Knowledge of the English language

To be able to take the second year exams, students must be proficient in English at a B2 level, certified as follows:

- By submitting a valid language certificate at B2 level or higher, issued no more than three years prior to the application date. The list of language certificates recognized by the University is available at <https://www.unimi.it/en/node/39322>. If not submitted during the application process, the certificate must be uploaded when enrolling, or later through the portal: <http://studente.unimi.it/uploadCertificazioniLingue>;
- B2 level or higher achieved earlier and validated during the application process;
- B2 level or higher achieved during the Entry test;
- By taking a Placement test administered by the University Language Centre (SLAM) between October and January of year 1.

Students who do not meet the B2 requirement will be required to attend a B2-level English course offered by the University Language Centre (SLAM) during the second semester of the first year.

Those who do not attend the course or fail the end-of-course test after six attempts must obtain a language certificate privately before graduating.

## **EXPERIENCE OF STUDY ABROAD AS PART OF THE TRAINING PROGRAM**

The University of Milan supports international mobility by providing its students with the opportunity to spend study and internship periods abroad. It is a unique chance to enrich your educational path in a new exciting environment.

The agreements entered into by the University with over 300 universities from the 27 EU member countries under the European Erasmus+ programme allow regularly enrolled students to carry out part of their studies at one of the partner universities or to undertake internships at companies, training and research centres and other organisations.

Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

The University of Milan is a member of the 4EU+ European University Alliance that brings together eight public multidisciplinary universities: University of Milan, Charles University of Prague, Heidelberg University, Paris-Panthéon-Assas University, Sorbonne University of Paris, University of Copenhagen, University of Geneva, and University of Warsaw. The 4EU+ Alliance offers integrated educational pathways and programmes to promote the international mobility of students (physical, blended and virtual).

### **Study and internships abroad**

The eligibility criteria to study under the Erasmus+ program, the rules for participation and the criteria for students selection are described in a specific call dedicated to the Food Area. Erasmus+ provides mobility opportunities within 40 academic partners, widely distributed in Europe and selected on the basis of their excellence and teaching affinity with the Italian degree. Students can apply to take courses in the following thematic areas: microbial biotechnology, applied nutrition, design and management of food plants, economy and innovation management, logistics and packaging technologies, modeling and process innovation. The outline of the Erasmus+ study program (learning agreement) is prepared by the student in collaboration with the Italian academic Erasmus+ tutor. This document is defined after consulting the teaching board of the Italian degree and receiving the official approval of the activities to be performed in the host institution. In case of research activities, a detailed program describing the activities and the duration of the internship must be planned and formally approved by the host institution supervisor and by a member of the Italian teaching board (Italian supervisor). At the end of study period abroad the Erasmus+ activities (credits and grades) must be certified in a document called transcripts of records that must be approved by the Italian teaching board. Exam grades are converted according to a pre-defined scale. The MSc degree in Food Science and Technology is part of the international program Erasmus+ Placement which is finalized to fund mobility of students, to carry out research activities aimed at the preparation of their final thesis in highly qualified host institutions (private and public universities and research centers).

### **How to participate in Erasmus mobility programs**

The students of the University of Milan can participate in mobility programmes, through a public selection procedure.

Ad hoc commissions will evaluate:

- Academic career
- the candidate's proposed study programme abroad
- his/her foreign language proficiency
- the reasons behind his/her application

Call for applications and informative meetings

The public selection for Erasmus+ mobility for study generally begins around February each year with the publication of a call for applications specifying destinations and requirements. Regarding the Erasmus+ Mobility for Traineeship, the University of Milan usually publishes two calls a year enabling students to choose a destination defined by an inter-institutional agreement or to find a traineeship position on their own.

The University organises informative meetings to illustrate mobility opportunities and rules for participation.

Erasmus+ scholarship

The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which may be supplemented by the University funding for disadvantaged students.

Language courses

Students who pass the selections for mobility programmes can benefit from intensive foreign language courses offered each year by the University Language Centre (SLAM).

<https://www.unimi.it/en/node/8/>

Learn more at <https://www.unimi.it/en/node/274/>

For assistance, please contact:

International Mobility Office

Via Santa Sofia 9 (second floor)

<b>1st COURSE YEAR Core/compulsory courses/activities common to all curricula</b>		
<b>Learning activity</b>	<b>Ects</b>	<b>Sector</b>
Economics and Policies of the Food System	7	AGRI-01/A
English proficiency B2 (3 ECTS)	3	NN
Food molecules: Chemical and biochemical function and transformation	8	(2) CHEM-02/A, (2) CHEM-07/B, (4) BIOS-07/A
Food product and process development by quality by design and consumer science	10	AGRI-07/A
Food quality and safety: regulatory and management systems	7	AGRI-07/A
Microbial Cultures for Food Systems	8	AGRI-08/A
Nutrition and Health Promotion: Nutritional and Biochemical Aspects	8	(2) BIOS-07/A, (6) MEDS-08/C
Technologies and Systems for Sustainable Agri-Food Processes	9	(3) AGRI-04/B, (6) AGRI-07/A
Total compulsory credits		60
<b>Further elective courses common to all curricula</b>		
<p><b>The student may choose elective activities corresponding to 8 ECTS. The student may choose elective courses (minimum 4 ECTS- maximum 8 ECTS) or other activities (seminars, conferences, courses, or other activities organized by the University or by another institution) up to a maximum of 4 ECTS provided they are consistent with the training project. Elective activities can be undertaken always and exclusively after the favorable opinion of the Academic Board. The instructions for choosing these activities can be found in the paragraph "Course structure - presentation of the study plan".</b></p> <p><b>The table below lists the elective activities proposed by the Academic Board of Food Science and Technology.</b></p>		
Biotechnological production of food ingredients	4	AGRI-08/A
Design of experiments for process and product optimization	4	AGRI-07/A
Economics and management of the innovation in the food system	4	AGRI-01/A
Innovation trends in products of animal origin	4	AGRI-07/A
Medical foods	4	MEDS-08/C
Nanotechnology in the food industry	4	AGRI-07/A
Tailor-made confectionery products: raw materials and technologies	4	AGRI-07/A
Water microbiology	4	AGRI-08/A
<b>End of course requirements common to all curricula</b>		
Internship/mentorship	6	NN
Final exam	22	NN
Total compulsory credits		28

## ACTIVE CURRICULA LIST

INNOVATION AND DEVELOPMENT OF THE FOOD SYSTEM Course years currently available: 1st  
 QUALITY AND MANAGEMENT OF THE FOOD SYSTEM Course years currently available: 1st

### Procedure for choosing a curriculum

The curriculum must be selected at the time of submitting the study plan, usually at the end of the first semester of the first year. Students will have the opportunity to change their choice during the first semester of the second year, opting for the other curriculum. In this case, it will be necessary to inform their study plan tutor and proceed with updating the plan accordingly.

## CURRICULUM: [GBB-A] INNOVATION AND DEVELOPMENT OF THE FOOD SYSTEM

### Qualifying Training Objectives

The Development and Innovation in the Food System curriculum aims to provide advanced knowledge in key areas related to development and innovation in the production and preservation of food. The objectives of this curriculum address the growing need to modernize technologies used in the production of traditional foods, while also fostering the development of new products, technologies, and methods capable of meeting the sustainable nutritional needs of a continuously expanding global population.

### Skills acquired

Students enrolled in the Development and Innovation in the Food System curriculum will acquire specialized knowledge and skills to innovate and enhance both traditional and emerging food technologies, including product and process development. In particular, the curriculum provides expertise in:

- emerging technologies for the production of plant-based foods and beverages;
- the identification and application of proteins and other ingredients derived from alternative sources;
- managing challenges related to the production of dairy products, which remain central to the food industry;

- understanding innovations in the strategic field of food packaging;
- gaining advanced skills in the production of fermented foods and beverages, the management of microbial cultures of food interest, and the use of enzymes in food processing;
- exploring the relationship between molecular properties and consumer acceptance of food products, and the relevance of these aspects for the development of new ingredients and food innovations.

### Professional profile and employment possibilities

Graduates with a Master's degree in Food Science and Technology primarily work in the food industry and in all businesses related to the production, processing, packaging, and commercialization of food products. They may also find employment in large-scale retail companies, public and private institutions engaged in research, planning, analysis, control, certification, information, and communication, as well as in organizations conducting scientific investigations for the protection and enhancement of food production. Additional career opportunities exist in educational institutions and freelance consultancy.

Common career paths across both curricula include:

- Providing consultancy, technical support, and strategic guidance to companies in the agri-food sector, particularly in process management, sustainability, and innovation;
- Establishing an entrepreneurial venture focused on developing new food products, technological innovation, or specialized consultancy in the food sector;
- Opportunities in the education sector, including teaching in schools or providing training for the food industry and professionals on regulatory updates, innovations, and best practices;
- Science communication and public outreach;
- Pursuing a PhD to enter academia or enhance expertise in food research and development.

The Development and Innovation in the Food System curriculum offers a wide range of career opportunities, focusing on product and process innovation in the food sector, with particular emphasis on sustainability and food waste reduction.

Specific career paths include leadership roles in:

- Designing and implementing innovative processes for food stabilization and (bio)transformation;
- Developing new food products and ingredients;
- Designing and implementing innovative solutions for food packaging and preservation;
- Analyzing consumer preferences and behaviors to optimize and design new food products, considering perceptual mechanisms and behavioral factors that influence acceptability;
- Designing and managing agri-food development programs, including collaborations with national and international agencies;
- Developing and implementing food waste reduction programs across the entire supply chain.

## **2nd COURSE YEAR (available as of academic year 2027/28) Elective courses Curriculum-specific elective courses for INNOVATION AND DEVELOPMENT OF THE FOOD SYSTEM**

### **Educational activities of the Development and Innovation in the Food System curriculum**

**Students must earn 24 credits by choosing four courses from those listed:**

**- At least one course (6 credits) must be chosen from Group A**

Advanced dairy technologies	6	AGRI-07/A
Fermented foods	6	AGRI-08/A
Process and product innovation in cereals and pulses	6	AGRI-07/A
Product development for food industry challenges	6	AGRI-07/A

**- at least 1 course (6 CFU) must be chosen from Group B**

Alternative protein sources: properties and processing	6	(2) BIOS-07/A, (2) AGRI-07/A, (1) AGRI-05/A, (1) AGRI-08/A
Chemo-sensing and consumer acceptability for food innovation	6	(3) CHEM-05/A, (3) AGRI-07/A
Enzymes in food industry	6	(3) CHEM-07/C, (3) BIOS-07/A
Innovation in food packaging	6	(1) CHEM-07/C, (1) CHEM-07/B, (4) AGRI-07/A

## **CURRICULUM: [GBB-B] QUALITY AND MANAGEMENT OF THE FOOD SYSTEM**

### Qualifying Training Objectives

The Management and Quality of the Food System curriculum aims to provide in-depth knowledge in the key areas of food process management and the quality, safety, and integrity of food products. The objectives of this curriculum address the growing demand for specialists equipped with the latest analytical techniques and methodologies to ensure food quality, while also being capable of coordinating the various stages of food processing, including aspects related to automation, waste management, and the valorization of surpluses and by-products.

### Skills acquired

Students enrolled in the Management and Quality of the Food System curriculum will develop advanced skills in managing food technology processes and ensuring the quality and integrity of food products.

Specifically, students will acquire:

- methodological, analytical (physical, chemical, molecular), and statistical competences for comprehensive analysis of traceability, structure?quality relationships, and food safety and integrity;
- knowledge of the role and implementation of automation in the food system, including tools to predict and enhance shelf-life;
- advanced competences in the recovery and valorization of food by-products;
- understanding of key marketing tools, such as demand analysis, consumer behavior, competitive strategies, and market segmentation.

### Professional profile and employment possibilities

Graduates with a Master's degree in Food Science and Technology primarily work in the food industry and in all businesses related to the production, processing, packaging, and commercialization of food products. They may also find employment in large-scale retail companies, public and private institutions engaged in research, planning, analysis, control, certification, information, and communication, as well as in organizations conducting scientific investigations for the protection and enhancement of food production. Additional career opportunities exist in educational institutions and freelance consultancy.

Common career paths across both curricula include:

- Providing consultancy, technical support, and strategic guidance to companies in the agri-food sector, particularly in process management, sustainability, and innovation;
- Establishing an entrepreneurial venture focused on developing new food products, technological innovation, or specialized consultancy in the food sector;
- Opportunities in the education sector, including teaching in schools or providing training for the food industry and professionals on regulatory updates, innovations, and best practices;
- Science communication and public outreach;
- Pursuing a PhD to enter academia or enhance expertise in food research and development.

The Food System Management and Quality curriculum prepares graduates to take on leadership roles in various fields related to food quality, safety, integrity, and process management. Through a combination of theoretical and practical training, graduates acquire advanced skills that facilitate their integration into different sectors of the food supply chain.

Specific career paths include leadership roles in:

- Designing and managing quality control and food safety assurance systems, with a focus on structural properties, molecular traceability, biotic contaminants, xenobiotics, and food authenticity;
- Developing and validating methodologies for determining food product shelf life;
- Implementing sustainable strategies for the recovery and valorization of food waste and by-products;
- Defining marketing plans and commercial strategies for the food sector;
- Designing innovative solutions for process automation and optimization, in collaboration with other professionals;
- Assessing food quality and authenticity in analytical laboratories, regulatory agencies, and certification bodies.

<b>2nd COURSE YEAR (available as of academic year 2027/28) Elective courses Curriculum-specific elective courses for QUALITY AND MANAGEMENT OF THE FOOD SYSTEM</b>		
<b>Educational activities in the Food System Management and Quality curriculum</b>		
<b>Students must earn 24 credits by choosing four courses from those listed:</b>		
<b>- At least one course (6 credits) must be chosen from Group A</b>		
<b>(The courses: Automation, Robotics, and Artificial Intelligence for the Food Industry and Marketing of Agri-Food Products are alternatives to each other)</b>		
Agri-Food Marketing	6	AGRI-01/A
Automation, Robotics and Artificial Intelligence for Food Industry	6	AGRI-04/B
Food structure: concepts and methods	6	AGRI-07/A
Molecular traceability of food	6	BIOS-07/A
<b>- at least 1 course (6 CFU) must be chosen from Group B</b>		
Analytical Methods and Chemometrics for Food Integrity Assessment	6	(1) CHEM-05/A, (4) AGRI-07/A, (1) CHEM-01/A
Biotic and xenobiotic contaminants in food matrices	6	(3) AGRI-05/B, (3) AGRI-05/A
Recovery and valorization of by-products and food waste	6	(1) CHEM-07/C, (1) CHEM-05/A, (2) AGRI-06/B, (2) AGRI-07/A
Shelf life of Food Products	6	(4) AGRI-07/A, (2) AGRI-08/A