UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2025/26
BACHELOR
SCIENCE AND TECHNOLOGY FOR SUSTAINABLE FOOD (Classe L-26 R)
Enrolled in the 2025/2026 academic year

HEADING

Degree classification - Denomination and code:	L-26 R
Degree title:	Dottore
Length of course:	3 years
Total number of credits required to complete programme:	180
Years of course currently available:	1st
Access procedures:	Open, subject to completion of self-assessment test prior to enrolment
Course code:	GAF

PERSONS/ROLES

Head of Study Programme

Prof. Francesco Enzo Molinari

Tutors - Faculty

Tutor per i piani di studio:
lettera iniziale cognome studenti A-BE: Prof.ssa Stefania Iametti
lettera iniziale cognome studenti BI-CE: Prof.ssa Manuela Silvia Rollini
lettera iniziale cognome studenti CH-DI: Prof.ssa Cristina Alamprese
lettera iniziale cognome studenti DO-GI: Prof.ssa Luisa Maria Pellegrino
lettera iniziale cognome studenti GL-LU: Prof.ssa Alyssa Mariel Hidalgo Vidal
lettera iniziale cognome studenti MA-MU: Prof.ssa Barbara Brunetti
lettera iniziale cognome studenti NA-PE: Prof.ssa Sara Limbo
lettera iniziale cognome studenti PH-RI: Prof. Alberto Giuseppe Barbiroli
lettera iniziale cognome studenti RO-TA: Prof.ssa Maria Stella Cosio
lettera iniziale cognome studenti TE-Z: Prof.ssa Stefania Arioli

Tutor per la mobilità internazionale e l'Erasmus:
Prof.ssa Alyssa Mariel Hidalgo Vidal

Degree Course website

https://stals.cdl.unimi.it/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

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 degree program in Science and Technologies for Sustainable Foods (STALs) provides the knowledge and skills necessary to develop professional competencies that enable graduates to work proficiently in the fields of food and beverage production, preservation, and distribution, as well as in related sectors. The course structure is designed to ensure a solid foundation in basic disciplines and an in-depth study of core subjects.

The science and technology supporting sustainable food production encompass a range of knowledge and skills related to the environmental, industrial, and economic sustainability of food processes, as well as food supply security, safety,

preservation, and protection. Graduates of the STALs program are trained to contribute to a modern food industry that is both highly productive and aware of the importance of food sustainability. The program prepares professionals capable of maintaining high-quality standards in small, medium, and large food enterprises.
Graduates may also work in public and private organizations engaged in analysis, monitoring, certification, and research to protect and promote food products. Furthermore, their expertise extends to companies supplying materials, equipment, aids, and ingredients related to food production.
Educational Objectives
The program?s objectives address general aspects of food systems and food sustainability, enabling graduates to understand the entire process of food transformation and preservation. They learn to verify and improve the quality of food products and by-products through the sustainable use of ingredients, additives, aids, and optimized technologies for food processing and packaging.

Expected learning outcomes

Graduates are expected to achieve:

Knowledge and Understanding
By the end of the program, graduates will:
? Understand the biological, chemical, biochemical, and physical principles governing food transformation and preservation, leveraging mathematical knowledge.
? Recognize the key raw materials of animal and plant origin and their roles in food systems.
? Comprehend cellular metabolism and regulation in the context of human nutrition and microbiology.
? Analyze the roles of microorganisms in food fermentation, hygiene, and microbiological quality assessment along the production and distribution chain.
? Identify agents and factors responsible for food infestations and apply integrated control strategies.
? Understand the unit operations in food technology, including material and energy balances and kinetics.
? Evaluate the primary food technology processes, considering raw material requirements, process diagrams, material flows, functional plant layouts, and optimization criteria.
? Grasp the fundamentals of food sustainability.
? Assess the suitability of materials in contact with food during preparation, distribution, and preservation.
? Apply standard methods for food analysis, including sensory evaluation, and understand the associated regulations.
? Utilize concepts of quality, risk analysis, assurance, and certification.
? Manage food processes and traceability systems.
? Understand economic and marketing principles related to the food industry.
These outcomes are achieved and assessed through foundational coursework (mathematics, physics, chemistry, biochemistry, and biology) and specialized modules (food technologies, safety, evaluation, and economic/legal disciplines).

Applying Knowledge and Understanding
Graduates will be capable of:
? Solving practical problems related to food quality, including the use of ingredients, additives, aids, packaging materials, and technologies across the food chain.
? Collaborating on projects aimed at food and technology innovation, responding to sustainable development goals.
? Utilizing interdisciplinary approaches, including object-based learning (OBL), to study food raw materials and processed products from chemical, biochemical, microbiological, technological, and economic perspectives.
? Engaging in practical training during internships in university labs or food-related organizations.
Assessment includes practical lab work, problem-solving tasks, internship evaluations, and final thesis discussions.

Autonomy of Judgment
Graduates will:
? Develop the ability to independently acquire and evaluate information to improve food production quality, efficiency, and sustainability.
? Assess the technological, production, and market implications of food technologies.
? Demonstrate autonomy in organizing and conducting experimental activities, lab analyses, and data reporting.

Communication Skills
The program trains graduates to:
? Work in interdisciplinary teams and effectively communicate technical and scientific aspects of food production to both specialists and non-specialists, including in English.
? Develop professional technical reports and presentations through coursework and internships.
Communication skills are assessed through coursework, internship activities, and the final thesis defense.

Learning Skills
Graduates will acquire cognitive tools for critical, creative, and collaborative problem-solving, as well as the ability to continuously update their knowledge in food science and technology. This includes the use of case studies, bibliographic research, and data analysis.

Professional profile and employment opportunities

Food Production Technologist

Graduates of the STALs program are qualified to perform technical activities across the food chain, including raw material procurement, process control, food preservation, and safety and quality management.

Functions in the Workplace
? Planning and controlling food production and transformation lines.
? Managing quality systems and traceability according to ISO and other sector-specific standards.
? Conducting audits, handling product recalls, and participating in R&D for sustainable agro-food chains.
? Developing standards for raw materials, finished products, and auxiliary substances.
? Performing technical analyses and preparing reports.
? Training personnel in food safety.

Competences Associated with the Role

The profile of graduates in Sustainable Food Sciences and Technologies brings together diverse competencies by integrating knowledge of biology, chemistry, microbiology, economics, and technology within the agro-food system. As such, graduates can perform various functions in the food industry and related production activities.

Graduates in Sustainable Food Sciences and Technologies possess the logical and cognitive tools to:
a) intervene in key operations and transformation processes in the food industry, focusing on the relationship between the production process and product quality;
b) develop investigative methods specific to food science and technology, aimed at the development and control of food and related materials, considering consumer needs and the necessity of improving the sustainability of agro-food chains;
c) apply chemical, microbiological, and sensory analytical techniques in the food sector.

Graduates in Sustainable Food Sciences and Technologies can be employed in small, medium, and large enterprises, as well as in public institutions, performing technical tasks in production, analysis, consultancy, quality control, and sustainability, particularly concerning the development and management of food production and preservation processes.

Graduates in STALs are prepared to operate in a modern food industry, which is both efficient in production terms and aware of the importance of food sustainability. The study program trains professionals capable of maintaining high-quality standards in food companies.
Professional Activities

Graduates? professional activities may include:

- Food companies of various sizes, with operational and control responsibilities;
- Companies linked to food production, such as suppliers of materials, equipment, processing aids, and ingredients;
- Public and private institutions engaged in analysis, control, certification, and research aimed at protecting and enhancing food production;
- Large-scale food distribution companies;
- Activities related to communication and eno-gastronomic tourism;
- Companies specializing in food fermentations and/or the production of microbial cultures (starters) for the food industry;
- Companies engaged in food packaging.

Technical Roles

Graduates also take on technical tasks involving the planning and control of different stages in the food supply chain. This includes work with companies involved in the production, preservation, and distribution of food and beverages, as well as companies supplying materials, equipment, processing aids, ingredients, and services (e.g., analytical laboratories or certification bodies).

Further Education

The study program is designed to ensure that first-level STALs graduates acquire sufficient skills to pursue further academic training in Italy and abroad (master?s programs and second-cycle degrees) within the relevant cultural area. The program complies with the minimum criteria set by the National Coordination of Degree Programs (http://COSTAL.unirc.it/) and aligns with the standards of food-related degree programs across Europe.

Professional Opportunities (ISTAT Classifications)

The program prepares students for roles such as:

- Food Preparation Technicians (3.1.5.4.1)

- Food Production Technicians (3.1.5.4.2)
- Food Product Technicians (3.2.2.3.2)

Professional Qualifications

Graduates are eligible for registration in the following regulated professions:

- Junior Agricultural and Forestry Specialist
- Certified Agrotechnician
- Certified Agricultural Expert
- Certified Industrial Expert

Initial knowledge required

Initial knowledge required

Qualifications and knowledge required for admission

To be admitted to bachelor's degree in "Science and Technologies for Sustainable Food", you must have a secondary school diploma or other qualification obtained abroad and recognized as suitable. Basic knowledge of mathematics, general chemistry, physics, cell biology, and logic skills are a prerequisite. An integration of the knowledge of mathematics obtained in secondary schools other than scientific high school is a fundamental requirement for tackling the course of study. Methods of verifying knowledge and personal preparation Access to the course is regulated by a mandatory test, aimed at ascertaining the initial preparation of the students, in terms of minimum knowledge requirements of basic scientific disciplines and understanding of elementary logic. The test is carried out using the TOLC-AV platform (Test OnLine CISIA); the test is provided by various universities and the location of the test is not binding for subsequent enrolment. Details relating to dates, times, places, and methods of carrying out the test and admission requirements will be made available in the notice published on the website www.unimi.it The access procedures for students from other Degree Courses of the University of Milan, from other Universities or already graduates are disclosed each year in the call for applications available on the University website. The recognition of credits will be carried out by a teaching commission set up by the teaching college.

Admission assessment

Methods of verifying knowledge and personal preparation

The degree course has open access with mandatory knowledge verification tests, but it is not selective, before enrollment. The test is carried out using the TOLC-AV platform (Test OnLine CISIA); the test is provided by various universities and the location of the test is not binding for subsequent enrolment. Details relating to dates, times, places, and methods of carrying out the test and admission requirements will be made available in the notice published on the website www.unimi.it The access procedures for students from other Degree Courses of the University of Milan, from other Universities or already graduates are disclosed each year in the call for applications available on the University website. The recognition of credits will be carried out by a teaching commission set up by the teaching board.

Admission of transfer or graduate students

Transfer students from a degree programme of the University of Milan, or another university, and graduate students will be waived from the test requirement only if admitted to years subsequent to Year I. To this end, they will have to submit a specific request for prior assessment of their academic records using the online service as shown in the call for applications. These candidates must provide a full transcript of records (listing exams, subject areas, credits, grades) and attach the course syllabi. For more details and dates, please refer to the call for applications. Students admitted to the first year must take the test.

Additional learning requirements (OFA) and remedial activities

Additional training obligations (OFA) and methods for recovering Admitted students who have achieved a score lower than or equal to 4 in the mathematics section of the TOLC-AV are assigned additional learning obligations (OFA). The deadline for passing the OFA coincides with the deadline for the exam session of the academic year of enrolment. The OFA can be fulfilled by attending and passing a final test of the alignment course in Mathematics. The OFA can also be fulfilled by passing the Elements of Calculus course included in the study plan by the deadline of the exam session of the academic year of enrolment. In the event of failure to complete the OFA (or failure to pass the Elements of Calculus exam) within the first year of the course, the student is prevented from taking the second- and third-year exams.

Compulsory attendance

Attendance is strongly recommended for all training activities.

Internship criteria

The internship must be carried out under the guidance of a supervisor teacher, who must indicate a second teacher or an

external expert for the role of co-supervisor. The supervisor of the degree thesis can only be a professor of the CdS or of the Faculty of Agricultural and Food Sciences. Any type of activity (for example internships in external companies or laboratories) carried out without the consent of a supervisor will have no value for the final exam.
The end-of-course training internship can only be started:
1) after having obtained at least 90 CFU,
2) after passing all the compulsory exams required in the first year,
3) after acquiring the qualification for knowledge of the foreign language.

Degree programme final exams

The final exam awards 3 credits (CFU). Upcoming graduates must comply with the following:
- pass all exams included in the academic plan, for a total of 153 credits, and earn 12 credits for elective activities;
- earn 3 credits for foreign language proficiency;
- earn 3 credits for computer skills;
- complete an internship on campus or in another public or private organization, for a total of 6 credits;
- write a report on the internship.

The final exam consists of the presentation and discussion of the final paper before an examining board. Candidates will present their final paper, highlighting the purpose and findings of their work, and skills learned. The paper can be written and discussed in Italian or English. Regulations for the awarding of degree marks is posted on the page https://www.unimi.it/en/education/faculties-andschools/agricultural-and-food-sciences

Notes

In order to obtain their degree, students must be proficient in English at a B1 level under the Common European Framework of Reference for Languages (CEFR). This proficiency level may be certified as follows:
- By submitting a language certificate attesting B1 or higher level in English and issued no more than three years before the date of submission. You will find the list of language certificates recognized by the University at: (https://www.unimi.it/en/node/39322). The certificate must be uploaded during the enrolment procedure, or subsequently to the portal http://studente.unimi.it/uploadCertificazioniLingue;
- By taking a placement test offered by the University Language Centre (SLAM) between October and December of the first year (or in January for Master?s degree programmes). Students who fail the test will be required to take a SLAM course.

The placement test is mandatory for all those who do not hold a valid certificate attesting to B1 or higher level.
Those who have not taken the placement test by the end of December (end of January for Master?s degree programmes) or fail the end-of-course exam six times must obtain the necessary certification 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: chemistry, biochemistry, food microbiology, food technology processes, human nutrition, quality management and food economics and marketing. The outline of the Erasmus+ study program (learning agreement) is prepared by the student in collaboration with the Italian academic Erasmus+ tutor (Prof. Alyssa Mariel Hidalgo Vidal - alyssa.hidalgovidal@unimi.it). 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 (Prof. Alyssa Mariel Hidalgo Vidal - alyssa.hidalgovidal@unimi.it). Exam grades are converted according to a pre-defined scale. The bachelor 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

How to participate in Erasmus+ mobility programmes

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)
Tel. 02 503 13501-12589-13495-13502
Contacts: InformaStudenti;
Student Desk booking through InformaStudenti

1st COURSE YEAR Core/compulsory courses/activities common

Learning activity		Ects	Sector
Calculus		8	MAT/02
Elements of Chemistry and Physical Chemistry		8	CHIM/02
English assessment B1 (3 ECTS)		3	ND
Fundamentals of Physics		6	FIS/01
Fundamentals of Plant Biology and Yield		10	(5) AGR/19, (5) AGR/13
Introduction to the Sustainability of Food Production		3	AGR/15
Organic Chemistry		6	CHIM/06
	Total compulsory credits	44	

2nd COURSE YEAR (available as of academic year 2026/27) Core/compulsory courses/activities common

Learning activity		Ects	Sector
Biochemistry		8	BIO/10
Food Chemistry and Analysis		10	(5) CHIM/10, (5) AGR/15
Fundamentals in Chemical and Analytical Methods		8	(5) CHIM/01, (1) CHIM/02, (2) CHIM/06
Human Nutrition		6	MED/49
Microbiology and Food Microbiology		12	AGR/16
Principles of Food Engineering		12	(6) AGR/15, (6) ING-IND/11
	Total compulsory credits	56	

3rd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities common

Learning activity	Ects	Sector
Firm and Chain Management in the Food Sector	12	AGR/01
Food Ingredients and Additives for Products Development	6	AGR/15
Food Processing	9	AGR/15

Food Quality and Traceability in the Supply Chains		6	AGR/15
Interdisciplinary Methodologies for Food Systems		9	(2) BIO/10, (4) AGR/16, (3) AGR/15
Principles of Plant Pathology and and Stored-Product Pests		6	(3) AGR/11, (3) AGR/12
Sensory Analysis		6	AGR/15
Sustainable Packaging Principles and Technologies		5	AGR/15
	Total compulsory credits	59	

Further elective courses

The educational activities chosen by the student must be consistent with the overall educational project and allow the acquisition of 12 credits. The student may choose elective courses (minimum 8 ECTS- maximum 12 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. In this context, the Academic Board offers cycles of seminars (each corresponding to 2 credits). Elective activities can be undertaken always and exclusively after the favorable opinion of the Academic Board. The table below lists the elective activities proposed by the Academic Board of Sustainable Food Science and Technology. Independently chosen educational activities must be identified in consultation with the study plan tutor and appear in theindividual study plan which must be prepared by the date established by the Academic Senate and approved by the Academic Board. See also the paragraph Structure of the course - Presentation of the study plan.

Alcoholic Beverage Technology	4	AGR/15
Animal Morphology and Physiology	4	VET/01
Biomolecular Methodologies	4	BIO/10
Chemistry and Technology of Flavours	4	AGR/15
Dairy Chemistry and Technology	4	AGR/15
Food Enzymology	4	BIO/10
Health, Safety and Ergonomics in the Food Industry	4	AGR/09
Nutritional Evaluation of Foods	4	MED/49
Sanitation in Food Processing	4	AGR/15
Soft Skills for the Food Industry	4	AGR/15
Sustainability of animal production and aquaculture products	4	(2) AGR/19, (2) AGR/20
Technology of Canned Fruits and Vegetables	4	AGR/15

End of course requirements

Final Exam		3	NA
Stage		6	NA
	Total compulsory credits	9	

COURSE PROGRESSION REQUIREMENTS

The course contains the following obligatory or advised prerequisites

Learning activity	Prescribed foundation courses	O/S
Food Processing	Principles of Food Engineering	Core/compulsory