



UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2024/25
BACHELOR
SUSTAINABLE AGRICULTURE (Classe L-25)
Enrolled from academic year 2022/23

HEADING

Degree classification - Denomination and code:	L-25 Agriculture and forestry industry
Degree title:	Dottore
Length of course:	3 years
Total number of credits required to complete programme:	180
Years of course currently available:	1st , 2nd , 3rd
Access procedures:	Open, subject to completion of self-assessment test prior to enrolment
Course code:	G31

PERSONS/ROLES

Head of Study Programme

Prof. Alberto Tamburini

Tutors - Faculty

Tutor per i piani di studio:

A-B Prof.ssa Maria Cristina Bellucci

C Prof. Aldo Calcante

D-E-F Prof.ssa Arianna Facchi

G Prof. Pietro Marino Gallina

I-K-L Prof.ssa Noemi Negrini

M Prof.ssa Luisa Maria Pellegrino

N-O-P Prof.ssa Alessia Perego

R Prof. Roberto Pilu

S Prof. Giorgio Ragaglini

T Prof. Luca Rapetti

U-V-Z Prof.ssa Maddalena Enrica Zucali

Tutor per la mobilità internazionale e l'Erasmus:

Prof. Stefano Corsi

Tutor per trasferimenti:

Prof. Alberto Tamburini

Tutor per riconoscimento crediti:

Prof. Alberto Tamburini

Degree Course website

<https://agricoltura-sostenibile.cdl.unimi.it>

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

via Celoria 2 - Milano Città Studi Phone 0250316511-0250316512 Lunedì, mercoledì e venerdì dalle 10.30 alle 12.30; martedì e giovedì dalle 14 alle 16. <https://informastudenti.unimi.it/saw/ess?AUTH=SAML>

Degree programme head

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Student registrar

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CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The undergraduate course in Sustainable Agriculture is designed to train a professional figure in the agricultural field with both a solid basic preparation and specific knowledge of the agronomist in the current context.

The course is structured to provide a high level of multidisciplinary preparation and therefore give the graduate a high degree of attractiveness towards the working environment. The same training also represents an adequate basis for continuing the studies in a master's degree course.

The skills and tools acquired during the educational path have the main objective of providing graduates with the ability to design and manage production processes (plants and animals), considering the quality of the product and the sustainability of the agricultural system. Other training objectives are represented by the acquisition of the concepts of bio-economy and circular economy, to allow the management of the entire production process and provide or facilitate the use of by-products.

In addition, various skills provided in the course are oriented to the management of natural resources, land management, the production of renewable energy, the transformation and the enhancement of by-products in agricultural areas.

Expected learning outcomes

The course in Sustainable Agriculture provides basic and specialized knowledge of the agricultural sector, through diversified teaching methods such as lectures, laboratory exercises, educational outings and participation to seminars. Assessment of knowledge acquisition will take place both at the end of the courses and during the discussion of the final dissertation.

Graduates will be able to know and understand the various aspects that regulate plant and animal production in compliance with the principles of environmental sustainability and product quality, whether they are intended for human or animal use. To achieve this, they will be able to understand the physical, chemical, anatomical, physiological, genetic and mechanical factors, on which plant and animal productions are based. Finally, they will be able to understand the relationships that exist between these different factors also, but not only, through the knowledge of mathematical, computer and statistical tools.

During the course, the ability to apply the knowledge acquired will be enhanced with exercises in the classroom, in the laboratory or in the context of production activities and internships. This ability will be assessed on the basis of practical tests carried out in laboratories, in courses that include the study of real problems, in the evaluation of the internship training course and in the discussion of the final dissertation. At the end of the training course, graduates, based on the knowledge acquired, will be able to apply the correct tools to address problems in the field of agricultural production, land management and the use of by-products.

Graduates in Sustainable Agriculture acquire the ability to interpret data from analyses, databases, experiments and observations; to identify the relationships between facts and information in order to formulate independent judgments, also taking into account economic, regulatory, social and ethical; and to propose innovative solutions with particular reference to interventions aimed at improving the quality and economic and environmental sustainability of agricultural production.

The acquisition of skills relating to independent judgment is encouraged throughout the training course, thanks to the use of innovative teaching forms, but it is stimulated through the experience of the internship and the preparation of the final dissertation, during which students are generally enabled to acquire data and information through analyses, experiments and observations or by consulting databases. The information collected will be then processed, interpreted and discussed in the final dissertation in the light of the results reported in scientific papers, to reach original conclusions. The methods and tools with which this autonomy of judgment will be evaluated are substantially represented by the exams and the preparation of the final dissertation.

During the course, graduates in Sustainable Agriculture will be continuously stimulated to acquire communication skills, through oral or written exam tests with open questions. Communication skills are also encouraged by proposing the participation of students in seminars and conferences, also in English, held by specialists in the sector and by encouraging students to gain study experiences abroad. Communication skills will be then improved and assessed in the preparation, illustration and discussion of the final dissertation. At the end of the course, graduates will have acquired the agricultural terminology and become familiar with the communication, in a clear and effective way, of information, ideas, problems and solutions relating to the scientific areas of their competence. This ability also includes the use of a European Union language other than one's own, usually English, and using the potential of modern communication tools, including multimedia.

The knowledge acquired during the course provides the graduates with a strong learning ability necessary both to undertake subsequent studies and to maintain adequate and continuous professional updating. Indeed, they acquire the ability to deepen and update their knowledge to face scientific, technical and operational problems of their scientific and professional field, through the personal and autonomous collection and processing of bibliographic material and databases. These skills are acquired along the entire course of studies but reach complete maturity during the preparation of the final dissertation, during which students acquire skills in examining bibliographic material and databases and in individual processing of information, for the purpose of interpretation and discussion of the internship topic.

Professional profile and employment opportunities

Within the agricultural context in which they can work (vegetable production, livestock production, territorial management and related supply chains), graduates in Sustainable Agriculture carry out planning, management and executive functions. Graduates manage the main aspects of crop and tree production (processing, fertilization, start of cultivation, defence, irrigation, harvesting, etc.) and animal production (farming systems, feeding, management of housing, production and effluents), combining the needs of profitability with environmental sustainability, animal welfare and the quality of the products obtained by applying the knowledge and judgment skills received during the training course, the verification tests

and the drafting of the final paper.

Graduates in Sustainable Agriculture can be active in other work areas not directly connected with plant and animal production, namely: a) supporting the marketing of products obtained from plant and animal production as well as managing the marketing of products; b) actively participating in research and development actions related to the inputs necessary for the development of plant production (fertilizers, pesticides and agricultural machinery) and animal production (feed, supplements and technological systems), and dealing with their sale by exploiting technical knowledge of the products; c) actively participating in the development of agricultural businesses by providing technical assistance to the farm, in the context of plant and animal production, in line with the farm's technical and administrative procedures; d) managing natural resources, land management, production of renewable energy, transformation of products within the company and by-products; and finally, e) participating in environmental monitoring activities, the implementation of projects for the recovery of polluted areas and the management of plants for the transformation of biomass with a high environmental impact.

To carry out the functions of planning, management and execution of activities related to the agricultural, territorial and environmental monitoring system, graduates in Sustainable Agriculture will make use of the knowledge acquired during the course, with particular reference to the ability to relate different areas, to identify the appropriate tools and, finally, to adequately transfer the decisions taken.

The employment opportunities of graduates in Sustainable Agriculture are represented by:

- farms including those providing environmental services;
- agritourism farm and those oriented to the transformation and direct sale of their products;
- public bodies for agriculture, the territory and the environment (regions, municipalities, mountain communities, basin authorities, national and regional environmental agencies, reclamation and irrigation consortia, mountain basin consortia, protected parks and areas);
- professional associations;
- international and non-governmental organizations engaged in agricultural development projects;
- freelance, individually or as part of professional studies operating in the field of agricultural, livestock and natural systems;
- companies providing assistance and laboratories operating for the enhancement and protection of the environment and the territory, for environmental monitoring and recovery, for the management of wastewater, for environmental remediation, for the construction and maintenance of green areas and for works and interventions to protect the soil;
- companies providing assistance to agricultural and livestock activities (administrative assistance, agronomic consultancy and agro-mechanical companies);
- companies supplying technical means for agriculture and animal husbandry (fertilizers, pesticides, feed and food supplements);
- companies that supply structures and equipment for agriculture and animal husbandry (e.g., irrigation systems);
- agricultural machinery suppliers;
- agricultural consortia, producer associations, trade associations, agricultural cooperatives;
- agro-food processing, marketing and distribution companies.

Initial knowledge required

Admission requirements

Applicants to this degree programme must hold an upper secondary-school diploma or equivalent qualification obtained abroad, and adequate knowledge. In particular, candidates must have a good understanding of basic scientific subjects (mathematics, physics, chemistry, biology), as provided by upper-secondary school, as well as reasoning skills and written and oral presentation skills in Italian. The students' background will be assessed in accordance with academic regulations for the degree programme. Any additional learning requirements resulting from the aforementioned assessment must be met within the first year of the programme.

Admission assessment

Admission to this Bachelor's degree programme is open, subject to a mandatory, non-selective, assessment test before enrolment.

The test will ascertain that the candidate meets admission requirements, i.e. knowledge of key science subjects as provided by upper secondary school, and an understanding of elementary logic.

The test required for admission into the degree programme is TOLC-AV, an online test provided by the Consortium of Inter-University Integrated Access Systems (CISIA - <https://www.cisiaonline.it>).

For test topics and details, please review the page <https://www.cisiaonline.it/en/area-tematica-tolc-agraria-veterinaria/struttura-della-prova-e-syllabus/>

You may sit for the TOLC-AV test at the University of Milan or any other member university of CISIA.

The calendar with available venues and dates is posted to the page <https://tolc.cisiaonline.it/calendario.php?l=gb>.

Registration procedures and deadlines are set out in the call for applications posted to the page <https://agricoltura-sostenibile.cdl.unimi.it/isciversi>

The test results will be notified to each student individually, highlighting any additional learning requirements. To meet any additional learning requirements, the Faculty offers students remedial online courses and extracurricular tutoring at the beginning of classes. We strongly recommend that anyone with additional learning requirements use these services.

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

Students who are admitted with a score lower than or equal to 4 in the Mathematics section of the TOLC-AV test will have to fulfil additional learning requirements (OFA). Remedial activities will be organized for students with OFA (in the period October-December), both as online exercises on an e-learning platform and as discussion sessions with a tutor. After participating in remedial activities, new students will have to take a final assessment test. Mathematics OFA are prerequisites for all second- and third-year exams. For students who have not passed the OFA final test during the first year, passing the Mathematics exam is a prerequisite for all second- and third-year exams. Learn more at <https://agricoltura-sostenibile.cdl.unimi.it/it/studiare/le-matricole>.

Compulsory attendance

Course attendance is strongly recommended.

Internship criteria

The internship can be carried out on or off campus, as established by the Academic Board.

The Internship cannot start before the student has passed all first-year exams.

Internship activities are usually as follows:

- experimental laboratory or field activities, or monitoring of physical processes or production activities with data collection and processing;
- in-depth bibliographic and documentary research of a technical or scientific nature.

Degree programme final exams

For candidates to be admitted to the final exam, they must have earned 177 credits and completed their internship. Upcoming graduates are required to pass a final exam, consisting in the discussion of a written paper on the internship experience before an examining board. The student will write the paper under the guidance of a supervisor, and possibly a co-supervisor. You can find internship and thesis guidelines on the degree programme website. In awarding the degree mark, the board will consider the weighted average of exam grades (with 30 cum laude counting as 33), as well as how the candidate worked during the internship and how they presented their paper, whether they graduate on-track, and whether they have successfully completed an Erasmus internship abroad. Regulations for the awarding of degree marks is posted on the page <https://www.unimi.it/en/education/faculties-and-schools/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. 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 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 organizations. Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

Study and internships abroad

The Course of study in Sustainable agriculture gives many opportunities for stages abroad mainly through the Erasmus+ programme. About 30 foreign Universities of the EU are involved in this students exchange. The areas of study which can be followed by the students abroad are almost all those included in this course of study. In general, students who make a stage abroad attend local courses or participate in research for the preparation of their thesis. The learning agreement is outlined in collaboration with the person in charge for the Erasmus of the degree program, as regards both the choice of courses and the organization of the internship at the partner university. Students must obtain the formal approval of the examinations that they intend to carry out at the host university from professors who hold equivalent or similar teachings at

the University of Milan before completing the learning agreement. As regards experimental activities abroad, which can constitute part or the entire program of the internship, a letter of agreement from a professor of the partner university is required, along with the formal approval on the objectives, on the program and on the term of the internship by a professor of the degree program, who will also act as supervisor. Other possibilities exist in terms of cultural exchange with non EU universities (in China, Japan, Latin America) not involved in the Erasmus programme: https://drive.google.com/drive/folders/1-u48xSaV9eR9Vg-vU9YRT_DAcYCcI50K

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 organizes 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; mobility.out@unimi.it

Student Desk booking through InformaStudenti

1st COURSE YEAR Core/compulsory courses/activities common		
Learning activity	Ects	Sector
Basic statistics with computer applications	6	NA
English assessment B1 (3 ECTS)	3	ND
Fundamental biology and botanics for agriculture	12	(8) BIO/01, (4) BIO/04
Fundamental economics	6	AGR/01
General and inorganic chemistry	6	CHIM/03
Mathematics	6	MAT/07
Organic chemistry	6	CHIM/06
Physics	6	FIS/07
Total compulsory credits		51
2nd COURSE YEAR Core/compulsory courses/activities common		
Learning activity	Ects	Sector
Agricultural genetics	6	AGR/07
Agricultural hydraulics	6	AGR/08
Agricultural machinery	6	AGR/09
Agronomy	6	AGR/02
Animal husbandry	12	(4) AGR/19, (4) AGR/18, (4) VET/01
Microbiology	6	AGR/16
Soil and plant science	14	AGR/13
Total compulsory credits		56
Elective courses		
The study program includes 12 CFUs that the student may elect to allocate to selected courses within the degree program, or towards other degree programs within the faculty and university, or towards other creditable training activities. See also the paragraph Structure of the course - Presentation of the study plan. The training activities that are creditable include		

seminars, conferences, advanced courses, or other activities organized by the university or another institution, as long as they are consistent with the student's educational path, up to a maximum of 4 CFUs.

The recognition of credits for these activities must be agreed upon in advance with the academic tutor. In order to acquire the 12 credits that can be freely chosen, the Teaching Board proposes the following courses listed below:

Beekeeping	4	AGR/11
Farming in The Alps	4	AGR/19
Floriculture and Turfgrasses	6	AGR/04
History of Agriculture	4	AGR/01
Morphological Evaluation and Ethnology in Animal Production	4	AGR/17
Ornamental Arboriculture and Urban Forestry	6	AGR/03
Postharvest physiology and quality of horticultural commodities	6	AGR/03
Survey, map drawing and materials for green areas	6	AGR/10
Viticulture	6	AGR/03

3rd COURSE YEAR Core/compulsory courses/activities common

Learning activity	Ects	Sector
Agricultural, agro-food and agro-environmental economics	8	AGR/01
Farm structures	6	AGR/10
Field crops and fruit tree Production	10	(5) AGR/02, (5) AGR/03
Fundamentals of entomology and plant pathology	8	(4) AGR/11, (4) AGR/12
Total compulsory credits		32

Elective courses

Courses within a specialization track

The student must choose one of the following specialization tracks consisting of two multidisciplinary courses of 10 CFU each.

Agro-environmental track:

Interaction of agrochemicals with the environment	10	(2) AGR/07, (3) BIO/07, (5) CHIM/06
Nutrients cycle in soil-plant systems	10	(4) AGR/16, (6) AGR/13

Renewable energy and biomass reuse track:

Biomass valorisation and emissions reduction	10	(4) AGR/10, (6) AGR/13
Green chemistry and renewable energy in agriculture	10	(4) AGR/09, (6) AGR/13

Animal husbandry track:

Animal production	10	(4) AGR/18, (6) AGR/20
Animal welfare and extensive husbandry system	10	(7) AGR/19, (3) AGR/18

Short supply chain for agri-food production track:

Farm processing and marketing of agri-food products	10	(4) AGR/09, (2) AGR/10, (4) AGR/15
Technologies for produce processing	10	(6) AGR/15, (4) AGR/01

End of course requirements

Other educational experiences	6	NA
Final exam	3	NA
Total compulsory credits		9

COURSE PROGRESSION REQUIREMENTS

You can take exams for years subsequent to Year I only after you have passed the Maths exam or completed Maths OFA (additional learning requirements).

Passing the exams of the first year of the course is strongly recommended before enrolling in the second year and, in any case, before taking subsequent exams.

The internship can only be started after passing all the exams required in Year I.