



UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2023/24
IN
PLANT SCIENCE - (Classe LM -6)
Enrolled from 2018/2019 academic year

HEADING

Degree classification - Denomination and code:	LM-6
Degree title:	Dottore Magistrale
Length of course:	2 years
Credits required for admission:	180
Total number of credits required to complete programme:	120
Course years currently available:	1st , 2nd
Access procedures:	Cap on student numbers, student selection based on entrance test
Course code:	F3B

PERSONS/ROLES

Head of Study Programme

Prof.ssa Isabella Dalle Donne

Degree Course Coordinator

Prof. Luca E. A. Gianfranceschi

Tutors - Faculty

Academic guidance: Prof. Luca Gianfranceschi

Erasmus and international mobility: Prof. Veronica Gregis

Study plan: Prof. Luca Gianfranceschi

Internships: Dr. Camilla Betti

Seminars, laboratories and other activities: Prof. Fabio Fornara

Master thesis: Dr. Camilla Betti

University and programme transfer tutor: Prof. Luca Gianfranceschi

Master's degree admission: Prof. Alex Costa

Credit recognition: Prof. Luca Gianfranceschi

Degree Course website

<https://www.unimi.it/en/education/plant-science>

Academic Services Office

via Celoria, 26, 20133 Milan – 2nd floor, A Building Tel. 0250314870 By appointment. Email: cl.biol@unimi.it

Boards

- Collegio Didattico di Scienze Biologiche: presidente prof. Isabella Dalle Donne / - University of Milan – University Grenoble-Alpes Joint Board of Studies (JBS): prof. Luca Gianfranceschi (Unimi), dr. Camilla Betti (UNIMI), Monica Sinibaldi (UNIMI), prof. Christel Carles (UGA), prof. Gabrielle Tichtinsky (UGA), Philippe Moreira (UGA).

International Students Office - Welcome Desk

via S. Sofia, 9/1, Milan <https://www.unimi.it/en/international/coming-abroad/international-students-office-welcome-desk>

Matriculation and enrollment

<https://www.unimi.it/en/node/91/>

Plant Science master degree email

Email: plant.science@unimi.it

Representative for disability services and specific learning disabilities (appointed by the Academic Board):

Prof. Diletta Dolfini Email: diletta.dolfini@unimi.it

Student administrative office

via Celoria, 18, 20133 Milan Tel. 0250325032 <https://www.unimi.it/en/node/360> <https://www.unimi.it/en/node/359>

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The Plant Science Master's degree aims at training professionals with a solid and integrated cultural background in basic biology, appropriate for applications in different areas of biology, focusing mainly on plant science. The students will acquire a high level of scientific preparation and in-depth knowledge and skills, taking into consideration molecular and cellular aspects, without neglecting applicative goals such as plant breeding and the protection and preservation of natural plant species. Students will acquire high-level skills, which will enable them to use the latest technologies to study complex plant biological systems. The international character of the Master's programme, the knowledge of English and the international experience are all highly appreciated aspects that will certainly contribute to broadening the graduated student job opportunities beyond national borders.

Expected learning outcomes

The expected learning outcomes, expressed according to the Dublin descriptors are:

Knowledge and understanding. Plant Science Master's degree aims to train highly qualified experts in biology, in general, and more specifically in plant science, who will be able to face the new challenges imposed by the bioeconomy. To this aim, the Master's programme provides a solid theoretical foundation in basic biological disciplines and a comprehensive knowledge in specific areas of plant molecular and cellular biology: physiology, plant development, biochemistry, genetics, and bioinformatics. Moreover, the student will have a multidisciplinary knowledge of the most relevant and innovative methodologies and techniques required for data acquisition and analysis.

Applying knowledge and understanding. Students will acquire skills that will enable them to apply the latest technologies to the study of plant biological systems. We expect students to develop competences that allow them to anticipate the use and application of plants in various fields, ranging from the production of metabolites of nutraceutical/pharmaceutical interest, to the creation of new plant varieties that meet consumer and market needs. They will be able to carry out analysis and characterization of complex biological systems by applying innovative procedures and using state-of-art instruments. They will be able to interpret data obtained from laboratory observations and measurements.

Students will have the opportunity to learn about the rules and procedures for patenting and technology transfer. One of the strengths of the Master's programme are the laboratory training activities aimed at providing a solid practical foundation, which is highly appreciated when applying for qualified job positions.

Decision-making. At the end of the Master's course students are going to acquire independent judgment with regard to: interpretation of experimental data and mastering of the appropriate tools in relation to different scientific and technical disciplines; design and implementation of complex experiments, managing time and procedures; evaluation and quantification of the final outcome; management of projects, structures and personnel; identification of new perspectives and innovative strategies of development; evaluation, interpretation and revision of research data in literature; professional deontology; ability to formulate analytical problems and to propose innovative ideas and solutions; information-retrieval skills, in relation to primary and secondary information sources, including the retrieval and evaluation of information on chemical topics through on-line computer searches.

Communication skills. Graduates will be able to work both autonomously and within group, operating with different degrees of autonomy, thus acquiring skills to access the job market. The ability to communicate accurately and fluently in English with foreign partners will be further enhanced by the UNIMI - UGA collaborative programme.

Learning skills. Students will acquire adequate skills for the development and improvement of competences. They should be able to conduct online literature searches by accessing online databases and other sources. Proficiency in the use of instruments and methodologies, which enables continuous updating of personal knowledge, is another of the Master's programme goals. These skills, which include finding specific information on plant science topics (through specialized texts, scientific journals etc.) and related disciplines (including legal and economic ones), are essential for the management of complex projects.

The skills listed above will be attained through lectures, seminars, laboratory internships and through an extended period of laboratory work required for the preparation of the final thesis. The achievement of course-specific educational goals will be assessed through regular written and/or oral examinations.

Professional profile and employment opportunities

Biologist and assimilated professions. The decision to offer a Master's degree entirely in English and the close collaboration with UGA, where students are required to take part of the courses, broadens the graduate's job prospects, enabling them to enter the labour markets at national and international level.

The Master's course in Plant Science provides in-depth, state-of-the-art knowledge on the molecular and cellular aspects of plants, whether they are model organisms or species of agricultural interest, and their interactions with the environment. The skills acquired in this Master's programme will enable the graduate to carry out functions of high responsibility in professional fields such as:

- Basic and applied research activities in university laboratories, other public or private research institutions and in industry, with particular reference to plant organisms.
- Research and development of scientific methodologies for the study of plant biology.
- Functions of responsibility in public or private sectors in charge of environmental protection and management, in biology research laboratories, in biotechnology and food industries and in all professional fields where a multidisciplinary approach to plant biology is required.
- Scientific dissemination and publishing activities.
- Teaching activities: Graduates will be able to take the national examination to obtain the qualification to practice as a biologist and consequently register in the Italian National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will be able to access PhD positions, specialization schools and other Master's courses.

Job opportunities:

- Universities and public and private research institutions.
- Public and private laboratories for biological, microbiological, genetic, and quality control analyses.
- Biotechnological, pharmaceutical, chemical and biorefinery industries.
- Communication, scientific dissemination and information, scientific publishing.
- Plant genetic improvement and seed production.
- Agro-food sector.
- Production of molecules of food, industrial and pharmaceutical interest in plant systems
- Cooperation and development in international organizations.

Biotechnologist. Graduates in Plant Science will be able to take on functions of high responsibility in all professional fields in which an in-deep knowledge of plant biology is required, in particular those involving the use of plant biological systems and high competence in plant genetics and molecular biology techniques.

- Graduates will be able to take the national examination to obtain the qualification to practice as a biologist and consequently register in the Italian National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will be able to access PhD positions, specialization schools and other Master's courses.

Job opportunities:

- Universities and public and private research institutions;
- Biotechnological, pharmaceutical, chemical and biorefinery industries;
- Plant breeding and seed production companies;
- Cooperation and development in international organizations.

Botanist. The graduated in Plant Science will be able to assume functions of high responsibility in all professional fields in which a comprehensive knowledge of plant organisms is required, from the molecular and cellular level to the organismic level, and the interactions between living organisms and the ecosystem.

- Graduates will be able to take the national examination to obtain the qualification to practice as a biologist and consequently register in the Italian National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will be able to access PhD positions, specialization schools and other Master's courses.

Job opportunities:

- Universities and public or private research institutions;
- Biotechnological, pharmaceutical, chemical industries and bio-refineries;
- Communication, dissemination and scientific information, scientific publishing;
- Plant genetic improvement and seed production;
- Agro-food sector;
- Production of molecules of food, industrial and pharmaceutical interest in plant systems;
- Cooperation and development in international organizations.

Researchers and technicians with a degree in life sciences. The Plant Science graduate will be able to take high responsibility functions in all professional fields where it is necessary to develop and conduct research projects on plant science concepts and theories. The graduated student will be able to:

- Designing and carrying out experimental research projects aimed at expanding and innovating the scientific knowledge about plants, including applications in applied sectors;
- Ensures the proper functioning of laboratories and scientific equipment;
- Define and apply scientific protocols in laboratory experiments and research activities on both basic and applied plant science;
- Graduates will be able to take the national examination to obtain the qualification to practice as a biologist and consequently register in the Italian National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will be able to access PhD positions, specialization schools and other Master's courses.

Job opportunities:

- Universities and research institutions;
- Public and private research laboratories.

Pre-requisites for admission

It is a fundamental prerequisite for admission to the Master of Science degree in Plant Science to have an adequate and sound knowledge of the basics of biological disciplines. Graduates of class L-13 Biological Sciences, who are recognized as

fully meeting the curricular requirements, may apply to Plant Science MSc, provided they have completed an educational pathway in line with the indications of the National CBUI College guidelines and they are in possession of the appropriate certificate. Requirements include:

- 66 ECTS in biological areas (SSD bio), of which at least 6 in BIO/01 Botanica generale (General Botany), BIO/02 Botanica sistematica (Systematic Botany), BIO/04 Fisiologia Vegetale (Plant Physiology), BIO/05 Zoologia (Zoology), BIO/06 Anatomia comparata e citologia (Comparative Anatomy and Cytology) (at least 12), BIO/07 Ecologia (Ecology), BIO/09 Fisiologia (Physiology), BIO/10 Biochimica (Biochemistry), BIO/11 Biologia Molecolare (Molecular Biology), BIO/18 Genetica (Genetics), BIO/19 Microbiologia Generale (General Microbiology).
- 12 ECTS in FIS/01 - FIS/08 Fisica (Physics), INF/01 - Informatica (Informatics), ING-INF/05 - Sistemi di elaborazione delle informazioni (Information processing systems), MAT/01-MAT/09 Mathematics.
- 12 CFU in CHIM/01 - Chimica analitica (Analytical Chemistry), CHIM/02 - Chimica fisica (Physical Chemistry), CHIM/03 - Chimica generale e inorganica (General and Inorganic Chemistry), CHIM/06 - Chimica organica (Organic chemistry).

Other students graduating in the same class L-13, who have not followed a course of study in line with the CBUI indications or in class 12 Biological Sciences (ex DM 509/99), or in other classes, may be admitted provided they have an adequate number of ECTS, not less than 90 ECTS, in the disciplinary sectors (SSD) indicated above.

For students graduating in class L-25, i.e. agricultural and forestry science and technology (Scienze e Tecnologie Agrarie e Forestali) and related classes, ECTS acquired in the following disciplinary sectors will also be considered for admission purposes: AGR/02 Agronomia e Coltivazioni erbacee (Agronomy and field crops), AGR/03 Arboricoltura generale e coltivazioni arboree (Arboriculture and Fruitculture), AGR/07 - Genetica agraria (Agricultural genetics), AGR/12 Patologia vegetale (Plant pathology), AGR/13 - Chimica agraria (Agricultural chemistry), AGR/16 microbiologia agraria (Agricultural Microbiology), AGR/17 Zootecnica Generale e Miglioramento Genetico (Livestock systems, animal breeding and genetics), VET/01 Anatomia degli Animali Domestici (Veterinary anatomy), VET/02 Fisiologia Veterinaria (Veterinary physiology).

Proficiency in English at a B2 level or higher, under the Common European Framework of Reference for Languages (CEFR), is required for admission. The B2 level requirement will be assessed as follows:

- Language certificate at or above B2, obtained no more than three years earlier. For the list of language certificates recognized by the University of Milan review: <https://www.unimi.it/en/study/language-proficiency/placement-tests-and-english-courses/accepted-language-certificates>). The certificate must be uploaded when submitting the online application;
- English level achieved during a Bachelor's degree programme through the University Language Centre (SLAM) courses and tests. The test must have been passed within the last four years.

All those who fail to submit a valid certificate will be allowed to take the admission interview, but will only be admitted to the MSc Plant Science if their level of English proficiency is unequivocally good.

The adequate personal preparation of the candidates, their ability to communicate in English and their motivation are decisive elements for the admission and will be verified during the admission interview.

Admission procedure:

The adequate knowledge of the fundamentals of biological disciplines will be verified through the evaluation of the bachelor study program and the direct assessment of the candidates scientific knowledge. The candidate's background knowledge in Biology will be verified through an interview with the Admission Committee, consisting of teaching members appointed by the Teaching Board. The interview will assess the candidate competence on topics related to Plant Science and will ascertain the candidate's knowledge of English.

The committee evaluates the candidate on a 100-point scale:

- up to 25 points will be given for the graduation grade; for undergraduates the average grade of the sustained teaching activities will be evaluated;
- up to 10 points for the curriculum (type of degree, extra-curriculum free courses, Erasmus experience, etc.);
- up to 65 points for the interview.

A minimum total score of 60 out of 100 points is required for admission.

For the Academic Year 2023-2024, interviews will take place on June 21st, 2023 at the Department of Biosciences, via Celoria 26, room B8. The call for applications for the academic year 2023-2024 will be published in March/April 2023 and will contain detailed instructions (<https://www.unimi.it/en/education/plant-science>). Students must present a valid ID document for identification purposes. Foreign applicants not resident in Italy who have achieved their bachelor's degree abroad will be evaluated on the basis of their CV and may be invited for an online interview.

It is advisable to check for any updates regarding exam dates and times on the website <https://plantscience.cdl.unimi.it/en> or by writing to the Master's programme email plant.science@unimi.it.

After admission, enrollment at both universities (UNIMI and UGA) is required, but tuition fees are due only at the University of Milan. Specific campus fees for the running of programme may be asked at UGA.

Programme structure

The regular duration of the Master's course in Plant Science is two years, divided into 4 semesters. The Master's programme comprises compulsory courses, guided-choice courses, free-choice courses, and laboratory internships. The present document (Manifesto degli Studi) regulates the terms, timing, and rules for the selection of the courses and the presentation of the student's Learning Agreement (see below the Study Plan paragraph). In the first year, all students, regardless of the

university where they first enrolled (home university), must attend the first semester at UGA (September 1st, 2023), while the second semester will be held at UNIMI (March 4th, 2024). In the second year, students are free to decide where to attend the following two semesters. Remote teaching will be available for some second-year courses to guarantee a wider choice of courses. During the second year, a considerable part of the student's commitment is devoted to the research activities necessary for the preparation of the Master's thesis. This experience, in addition to highly practical internships, is probably the most qualifying element of the Master's degree, and allow students to learn the scientific method of investigation, the most modern methodologies and techniques of data acquisition, analysis and processing. One of the main aims of the Master's course is to provide, through a significant experience of experimental work in the laboratory, the opportunity to acquire both the cultural tools and the critical analytical skills to carry out research activities and to learn how to manage research projects and structures.

To obtain the degree, the student must acquire 120 educational credits (ECTS). ECTS are a measure of the learning effort required from the student and correspond to a global load of 25 hours of activity which can be split as:

- 8 hours of traditional class lessons followed by 17 hours of personal study;
- 12 hours of practical and/or laboratory training, followed by 13 hours of personal rework;
- 25 hours of training activities related to internships and for the preparation of the final exam.

In detail, the MSc course in Plant Science provides for the following:

- compulsory lessons in biological fields (36 ECTS, 24 of which in plant biology);
- guided-choice courses (30 ECTS) covering different biological areas, including topics such as applied physics, business management and agricultural specialties;
- 12 ECTS available to the student for free-choice optional courses;
- 18 ECTS for qualified internships to be carried out in university laboratories or other research institutions;
- 24 ECTS dedicated to the preparation of the experimental thesis, which involves the development of an original research project and its discussion during the final defense of the thesis dissertation.

The student's acquisition of the educational credits (European Credit Transfer and Accumulation System - ECTS) established for each teaching unit, even when the courses are divided into modules, is conditional on passing the final examination of each course, which results in a grade.

To expand the range of courses on offer, many of the courses planned for the second year will also be offered by the two universities as distance learning courses.

Study plan submission

All enrolled students must follow a study plan (Learning Agreement). To this end, each student will submit to the Joint Board of Studies (JBS) an individual study plan, drawn up in accordance with the Master's course regulations. The learning agreement must be approved by the JBS and signed by the JBS and the student.

Each student must present a Study Plan in the first year of the Master. The study plan may be revised at any time, the modified version must be approved again by the JBS and resubmitted in the second year through the Study plan service available on their Unimia personal page, see below.

To graduate, students must have passed all examinations included in their latest approved study plan. Students are requested to submit their study plan online through the study plan service available on their Unimia personal page > Study plan (<https://studente.unimi.it/pianiDiStudio/client/checkLogin.asp>). Guidelines for drawing up the study plan are also provided. Study plans must be submitted from 1 February to 29 February 2024.

In addition, students are invited to consider the activities included in the University project for the development of soft skills. If interested, the soft skills courses must be included in the study plan, they are of compulsory attendance, they have a defined number of places and they can only be selected by the students if they have been subscribed by the Master's degree program to which students belong. For further details, please visit: <https://www.unimi.it/en/study/bachelor-and-master-study/your-programme-study/soft-skills>

Schedule of teaching activities

During the first semester of the first year, students will attend courses at UGA, in Grenoble. The semester starts on September 1st, 2023 and ends on January 31st, 2024.

During the second semester of the first year, students must attend courses at the university of Milan. The second semester starts on March 4th, 2024 and ends on June 21st, 2024.

Students are free to choose where to spend their second year, depending on where they decide to do their Master's thesis internship. Remote teaching is available for most second-year courses to guarantee a wider choice of courses. Check semester start and end dates on UNIMI or UGA websites. The complete timetable of the individual courses will be available at the following addresses:

UNIMI

<https://plantscience.cdl.unimi.it/en/study/course-timetable>

UGA

<https://master-biologie.univ-grenoble-alpes.fr/majors/planta-international-plant-int-/plant-int-teaching-program/>

Exam sessions and assessment methods

ECTS are earned through lectures, internships, laboratories, and dissertation. Master's course exams must be passed, and each teaching units will be graded or approved for validation. Grades in Italy are calculated on a 30-point scale, to obtain course credits. The assessment consists of an oral or written exam. For courses structured in modules, a head lecturer will be

identified as the coordinator, and evaluation procedures for course outcomes and the registration of examination grades will be agreed by all associated teaching members. The calendar of the examination sessions for the assessment of the learning outcomes is available through the Unimi online service. For each course, there are at least 6 exam sessions per year, in January-February, June-July and September. At the University of Grenoble-Alpes (France) the rules are different, and the grading system is calculated on a 20-point scale. Students must carefully follow the host institution rules and regulations. The rules for converting grades between the two university systems are available at <https://plantscience.cdl.unimi.it/en>. In order to allow ECTS to be credited to the student's personal transcript and transmitted to UGA, examinations taken in Italy must be compulsory registered by the responsible teacher through the specific service of the University of Milan, accessible at <https://www.unimi.it/en/study/student-services/technology-and-online-services/online-services-former-sifa>. During the mobility students will follow the rules of the host institution with regard to examination sessions and procedures. Results will be exchanged between the two universities and converted according to the local assessment rules.

Conscientious objection policy

In the Plant Science Master degree the use of animals for teaching purposes is not allowed as stated by the law: art. 5f of the Legislative Decree 26/2014. Such procedures are allowed during the traineeships for thesis preparation. However, they must be carried out exclusively by authorized staff, since, in this case, Legislative Decree 26/2014 does not apply. According to Italian law n. 413, October 12 1993, "Norme sull'obiezione di coscienza alla sperimentazione animale", students have the uncontested right to conscientiously object to participation in any experimental activity using animals. In this case, the Teaching Board will suggest alternative traineeships consistent with the educational objectives of the Plant Science course, to ensure the correct acquisition of the study credits necessary for the degree completion.

Campus

At the University of Milan, classrooms are located in the University buildings, via Celoria, 26 (Edifici Biologici); via Celoria, 20 (Settore Didattico); via Golgi, 19 (Edificio Golgi), via Colombo 62 (Settore Didattico via Colombo), via Celoria 2 (Department of Agricultural and Environmental Sciences); most laboratories are located in the Department of Biosciences, via Giovanni Celoria 26, Milan and in the Department of Agricultural and Environmental Sciences - Production, Landscape, Agroenergy, via Giovanni Celoria 2, Milan.

At UGA, information is available at the following website: <https://master-biologie.univ-grenoble-alpes.fr/majors/planta-international-plant-int/> <https://master-biologie.univ-grenoble-alpes.fr/majors/planta-international-plant-int--298457.kjsp>

Libraries

A large collection of online books, scientific journals and online databases is available to University of Milan students (Sistema Bibliotecario di Ateneo) at the following address: <https://www.sba.unimi.it/en>

Traditional libraries are available in Via Celoria, 18 (Biblioteca di Biologia, Informatica, Chimica e Fisica: BICF) and in via Celoria 2 (Biblioteca Centrale della Facoltà di Scienze Agrarie e Alimentari).

Tutoring

Plant Science students are supported throughout their studies by tutors and teachers who provide academic advice, guidance on course selection and advice on where and how to seek help for personal problems. Moreover, the Academic Services Office (segreteria didattica, cl.biol@unimi.it) of the College of Biological Sciences (Collegio Didattico di Scienze Biologiche) provides didactic and logistical advice on the facilities and services made available by the Course of Study and in general by the University. Useful information is provided on compiling the study plan, the UNIMI website, computer rooms, services for the right to study, graduation sessions and how to conduct the final exam, and services for people with specific learning disabilities and the disabled. As is the case at our university, the University of Grenoble-Alpes also has a teaching secretariat, which students can refer to (ufrchimiebiologie-master-plantint@univ-grenoble-alpes.fr).

Two fundamental moments for student orientation are planned each year: i) a meeting in September at the beginning of the first semester, organized by the University Grenoble-Alpes, intended to welcome the newly enrolled students, and give them basic knowledge of the Master's course structure and organization; ii) a second meeting is organised at the beginning of the second semester, in March, when students moved to Milan. On this occasion, information is provided on the roles of the Departments, the College of Biological Sciences and the Joint Teachers-Students Committee (Commissione Paritetica Docenti-Studenti), as well as the names of the student representatives on these bodies. At UNIMI, an important role in ongoing guidance is also played by the University Study and Career Guidance Service (COSP, <https://www.unimi.it/it/corsi/orientarsi-e-scegliere/il-cosp>), which offers a multiple service platform for the guidance of students including individual counselling for students going through difficult times.

A dedicated Office of Services for Students with Disabilities and Specific Learning Disorders (DSA) is available at UNIMI for students with appropriate certification. After an interview with the student, the office produces a personalised document indicating compensatory measures for taking the exams. The department of Biosciences and the College of Biological Sciences have appointed Prof. Diletta Dolfini as liaison with the main Office, and students may refer to her for advice.

Core / compulsory activities

All above-mentioned training activities including mandatory, guided and free-choice courses and experimental research activities during the thesis internship are compulsory for completing a Master.

Compulsory attendance

Attendance is compulsory for all internships. Attendance at courses held at UGA is compulsory. For courses held at UNIMI, although not compulsory, attendance is highly recommended.

Procedures for exam registration and admittance

In order to allow ECTS to be credited to the student's personal transcript and transmitted to UGA, examinations taken in Italy must be compulsory registered by the responsible teacher through the specific service of the University of Milan, accessible at <https://www.unimi.it/en/study/student-services/technology-and-online-services/online-services-former-sifa>.

During the mobility students will follow the rules of the host institution with regard to examination sessions and procedures. Results will be exchanged between the two universities and converted according to the local assessment rules.

Internship criteria

Three internships are included in the teaching programme (Laboratory stage – 6 ECTS, Internship 1 - 12 ECTS and Thesis internship - 24 ECTS). All internships are compulsory and required for graduation. Each internship will be evaluated and credited with ECTS. Voluntary internship (not credited with ECTS) may also be included if related to the study project or professional project.

The location where the internship is carried out and topic must be agreed upon by both Universities via the JBS. The JBS shall name at least one academic supervisor for each internship.

According to Italian and French national rules, all students must establish specific internship agreements with at least one of the two universities and the host institution or host company, even if the internship takes place in a third Country. The agreement must precisely indicate the period of internship.

The internship for the Master's thesis follows the general rules (above) for internship, with the following additions: - The Master's thesis must be carried out under the supervision of two supervisors, one named by the home institution (relatore) and the other by the host institution (correlatore) and both approved by the JBS.

- The final degree project will be a report written in English.

Degree programme final exam

The thesis dissertation, written in English, must be an original work describing the research carried out by the student during his or her thesis internship, aimed at tackling a problem of biological interest, and documenting the ability acquired by the student to correctly apply experimental methodologies and to analyse and contextualise the results obtained. Compilatory theses are not accepted. The Master's degree in Plant Science is obtained by passing a final assessment by a thesis's committee that includes at least one UGA representative who can be connected remotely, if necessary. The committee will evaluate the work and express a final judgment on the thesis work and on the student's overall performance during the Master's programme. The final grade will be on a 110-point scale. More details on the web page: <https://plantscience.cdl.unimi.it/en/study/graduating>. The degree issued by the Committee is "Laurea Magistrale" (master's degree) in Biology, in relationship to the Master's course in Plant Science.

The JBS will take care to communicate the results – including the evaluation of the thesis - to the partner University for the awarding of the UGA Master's Degree. The conversion of diploma grade into the French grading system is part of the agreement between the two Universities and is available at <https://plantscience.cdl.unimi.it/en>

EXPERIENCE OF STUDY ABROAD AS PART OF THE DEGREE PROGRAM

The University of Milan supports the international mobility of its students, offering them the opportunity to spend periods of study and training abroad, a unique opportunity to enrich their curriculum in an international context.

Study and internships abroad

The Master's degree in Plant Science is the result of an agreement between the University of Milan (UNIMI) and the University of Grenoble-Alpes (UGA), France, establishing a joint Master's degree at the two Universities (<https://www.unimi.it/en/international/study-abroad/double-degree>).

Students admitted to the Plant Science Master's degree will receive a contribution to support higher costs arising from their stay at UGA. The level of each contribution will relate to the ISEE declared by the relevant student.

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

ADMISSION CRITERIA: 1ST YEAR CAP ON STUDENT, STUDENT SELECTION BASED ON ENTRANCE TEST

Application and enrolment information and procedures

Both Italian and foreign students must submit admission applications by the deadlines indicated in the call for applicants that is going to be published in spring 2023 on the University of Milan website (<https://www.unimi.it/en/education/plant-science>). Undergraduates who intend to achieve a Bachelor's degree in sciences (or equivalent) before 20 October 2023 may also apply. Completion of the application form is compulsory and must be submitted electronically to the following address: <https://www.unimi.it/en/study/student-services/technology-and-online-services/online-services-former-sifa>.

Practical instructions

Once the results have been published, students occupying the top ten positions on the merit list (or the top three for non-EU residents requiring a VISA) must complete the enrollment process by the deadline set out in the call for applications. Subsequently, if the available positions are not filled, enrolment will be possible for students with lower merit ranking, provided they have obtained at least 60/100 in the admission test. Enrolment of undergraduates will be validated only if they obtain their Bachelor's degree by 20th October 2023. Students from other Universities, upon graduation by 20th October 2023, must present certification of the awarded degree at the student administrative office (Segreteria Studenti).

N° of places reserved to non-EU students resident abroad

3

Number of places assigned

10

ADMISSION CRITERIA: 2°YEAR CREDIT-BASED:NUMBER OF ECTS40

1st COURSE YEAR Core/compulsory courses/activities

Scheduling	Learning activity	Module/teaching unit	Ects	Sector
1 semester	Evolutionary Biology of Plants (UGA)		6	BIO/02
1 semester	Introduction to Plant development and Signal transduction (UGA)		6	BIO/01
1 semester	Strategies in Experimental Biology (UGA)		12	BIO/11, BIO/10, BIO/18, BIO/04
2 semester	Plant development		6	BIO/01
2 semester	Plant signal transduction		6	BIO/04
Total number of compulsory credits/ects			36	

Further elective courses

The student must choose one of the following courses:

1 semester	EvoDevo in the green lineage (UGA)		6	BIO/02
2 semester	Plant ecology		6	BIO/02

The student must choose one of the following courses:

1 semester	Chemistry and Cellular Biochemistry (UGA)		6	BIO/10
1 semester	Epigenetics and cell differentiation (UGA)		6	BIO/18
1 semester	Functional genomics		6	BIO/18
1 semester	Molecular bioinformatics		6	BIO/11
1 semester	Molecular genetics and epigenetics of the cell (UGA)		6	BIO/18
1 semester	Photobiology and bioenergy		6	BIO/18, BIO/04
2 semester	Advanced Plant Cell Biotechnology		6	BIO/18, BIO/04
2 semester	Molecular plant breeding and Genetics		6	BIO/18

The student must choose one of the following courses:

1 semester	Biostatistic, Bioinformatics and Modeling (UGA)		6	BIO/13
1 semester	High-throughput Biology (UGA)		6	BIO/13
1 semester	Patenting and technology transfer		6	IUS/14, IUS/10

The student must choose one of the following courses:

1 semester	Basic Statistics and Experimental design		6	SECS-S/02, AGR/02
1 semester	Development of Crop Ideotypes		6	AGR/07
1 semester	Molecular and Cellular Imaging		6	FIS/07, FIS/03
2 semester	Environmental Plant Biochemistry and Physiology		6	AGR/13

The student must choose one of the following courses:

1 semester	Communication tools and Scientific English (UGA)		6	L-LIN/12, SPS/08
1 semester	Entrepreneurship and Science and Scientific English (UGA)		6	SECS-P/09, SECS-P/07, L-LIN/12

Open choice courses: the student must acquire 12 CFU

End of course requirements				
year	Final dissertation		24	NA
year	Internship 1		12	NA
year	Laboratory stage		6	NA
		Total number of compulsory credits/ects	42	

COURSE PROGRESSION REQUIREMENTS

There are no propaedeutic courses in Plant Science that can limit progression from the first to the second year. First- year students must acquire 40 ECTS within September 30th in order to be admitted to the second year.

VALIDATION OF ECTS ACQUIRED IN OTHER/PREVIOUS DEGREE PROGRAMMES/ THROUGH PROFESSIONAL EXPERIENCE

Validations of previously acquired ects

CFU ACQUIRED IN OTHER MASTER'S

Students requesting a transfer from another Master programme to Plant Science, will undergo the audit of an ad hoc committee that will decide whether and how many of the ECTS previously acquired by the student can be validated upon admittance to Plant Science.

CFU ACQUIRED DURING PROFESSIONAL EXPERIENCES

A maximum of 9 ECTS can be acquired (according to art. 5, comma 7, del DM 270/2004) by certified professional experiences and by post-secondary level educational activities performed in association with the University.