



**UNIVERSITA' DEGLI STUDI DI MILANO**  
**PROGRAMME DESCRIPTION - ACADEMIC YEAR 2022/23**  
**IN**  
**PLANT SCIENCE - (Classe LM -6)**  
**Enrolled from 2018/2019 academic year**

### **HEADING**

<b>Degree classification - Denomination and code:</b>	LM-6
<b>Degree title:</b>	Dottore Magistrale
<b>Length of course:</b>	2 years
<b>Credits required for admission:</b>	180
<b>Total number of credits required to complete programme:</b>	120
<b>Course years currently available:</b>	1st , 2nd
<b>Access procedures:</b>	Cap on student numbers, student selection based on entrance test
<b>Course code:</b>	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 Mon-Fri. from 10.00 a.m. to 11:45 a.m.

Email: [cl.biol@unimi.it](mailto: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](mailto:plant.science@unimi.it)

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

Dr.ssa Diletta Dolfini Email: [diletta.dolfini@unimi.it](mailto:diletta.dolfini@unimi.it)

#### **Student administrative office**

## **CHARACTERISTICS OF DEGREE PROGRAMME**

### **Introduction**

The Master's degree course in Plant Science is the result of an agreement between the University of Milan (UNIMI) and the University of Grenoble-Alpes (UGA), France. The Master's course is a collaborative effort planned to allow students to achieve two Master's degrees, one from UNIMI and one from UGA. The agreement requires that students attend courses and take exams at either Universities. In particular, during the first year, students will be attending the first semester teachings at UGA and the second semester teachings at UNIMI. In their second year, depending on the location of laboratory where they decide to carry out the compulsory experimental thesis work, students will be free to decide whether to stay at UGA or at UNIMI.

### **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. The graduated student will acquire high-level skills, which will enable him/her to use the latest technologies to study complex plant biological systems. The international character of the Master's course, the knowledge of English and the international experience are all highly appreciated aspects that should contribute to broadening the job perspectives of the graduated student, reaching beyond national borders.

### **Expected learning outcomes**

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

**Knowledge and understanding.** The Plant Science Master's degree aims at training highly qualified experts in biology, in general and more specifically in plant science, who will be able to face the new challenges imposed by bioeconomy. To this aim, the Master's degree 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 be provided with 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 enabling them to apply the latest technologies to the study of plant biological systems. We expect students to acquire expertise enabling them to envisage 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 meeting 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 instrument. They will be able to interpret data obtained from laboratory observations and measurements.

Students are going to acquire knowledge about rules and procedures for patent formulation and technology transfer. One of the strengths of the Master's course are the lab training activities aimed at providing a solid practical foundation, 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 regarding: interpreting experimental data and mastering the appropriate tools in relation to different scientific and technical disciplines; designing and implementing complex experiments, by managing time and procedures; assessing and quantifying the final outcome; directing projects, structures and personnel; identifying new perspectives and innovative strategies of development; evaluating, interpreting and revising literature research data; professional deontology; ability to formulate analytical problems and to propose ideas and innovative solutions; information-retrieval skills, in relation to primary and secondary information sources, including information retrieval and evaluation 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 increased 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. Competence in the use of instruments and methodologies, allowing personal knowledge to be continuously updated, is another of the Master's degree goals. Such skills, including the identification of specific information in plant science topics (through specialized texts, scientific journals etc.) and in related disciplines (including legal and economic ones), are essential for the management of complex projects.

The skills listed above will be achieved 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 exams.

### **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 have to follow part of the courses, broadens the graduate's job prospects, enabling him or her to enter the domestic and foreign labour markets.

The Master's course in Plant Science provides in-depth, state-of-the-art knowledge of the molecular and cellular aspects of plants, whether they are model organisms or of agricultural interest, and their interactions with the environment. The skills acquired in this Master's course will allow the graduate to perform 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.
- Responsibility functions in public or private sectors accountable for 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 can take the state exam for the qualification to practice the profession of biologist and consequently obtain the enrolment in the National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will also have access to PhD positions, specialization schools and other Master's degrees.

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. The graduated in Plant Science will be able to take high responsibility functions in all professional fields in which a deep knowledge of plant biology topics is required, particularly in those involving the use of plant biological systems and genetic engineering techniques for applications in various sectors.

Graduates can take the state exam for the qualification to practice the profession of biologist and consequently obtain the enrolment in the National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will also have access to PhD positions, specialization schools and other Master's degrees.

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 take high responsibility functions in all professional fields in which a complete knowledge of plant organisms is required, from the molecular and cellular level, to the organismic to the interactions between living organisms and the ecosystem.

Graduates can take the state exam for the qualification to practice the profession of biologist and consequently obtain the enrolment in the National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will also have access to PhD positions, specialization schools and other Master's degrees.

Job opportunities:

- Universities and public or private research institutions;
- Biotechnological, pharmaceutical, chemical industries and bi-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 graduated in Plant Science will be able to take high responsibility functions in all professional fields where it is necessary to develop and conduct research projects on concepts and theories dealing with plant science. The graduated student will be able to:

- Designs and carry out experimental research projects aimed at broadening and innovating the scientific knowledge on plants, including applications in applied sectors;
- Ensures the operation of laboratories and scientific equipment;
- Defines and apply scientific protocols in laboratory experiments and research activities on both basic and applied plant

science;

- Graduates can take the state exam for the qualification to practice the profession of biologist and consequently obtain the enrolment in the National Order of Biologists (Ordine Nazionale dei Biologi, section A). They will also have access to PhD positions, specialization schools and other Master's degrees.

Job opportunities:

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

### **Pre-requisites for admission**

The prerequisite for admission to the Master's degree in Plant Science programme is an adequate and sound knowledge of the fundamentals of biological disciplines. Graduates of class L-13 Biological Sciences, who are recognized as fully satisfying the curriculum requirements, can apply to the Master degree course in Plant Science, provided they have completed a training course consistent with the indications of the National CBUI College and they have the appropriate certificate. The 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 graduate students in the same class L-13, who have not followed a training course in line with the indications of the CBUI 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) mentioned above.

For students graduated in the L-25 class, i.e. agricultural and forestry science and technology (Scienze e Tecnologie Agrarie e Forestali) and related classes, ECTS acquired in the following disciplinary sectors: AGR02 Agronomia e Coltivazioni erbacee (Agronomy and field crops), AGR03 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), will also be considered for admission.

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 ascertained 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 please review: <https://www.unimi.it/it/studiare/competenze-linguistiche/placement-test-e-corsi-di-inglese/test-di-ingresso-di-inglese>. 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 admitted to the admission interview, but they will be accepted only provided their level of English proficiency is unmistakably good.

The adequate personal preparation of the candidates, their ability to communicate in English and their motivation are decisive elements for the admission and they are going to be tested 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 candidate scientific background knowledge. The candidate's background knowledge in Biology will be verified by an interview with the Commission for Admittance, composed by teaching members appointed by the Teaching Board. The interview will evaluate the expertise of the candidate in topics related to Plant Science and will ascertain the knowledge of the English language.

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.

To be admitted a minimum total score of 60 out of 100 points is required.

For the Academic Year 2022-2023, interviews will take place on June 22nd, 2022 at the Department of Biosciences, Via Celoria 26, room B8. See the 2022-2023 call for applications for detailed instructions (<https://www.unimi.it/en/education/plant-science>). Students must have a valid ID card for identification. Foreign applicants who are not resident in Italy and have achieved their bachelor's degree abroad will be evaluated based on their curriculum and may be invited to an online interview.

It is advisable to check for any possible updates concerning dates and times of the examination on the <https://plantscience.cdl.unimi.it> website or by writing to the Master's course email [plant.science@unimi.it](mailto:plant.science@unimi.it).

After admission, registration to both universities (UNIMI and UGA) is required, but tuition fees are due only to the home institution. Specific programme fees covering programme management 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 includes compulsory courses, guided and free 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 their home University, must attend the first semester at UGA (1st September 2022), while the second semester will be held at UNIMI (1st March 2023). 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 dedicated to the research activities necessary for the preparation of the Master's thesis. This experience, in addition to highly practical internships, are probably the most qualifying elements of the Master's degree, allowing 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 and to learn 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 Master's 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 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 test.

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 subject to passing each course final examination test, resulting in a mark.

To broaden the range of courses to choose from, 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 shall follow a study plan (Learning Agreement). For this, each student will propose an individual study plan to the Joint Board of Studies (JBS), made according to the Master's course rules. Such learning agreement needs to be approved by the JBS and signed by the JBS and the student.

Each student must present a Study Plan in the first year. The study plan may be revised at any time, the modified version must be approved 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 exams included in their latest approved plan of study. Students are requested to submit their study plan online through the Study plan service available on their Unimia personal page > Study plan (<http://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 28 February 2023.

### **Schedule of teaching activities**

During the first semester of the first year, students will be attending courses at UGA, in Grenoble. The semester starts on September 1st, 2022 and ends on January 31st, 2023.

During the second semester of the first year, students are going to attend courses at UNIMI, in Milan. The second semester starts on March 1st, 2023 and ends on June 16th, 2023.

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 date 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, exercises, laboratories, and dissertation. Master's course exams must be passed, and each teaching unit will be graded or approved for validation. Grades in Italy are calculated on a 30-point scale, to obtain course credits. The assessment will consist of an oral or written exam. For courses structured into 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 schedule of the examination sessions for the assessment of the learning outcomes is available through the SIFA online Service. For each course, at least 6 sessions per year are scheduled, during 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 conversion rules between the two grading systems are available at <https://plantscience.cdl.unimi.it/en>.

In order to allow ECTS to be accredited to the student's personal record and transmitted to the host institution, for the exams taken in Italy, registration is compulsory and must be carried out through the SIFA website available at <https://www.unimi.it/en/study/student-services/technology-and-online-services/online-services-former-sifa>. During mobility the students will follow the rules of the host institution concerning exam sessions and procedures. Results will be exchanged between the two universities and converted according to the local grading 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, the 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 that are consistent with the educational goals of the Plant Science course, to ensure the correct acquisition of the study credits necessary for 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 (departments of 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-/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: <http://www.sba.unimi.it/en>

Traditional libraries are available in Via Celoria, 18 (Biblioteca di biologia, informatica, chimica e fisica) and in via Celoria 2 (Biblioteca Centrale della Facoltà di Scienze Agrarie e Alimentari).

## Tutoring

Plant Science students are supported throughout their studies by both tutor teachers providing students with academic advice, guidance on their course choices and advice on where and how to seek help with personal problems. Moreover, the Academic Services Office (segreteria didattica, [cl.biol@unimi.it](mailto: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 more generally by the University. Useful information is provided regarding the compilation of the study plan, UNIMI website, computer rooms, services for the right to study, degree sessions and how to take the final exam, 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](mailto: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, held in Grenoble, 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 March in the second semester when students move 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 for 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 open-choice courses and experimental research activities during the thesis internship are compulsory for completing a Master.

### **Compulsory attendance**

The above-mentioned training activities, including obligatory, guided and free-choice courses and experimental research activities during the thesis internship, are compulsory for completion of the Master's degree. 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 accredited to the student's personal record and transmitted to the host institution, for the exams taken in Italy, registration is compulsory and must be carried out through the SIFA website available at <https://www.unimi.it/en/study/student-services/technology-and-online-services/online-services-former-sifa>

During mobility the students will follow the rules of the host institution concerning exam sessions and procedures. Results will be exchanged between the two universities and converted according to the local grading 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 to obtain the diplomas. Each internship will be evaluated and credited with ECTS. Voluntary internship (not credited with ECTS) may also be included when related to the study project or professional project.

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

According to Italian national rules, all students must establish specific internship agreements with UNIMI and the host institution or host company even if the internship takes place outside of Italy. Similarly, according to French national rules, all students must establish an internship agreement ("convention de stage") with UGA and the host institution or host company even if the internship takes place outside of France. 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 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. 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 Diploma. The diploma grade conversion into the French grading system is part of the agreement between the two Universities and is available <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

## 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 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 31 July 2022 may also apply. Completion of the application form is compulsory and must be submitted electronically to the following address: <http://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 in the merit list (or the top three for non-EU residents requiring a visa) must complete their registration by the deadline set out in the competition notice. Subsequently, if positions are not saturated, enrolment will be possible for students with lower merit ranking, provided they have achieved at least 60/100 in the admission test. Enrolment of undergraduates will be validated only if they obtain their Bachelor's degree by 31 July 2022. Students from other Universities, upon graduation by 31 July 2022, 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

<b>1st COURSE YEAR Core/compulsory courses/activities</b>				
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
<b>Further elective courses</b>				
<b>The student must choose one of the following courses:</b>				
1 semester	EvoDevo in the green lineage (UGA)		6	BIO/02
2 semester	Plant ecology		6	BIO/02
<b>The student must choose one of the following courses:</b>				
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
<b>The student must choose one of the following courses:</b>				
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
<b>The student must choose one of the following courses:</b>				
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
<b>The student must choose one of the following courses:</b>				
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
<b>Open choice courses: the student must acquire 12 CFU</b>				
<b>End of course requirements</b>				
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 30 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 program to Plant Science, will undergo the audit of an ad hoc committee that will decide if and how many of the CFU previously acquired by the student can be validated upon admittance to Plant Science.

##### **CFU ACQUIRED DURING PROFESSIONAL EXPERIENCES**

A maximum of 9 CFU 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.