



UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2025/26
MASTER DEGREE

Applied Biology in Nutritional Sciences (Classe LM-6)
Enrolled from 2022/23 to 2024/2025 academic year

HEADING

| | |
|--|-------------------------------------|
| Degree classification - Denomination and code: | LM-6 Biology |
| Degree title: | Dottore Magistrale |
| Length of course: | 2 years |
| Credits required for admission: | 180 |
| Total number of credits required to complete programme: | 120 |
| Years of course currently available: | 2nd |
| Access procedures: | Open, subject to entry requirements |
| Course code: | F3Y |

PERSONS/ROLES

Head of Study Programme

Prof.ssa Isabella Dalle Donne

Degree Course Coordinator

Prof.ssa Katia Petroni

Tutors - Faculty

Tutor per l'orientamento: Marta Valenza, Federica Marini, Alessandro Aliverti, Elisabetta Tanzi, Anita Ferraretto

Tutor per la mobilità internazionale e l'Erasmus: Cristina Bonza

Tutor per i piani di studio: Katia Petroni, Elena Menegola

Tutor per stage e tirocini: Alessandro Aliverti, Elena Menegola, Elisabetta Tanzi

Tutor per laboratori e altre attività: Alessandro Aliverti, Anita Ferraretto

Tutor per tesi di laurea: Alessandro Aliverti, Monica Gomaschi, Andrea Binelli

Tutor per trasferimenti: Alessandro Aliverti

Tutor per ammissioni lauree magistrali: Alessandro Aliverti, Katia Petroni, Annalisa Bucchi

Tutor per riconoscimento crediti: Alessandro Aliverti

Degree Course website

<http://bionutri.cdl.unimi.it>

Email: bionutri@unimi.it

Admissions and enrolment

<https://www.unimi.it/it/studiare/frequentare-un-corso-di-laurea/iscriversi/iscriversi-un-corso-magistrale>

Disability and SLD academic tutor (appointed by the Academic Board):

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

New student information center

via Celoria, 26 - piano terra, torre C. <https://informastudenti.unimi.it/saw/ess?AUTH=SAML>

Programme Coordinator

Prof. Alessandro Aliverti Email: alessandro.aliverti@unimi.it

Student registrar

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

Study programme head and course management

via Celoria, 26 - piano terra, torre C. <https://informastudenti.unimi.it/saw/ess?AUTH=SAML> Email: bionutri@unimi.it

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The Master of Science (M.Sc.) programme in BIOLOGY APPLIED TO THE SCIENCES OF NUTRITION (BIONUTRI, Class LM-6 Biology) is aimed to the training of qualified experts in the application of biology in nutrition-related fields, the interaction between environment and food, the hygiene and quality of food resources, the control procedures and the accreditation and certification of food. On the basis of the development of biological knowledge in the bio-nutritional field, graduates will be able to manage the problems arising from the rapid evolution of the environmental, cultural, regulatory and technological aspects of nutrition. The M.Sc. in BIONUTRI intends to respond to emerging needs for specific skills in the bio-nutritional field that are currently growing. Specific training objectives are the acquisition of a thorough scientific and operational preparation about:

- the basic chemical composition of food, bioavailability of the macro- and micro-nutrients, the energy content and the nutritional quality of foods, modification of food caused by technological and production processes and by environmental contamination;
- biochemistry and physiology of digestion and absorption and the metabolic processes;
- ecology of nutrition; trophic chains, food eco-toxicology and evaluation of the risk; OGM in the alimentary sector;
- alimentary ethology and pathological dysfunctions connected with the alimentation; microbiology, toxicology and hygiene of the foods;.
- legislation and norms, national and community, relative to the alimentary politics, to the hygiene and to the control of the foods, to the nutritional overseeing for populations, to the risk of exposure to contaminating agents in the animal and human diets.

Expected learning outcomes

In compliance with the indications of the European Union, the expected learning results reached by M.Sc. graduates in BIONUTRI respect the specific statements defined by the Dublin Descriptors system.

- Knowledge and understanding, defined as: integrated cultural competencies in relation to the specific field of nutritional biology as well as related applicative fields; advanced scientific preparation in nutritional biology, with special reference to structural, biochemical and functional aspects (both at the molecular and cellular level and at the levels of whole organism and food behavior), to ecological aspects (food-environment interactions), to regulatory aspects (implementation of new directives of the European Union in the field of food), and to the ability in the knowledge re-elaboration.

- Advanced applicative and multi-disciplinary competences in the methodological technological, and instrumental aspects of biological analyses, with thorough knowledge of: instrumental methodologies, analytical instruments, acquisition and elaboration of data, mathematical and IT supporting tools, scientific method of investigation, with special reference to the field of nutritional biology.

- Acquirement of autonomy of judgement in relation to: management of projects, personnel and work structures; identification of novel perspectives and strategies of development; evaluation, interpretation and elaboration of scientific literature data; professional deontology, critical and responsible approaches to bioethical topics.

- Acquirement of adequate competencies and skills for the communication and management of information, in relation to the ability of: interacting with other subjects with the fluent usage of an UE language, and knowing of the specific discipline lexicon; elaborating and presenting research project; organizing and leading research groups; presenting the result of the research.

The M.Sc. graduates in BIONUTRI will acquire the ability to master the scientific method of investigation and the capacity to work in autonomy, also fulfilling responsible positions and coordination roles, providing essential contributions in any occupational field (scientific research, food security, public and private laboratories involved in nutrition, to monitoring of food quality and safety, scientific professional publishing and science communication) they could cover.

The present master program also provide an adequate cultural basis in order to continue the formation with a PhD program.

Professional profile and employment opportunities

The M.Sc. graduates in BIONUTRI possess a specific and modern knowledge of the biological applications in alimentary and nutritional field and a deepened cultural preparation on the problems of nutrition in several contexts as the environmental, technological, legislative and of scientific research ones with particular attention to the cellular and molecular aspects.

The broad acquired competence confers a specific preparation for professional activities and projects in fields correlated to the biological disciplines in the sectors of the industry and of the public administration with particular reference to:

- 1) comprehension of the biological phenomena at all levels and diffusion/divulgarion of such knowledge;
- 2) correct application of nutrition and of the relative current rules in the field of the public and private health;
- 3) monitoring of food consumption to assess the nutritional trends of the population, application of methods apt to evaluate food safety and to ensure the health of the consumer;
- 4) nutritional education for the institutional operators and the population;
- 5) dietetic advice for determining optimal diets for communities (company refectories, sporting groups, and so on) or single individuals;
- 6) participation in processes of optimization, conservation and safety of the alimentary resources;
- 7) procedures of control, credit and certification of private and public laboratories or structures in accordance with the European dispositions;
- 8) promotion and development of the scientific and technological innovation, as well as of management and design of the technologies related to the biology of nutrition;
- 9) management and coordination tasks in installations of the national and foreign alimentary industries;
- 10) professional activities and to set up projects in all the fields correlated to the biological disciplines, in the application

sectors of the industry, of the agriculture, of the health and of the public administration.

The M.Sc. graduate in BIONUTRI will be able to carry out:

- 1) research activity in the bio-nutritional field,
- 2) research activity in the alimentary industry and in specific sectors for protection of the public health,
- 3) marketing in the industry of the sector of pertinence,
- 4) managerial career in either public or private laboratories,
- 5) free professional activities in pertinent sectors,
- 6) managerial career in the great alimentary distribution;
- 7) activity of diffusion of nutritional education.

The M.Sc. graduate in BIONUTRI, after passing the exam for the profession, will be able to enroll in the Biologist's Professional Register, section A, with the title of Biologist, to perform the activities recognized by the Italian law.

The educational goals and the whole organization of the master program have been defined in the perspective of professional profiles that take into account feasible emergent occupational fields not only within the regional territory, but also within the national and European ones. The expected competences of the graduate are specifically included among those of the Biologist professional. Large and diverse possibilities of professional employment for master graduates with specific formation and cultural competences are also available outside the nation within the EU territory.

Initial knowledge required

Applicants to the programme must hold minimum curricular requirements and prove adequate knowledge (Ministerial Decree 270/04).

Admission requirements

Graduates in Biological Sciences (Class L-13) fully meeting curricular requirements can access the Master's Degree Programme in APPLIED BIOLOGY IN NUTRITIONAL SCIENCES, provided that their course of studies is consistent with the CBUI Italian National Board's guidelines, as duly certified. These guidelines, provided in the CBUI model table, specify the required academic fields and the respective recommended credits (CFU): 66-96 CFU in basic biological disciplines (BIO/01, BIO/02, BIO/04, BIO/05, BIO/06, BIO/07, BIO/09, BIO/10, BIO/11, BIO/18, BIO/19); 12-15 CFU in basic non-biological chemical disciplines (CHIM/01, CHIM/02, CHIM/03, CHIM/06); 15-18 CFU in basic non-biological mathematical, physical and computer science disciplines (MAT/01-09, FIS/01-08 and INF/01).

The programme can also be accessed by graduates of the same class (L-13), who have not followed a course of studies in line with the CBUI's guidelines, or of class L-12 - Biological Sciences pursuant to Ministerial Decree 509/99, or of other classes, as long as they meet certain curricular requirements. More specifically, they must have earned an adequate number of CFU (normally not less than 90 CFU) in groups of academic fields equivalent or similar to those listed in the table for class L-13 - Biological Sciences across non-biological and basic biological disciplines, according to a quantitative logic similar to that of the above mentioned CBUI criteria.

In order to meet CFU requirements, you can sit for the relevant exams at our or other universities before enrolling in the MDP.

For information on unmet curricular requirements, please send your curriculum for assessment to the MDP Coordinator, or to bionutri@unimi.it, well in advance (even during the Bachelor's degree programme), so that you can take the necessary exams in time.

The educational background required for admission to the Master's degree programme includes adequate basic training in biology, allowing the candidate to pursue advanced-level studies. The admission assessment will include:

1. the assessment of the candidate's previous curriculum;
2. the candidate's knowledge and skills.

Compulsory attendance

Attendance is strongly recommended for all courses and compulsory for laboratory activities.

Internship criteria

Thesis

Thesis work and the final exam may award a total of 42 credits. Upcoming graduates are required to undertake an internship at a laboratory of the University or another public or private institution. The thesis must be an original work of biological interest, intended to solve a scientific problem and documenting the candidate's ability to correctly use the experimental method. Descriptive theses will not be accepted. Upcoming graduates are required to work on their thesis for about one year at a scientific laboratory under an academic supervisor.

Laboratory attendance for thesis work will be ascertained by thesis supervisors as appropriate. You will have both a thesis supervisor and a co-supervisor, and you can work on your thesis on or off campus, i.e. in any of the departments where your MDP courses are taught, or in other departments of the University of Milan or in laboratories or non-university institutes as pre-selected based on their proven scientific reputation. Upcoming graduates may earn a portion of 42 CFU through internships or other experiences in work environments that provide specific theoretical and technical skills. The thesis can be written in Italian or English.

Thesis supervisor

Any lecturer and researcher who sits on the Academic Board of the Department of Biological Sciences, or who belongs to the Department of Biosciences, may act as thesis supervisor or internal tutor.

Thesis application and internship

Upcoming graduates may submit their proposed thesis subjects to the programme coordinator well in advance, according to the timeline set by the Departmental Academic Board. To help students choose their topic, the following initiatives will be launched:

- 1) Department web page listing thesis subjects proposed by faculty members (<http://tesi.bioscienze.unimi.it/>);
- 2) Thesis orientation meetings for the specific academic year, with reference to the number of places available for on- and off-campus theses by area.

The thesis application outcome will be discussed with the student or notified shortly after submission. The internship activity (thesis topic, supervisor, internship start and end dates) must in any case be formalized with the course administration office and agreed with the programme coordinator.

The coordinator, or his/her deputy, will advise students to work on their thesis off campus only if there are no on-campus thesis opportunities. They will direct students to an official professor of the degree programme who will act as supervisor for off-campus theses. The latter will check internship reports and ensure that the internship takes place in compliance with programme rules. The supervisor will critically assess the candidate's work and decide whether their thesis meets the requirements for a Master's Degree in Biology. The name of the research facility where experimental work was conducted must appear on the first page of the thesis.

Degree programme final exams

The final exam consists in defending a written paper on internship research in a public session before a faculty board. The degree mark will be on a scale of 110.

More details on the web page: <https://bionutri.cdl.unimi.it/it/studiare/laurearsi>

The programme awards the title of "Dottore Magistrale" (Master's graduate) in Biology, majoring in Applied Biology in Nutritional Sciences.

To be admitted to the final exam, the student must:

- 1) have passed the exams for compulsory and elective courses, and earned the corresponding credits, including 3 credits for English language proficiency;
- 2) have completed their internship, as duly certified.

Campus

Classrooms are located in the University buildings in: Via Celoria, 26 (Biology buildings); Via Celoria, 20 (Teaching Sector); Via Golgi, 19.

The Academic Services Office is located in the Department of Biosciences, Via Celoria, 26 – Milano (Tower A, II Floor).

Laboratories

The CLM is characterized by an intense laboratory activity that is mainly carried out in the internship activity for the thesis.

Notes

In order to obtain their degree, students must be proficient in English at a B2 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 B2 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 January 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 B2 or higher level.

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

BIONUTRI students are given the opportunity to spend part of their curriculum abroad, at a University within the European Union (EU) in the frame of the Erasmus+ program of the European Commission. BIONUTRI students can attend courses and take exams that can be included in the core curriculum and/or perform the experimental thesis work in several European Universities localized in Netherlands, Norway, Ireland, Germany - where courses taught in English are active – France, Spain

and Portugal (see <https://dbs.unimi.it/it/rapporti-internazionali/mobilita-internazionale>). The admitted student will present a study plan including all the activities he/she intends to perform abroad, detailing the corresponding CFU: the number of proposed CFU should roughly correspond to those the student would achieve in the same time lapse remaining in his/her university. The study plan proposed by the student within the Erasmus+ program should be coherent with the BIONUTRI Master course and must be evaluated and approved by the Teaching Board. The Teaching Board, if necessary, will require the student to integrate the program of exams taken abroad. At the end of the Erasmus + program, according to the rules established by the Academic Senate, the approved exams will be recorded, possibly with the original denomination, as part of the student's curriculum upon conversion of the European Credit Transfer and Accumulation System (ECTS) into CFU. If the student performs the experimental thesis work abroad, he/she must follow the rules outlined below (see Caratteristiche tirocinio). Erasmus+ program representative for Biological area is Dr. M. C. Bonza (cristina.bonza@unimi.it).

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 (disactivated from academic year 2025/26) Core/compulsory courses/activities common | | |
|--|-------------|--|
| Learning activity | Ects | Sector |
| BIOLOGY OF NUTRITION | 9 | (1) ING-INF/06, (6) MED/49, (2) MAT/06 |
| English proficiency B2 (3 ECTS) | 3 | ND |
| FOOD AND FERMENTATION CHEMISTRY | 6 | CHIM/11 |
| NUTRITIONAL BIOCHEMISTRY | 6 | (5) BIO/10, (1) BIO/04 |
| STRUCTURAL AND FUNCTIONAL BASES OF NUTRITION | 9 | (6) BIO/09, (3) BIO/16 |
| Total compulsory credits | 33 | |
| 2nd COURSE YEAR Core/compulsory courses/activities common | | |
| Learning activity | Ects | Sector |
| APPLICATIONS IN FOOD SCIENCES | 9 | (3) VET/06, (3) MED/38, (3) CHIM/06 |
| Total compulsory credits | 9 | |
| Further elective courses | | |

| | | | |
|---|--|----|------------------------------------|
| The student must choose one of the following courses: | | | |
| FOOD HYGIENE AND SAFETY | | 6 | MED/42 |
| MOLECULAR AND CELLULAR BASES OF METABOLIC AND NUTRITIONAL DISEASES | | 6 | (3) MED/04, (3) BIO/09 |
| NUTRITION, PHARMACOLOGY AND TOXICOLOGY | | 6 | BIO/14 |
| The student must choose one of the following courses | | | |
| FEEDING BEHAVIOUR AND NUTRITIONAL STATUS OF POPULATIONS | | 6 | (3) BIO/05, (3) BIO/07 |
| FOODS RESOURCES | | 6 | (3) BIO/05, (3) BIO/01 |
| NUTRITION AND LIFE CYCLES | | 6 | BIO/06 |
| NUTRITION ECOLOGY AND ECOTOXICOLOGY | | 6 | BIO/07 |
| The student must choose one of the following courses: | | | |
| ALIMENTATION AND PREVENTION OF NUTRITIONAL DISEASES | | 6 | (1) MED/13, (4) MED/49, (1) BIO/13 |
| REGULATION, STANDARDIZATION AND BUSINESS ORGANIZATION | | 6 | (3) SECS-P/06, (3) IUS/07 |
| The student must acquire 12 CFU by selecting any of the courses offered by the University of Milan, provided that they are coherent with their educational plan and that the course content does not overlap with those present in mandatory and guided-choice courses in the study plan. For example, “Nutrition for Sport and Health” course of the “Individual and Team Sport Science” Master's Degree programme is eligible. The student can pick the remaining principal and guided-choice courses that he/she had not inserted in the study plan. 6 of the 12 free choice CFU can be spent on internship activities of proven quality. | | | |
| The student must choose one of the following courses: | | | |
| HUMAN MICROBIOTA AND HOST-INTERACTIONS | | 6 | BIO/19 |
| NUTRIGENOMICS AND NUTRIGENETICS | | 6 | BIO/18 |
| | | | |
| <i>End of course requirements</i> | | | |
| FINAL EXAM | | 42 | NA |
| | | | |
| Total compulsory credits | | 42 | |