UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2026/27
MASTER DEGREE
BIOMEDICAL OMICS (Classe LM-9 R)
Enrolled in 2026/2027 Academic Year

HEADING

Degree classification - Denomination and code:	LM-9 R
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:	1st
Access procedures:	Open, subject to entry requirements
Course code:	DBC

PERSONS/ROLES

Head of Study Programme

prof.ssa Myriam Alcalay

Tutors - Faculty

Academic guidance tutor:
- Prof.ssa Myriam Alcalay
- Prof. Salvatore Pece
- Prof. Diego Pasini
- Dott.ssa Emanuela Colombo
- Prof. Gaetano Ivan Dellino
- Prof. Stefano Santaguida

Degree Course website

https://bo.cdl.unimi.it

International Students - Welcome desk:

https://informastudenti.unimi.it/saw/ess?AUTH=SAML

Student administrative office:

Email: biomedicalomics@unimi.it

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The advent of technologies that allow the global analysis of biological phenomena (omics) has revolutionized the study of human diseases and opened new perspectives in the field of research, diagnosis and therapy, tracing the path for Precision or Personalized Medicine. The central element of Precision Medicine is in fact the quantitative description of biological or clinical phenotypes by high definition omics (genomics, epigenomics, proteomics, metabolomics, microbiomics, digital imaging, radiomics and radiogenomics).

The Master Program in Biomedical Omics aims at providing students with a broad understanding of omics disciplines applied to medicine and first-hand practical experience with different omics techniques. Key competences of graduates include the ability to design experiments, manage the work flow, analyze and interpret omics data, and create applications for future developments in omics approaches.

Expected learning outcomes

Knowledge and understanding

Graduates in Biomedical Omics will have theoretical knowledge and practical experience in omics disciplines applied to the clinics. Key competences will include the ability to design experiments, manage work flow, analyze and interpret data and devise new strategies for further development of omics approaches. The courses and training activities will provide specific skills in omics disciplines and in the computational approaches that are necessary for the interpretation of results. Graduates will also be familiar with the legal, ethical and decision-making aspects related to the handling of sensitive data.

Applying knowledge and understanding

A key objective of the Master's Degree course in Biomedical Omics is to provide graduates with the full capacity to apply the theoretical knowledge they receive. To achieve this goal, a relevant amount of time will be devoted to practical training and to the experimental thesis deriving from a research project that can be conducted in a national or international, academic or industrial laboratory.

Professional profile and employment opportunities

Graduates in Biomedical Omics will be able to pursue careers as Technologists in Biomedical Omics:

Tasks: Coordination and execution of omics techniques in routine diagnostics or clinical research within hospital laboratories.

Skills:

i) understanding of the clinical demand underlying the required analyses;

ii) execution of omics analyses;

iii) interpretation of results;

iv) introduction of technological upgrades in the clinical laboratory and development of technology upgrades to adapt standard protocols to local needs.

Employment opportunities: diagnostic laboratories in hospitals and clinical research laboratories.

Graduates will also have the possibility to work in basic research laboratories, in biotechnological development institutes, or to continue their academic training by enrolling in doctoral programs or second-level masters programs, both in Italy and abroad.

Initial knowledge required

Access to the Master Program in Biomedical Omics is open to:

- Graduates in classes L-2 (Biotechnology), L-13 (Biological sciences), L-27 (Chemistry), L-29 (Pharmaceutical sciences and technologies), or equivalent foreign qualification for a total of 180 ECTS;
- Graduates in classes other than those listed above provided they have at least 40 ECTS in the following scientific disciplinary sectors: BIO/06, BIO/08, BIO/09, BIO/10, BIO/11, BIO/12, BIO/13, BIO/14, BIO/15, BIO/16, BIO/17, BIO/18, BIO/19, CHIM/01, CHIM/02, CHIM/03, CHIM/06, CHIM/07, CHIM/08, CHIM/09, MED/01, MED/02, MED/03, MED/04, MED/05, MED/07, MED/08, MED/43, MED/44, MED/46, MED/50, SECS - S/01, SECS - S/02.

Knowledge of English language is required at B2 level.

Knowledge Assessment

Candidates will be admitted to the Master's Degree on the basis of their academic curriculum and an interview (in presence or online).

An evaluation committee, composed by faculty members appointed by the Teaching Board, will verify the personal preparation of all candidates meeting the above-mentioned minimum requirements.

To this end, each candidate must send, in addition to the application:

1) their study plan with the indication of the exams and the grade obtained in each exam;

2) their curriculum vitae.

The adequate preparation and personal aptitude of the students will be verified with an individual interview conducted by the evaluation committee.

The overall evaluation will result in a score out of one hundred, calculated as follows:

- up to 25/100 for the degree grade (or weighted average of the exam results in the case of non- candidates that have not yet graduated),
- up to 10/100 for the curriculum of studies (type of degree, any free courses attended/passed, other diplomas, etc.),
- up to 65/100 for the outcome of the interview.

The minimum score for admission is 60/100. A negative result will preclude access to the Master's Degree Course for the current year.

In the event of transfer from another University or another degree course, admission to years after the first will be subject to the evaluation of the previous career by the Teaching Board

Foreign Students

Students must have a Bachelor's degree in one of the disciplines described above (Biotechnology, Biology, Chemistry, Pharmaceutical sciences). The number of hours/credits of the specific courses must be clearly identifiable in the academic curriculum. If this is not possible, documents certifying the student’s career will be examined by the Faculty to assess if their background complies with the admission requirements.

Compulsory attendance

Students are required to attend to at least 75% of teaching activities.

The experimental project leading to the final dissertation is considered mandatory for the Master Degree.

Campus

Lectures will be held in the educational center of the European Institute of Oncology. Laboratory activities will be held in the research and clinical laboratories of institutions represented in the Department of Oncology and Hemato-oncology of the University of Milan.

Notes

To obtain the degree, those who do not hold an Italian high school diploma or degree must demonstrate proficiency in Italian at the A2 or higher level per the Common European Framework of Reference for Languages (CEFR). This level must be demonstrated prior to completing the course programme in one of the following ways:

· by submitting a certificate of A2 or higher level issued no more than three years prior to the date of submission. You will find the list of language certificates recognized by the University at: https://www.unimi.it/en/node/349/). The language certificate must be uploaded through the dedicated platform;

· via an entry-level test administrated by SLAM that can be taken only once and is compulsory for all students who do not have a valid language certificate. Those who fail to reach A2 level will have to attend one or more than one 60-hour Italian course(s) geared to their level. Those who do not take the entry-level test or fail to pass the end-of-course test after six attempts will have to obtain language certification privately in order to earn the 3 credits of Additional language skills: Italian.

EXPERIENCE OF STUDY ABROAD AS PART OF THE TRAINING PROGRAM

The University of Milan supports international mobility by providing its students with the opportunity to spend study and internship periods abroad. It is a unique chance to enrich your educational path in a new exciting environment.

The agreements entered into by the University with over 300 universities from the 27 EU member countries under the European Erasmus+ programme allow regularly enrolled students to carry out part of their studies at one of the partner universities or to undertake internships at companies, training and research centres and other organisations.

Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

The University of Milan is a member of the 4EU+ European University Alliance that brings together eight public multidisciplinary universities: University of Milan, Charles University of Prague, Heidelberg University, Paris-Panthéon-Assas University, Sorbonne University of Paris, University of Copenhagen, University of Geneva, and University of Warsaw. The 4EU+ Alliance offers integrated educational pathways and programmes to promote the international mobility of students (physical, blended and virtual).

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 organises informative meetings to illustrate mobility opportunities and rules for participation.

Erasmus+ scholarship

The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which may be supplemented by the University funding for disadvantaged students.

Language courses

Students who pass the selections for mobility programmes can benefit from intensive foreign language courses offered each year by the University Language Centre (SLAM).
https://www.unimi.it/en/node/8/

Learn more at https://www.unimi.it/en/node/274/

For assistance, please contact:
International Mobility Office
Via Santa Sofia 9 (second floor)
Tel. 02 503 13501-12589-13495-13502
Contacts: InformaStudenti;
Student Desk booking through InformaStudenti

1st COURSE YEAR Core/compulsory courses/activities common			
Learning activity		**Ects**	**Sector**
Computational approaches for omics data		12	(6) IINF-05/A, (6) INFO-01/A
Experimental design		6	(2) BIOS-08/A, (2) MEDS-02/A, (2) BIOS-10/A
Genomics and epigenomics		12	(5) BIOS-08/A, (5) MEDS-02/A, (2) BIOS-07/A
Legislation, management and technology transfer		12	(6) MEDS-26/A, (6) MEDS-25/A
Practical laboratory activities		6	NN
Proteomics		6	BIOS-07/A
Radiomics		6	(5) MEDS-22/A, (1) MEDS-02/A
	Total compulsory credits	60	

2nd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities common			
Learning activity		**Ects**	**Sector**
Clinical omics		6	(2) MEDS-09/A, (2) MEDS-07/B, (2) MEDS-09/B
Ethics and decision-making		6	PSIC-01/A
High-throughput screenings		6	(3) BIOS-08/A, (3) MEDS-02/A
Omics in diagnostics		6	(4) MEDS-01/A, (2) MEDS-04/A
	Total compulsory credits	24	

Elective courses			
11 CFU from courses of their choice offered by the University of Milan during the second year.			
Additional Language Skills: Italian		3	NN

End of course requirements			
Final exam		25	NN
	Total compulsory credits	25	