



**UNIVERSITA' DEGLI STUDI DI MILANO**  
**PROGRAMME DESCRIPTION - ACADEMIC YEAR 2023/24**  
**MASTER DEGREE**  
**BIOMEDICAL OMICS (Classe LM-9)**  
**Enrolled since 2022/23 Academic Year**

### HEADING

<b>Degree classification - Denomination and code:</b>	LM-9 Pharmaceutical, veterinary and medical biotechnologies
<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>Years of course currently available:</b>	1st , 2nd
<b>Access procedures:</b>	Cap on student, student selection based on entrance test
<b>Course code:</b>	D58

### 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
- Dott. Gaetano Ivan Dellino
- Dott. 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](mailto: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.

## ***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.

### **How to participate in Erasmus mobility programs**

How to participate in Erasmus+ mobility programmes

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 InformaStudent

<b>1st COURSE YEAR Core/compulsory courses/activities common</b>		
Learning activity	Ects	Sector
	6	NA
Computational approaches for omics data	12	ING-INF/05, INF/01
Genomics an Epigenomics	12	BIO/11, BIO/10, MED/04
High-throughput screenings	6	BIO/11, MED/04
Legislation, management and technology transfer	12	(6) MED/46, (6) MED/43
Proteomics	6	BIO/10
Radiomics	6	MED/04, MED/36
Total compulsory credits		60
<b>2nd COURSE YEAR Core/compulsory courses/activities common</b>		
Learning activity	Ects	Sector
Clinical Omics	6	MED/15, MED/11, MED/06
Ethics and decision-making	6	M-PSI/01
Experimental design	6	BIO/11, MED/04, BIO/13
Omics in diagnostics	6	MED/03, MED/08
Total compulsory credits		24
<b>Elective courses</b>		
<b>8 CFU from courses of their choice offered by the University of Milan during the second year</b>		
Additional Language Skills: Italian (3 ECTS)	3	ND
<b>End of course requirements</b>		
	28	NA
Total compulsory credits		28