



UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2021/22
MASTER DEGREE
BIOMEDICAL OMICS (Classe LM-9)
Enrolled from academic year 2020/21

HEADING

Degree classification - Denomination and code:	LM-9 Pharmaceutical, veterinary and medical biotechnologies
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 , 2nd
Access procedures:	Cap on student, student selection based on entrance test
Course code:	D58

PERSONS/ROLES

Head of Study Programme

Prof. Pier Giuseppe Pelicci

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:

Email: international.students@unimi.it

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.

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 and other Extra-EU 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

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 generally begins around February each year with the publication of a call for applications specifying the destinations, with the respective programme duration (from 2/3 to 12 months), requirements and online application deadline.

Every year, before the deadline for the call, the University organizes informative meetings to illustrate opportunities and rules for participation to students.

Erasmus+ scholarship

The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which is 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.

Learn more at <https://www.unimi.it/en/international/study-abroad/studying-abroad-erasmus>

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 Core/compulsory courses/activities common		
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	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
2nd COURSE YEAR Core/compulsory courses/activities common		
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
Omics in diagnostics	6	MED/03, MED/08
	Total compulsory credits	24
Elective courses		
8 CFU from courses of their choice offered by the University of Milan during the second year.		
<p>To obtain the degree, students without an Italian degree or diploma are required to demonstrate an Italian language proficiency at level A2 within the Common European Framework of Reference for Languages (CEFR). This level can be assessed by the end of the first year in the following ways:</p> <ul style="list-style-type: none"> - by submitting the language certificate achieved no more than three years prior to the submission, at level A2 or higher, recognised by the University (the list of recognised language certificates can be found at: https://www.unimi.it/en/study/language-proficiency/italian-courses-and-tests). The language certificate must be uploaded through the service www.unimi.infostudente.it, by choosing the category SLAM; - by an entry-level test, organised by SLAM, to be taken at the beginning of the second year of study. <p>Students who attain A2 level through a certificate or the entry-level test must earn 3 ETS credits in other Electives. Students who fail to reach level A2 will have to attend an Italian course organised by SLAM and to pass the final test during the I semester of the second year of study in order to earn 3 ECTS credits of Additonal Language Skills: Italian.</p>		
Additional Language Skills: Italian (3 ECTS)	3	ND
End of course requirements		
	28	NA
	Total compulsory credits	28