UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2020/21
MASTER DEGREE
Biology Applied to Research in Biomedicine (Classe LM-6)
Enrolled from 2011/2012 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:	1st , 2nd
Access procedures:	Open, subject to entry requirements
Course code:	F92

PERSONS/ROLES

Head of Study Programme

Prof. Mirko Baruscotti

Degree Course Coordinator

Prof.ssa Graziella Cappelletti

Tutors - Faculty

Tutor per l'orientamento: Prof. Saverio Minucci, Prof. Katia Petroni
Tutor per la mobilità internazionale e l'Erasmus: Prof. Cristina Bonza
Tutor per i piani di studi: Prof. Graziella Cappelletti
Tutor per stage e tirocini: Prof. Andrea Barbuti
Tutor per laboratori e altre attività: Dr. Alida Amadeo
Tutor per tesi di laurea: Prof. Andrea Barbuti
Tutor per trasferimenti: Prof. Graziella Cappelletti
Tutor per ammissioni lauree magistrali: Prof. Graziella Cappelletti, Prof. Elisabetta Tanzi, Dr. Alida Amadeo, Dr. Marta Valenza
Tutor per riconoscimenti crediti: Prof. Graziella Cappelletti

Degree Course website

http://barb.cdl.unimi.it

via Celoria, 26 - 2° piano, torre A. A causa dell'emergenza sanitaria è momentaneamente attivo solo lo sportello telematico (via e-mail). Email: cl.biol@unimi.it

Via Celoria, 18 Phone 0250325032 https://www.unimi.it/it/node/360 https://www.unimi.it/it/node/359

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

Email: Orientamento.Barb@unimi.it

Information Center:

via Celoria, 26 - 2° piano, torre A. A causa dell'emergenza sanitaria è momentaneamente attivo solo lo sportello telematico (cl.biol@unimi.it).

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

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

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The Master of Science (M.Sc.) programme in BIOLOGY APPLIED to BIOMEDICAL RESEARCH (BARB, Class LM-6 Biology) aims to provide students with the theoretical and practical knowledge necessary to manage individually or in collaboration with other professional figures their research in both basic and applied aspects of the biomedical field.

The new M.Sc. in BARB proposes the basic flexible scheme applied previously and introduces some substantial new features that allow a better characterization of the biomedical aspects of the M.Sc. programme and a better identification of

the professional figure of the biomedical scientist and its role in all aspects of basic/applied research activities.

Specific educational aims are:
1) to provide students with the basic notions of biological processes underlying the physiology of organs and systems, their pathological dysfunctions and their modulation by pharmacological and other interventions, specifically in man.
2) to teach students how to apply theoretical notions to applications of biomedical interest for humans and in relation to the interaction with the environment;
3) to provide tools for understanding and practicing theoretical knowledge in the lab;
4) to foster the most updated knowledge in the biomedical field by use of specific teaching modules whose content will be continuously refreshed.
The M.Sc. in BARB strengthens an essential, culturally basic branch of Biology in which the Coordinating Board for teaching activities in Biology has full competence, both in terms of teaching tradition and established research expertise. The M.Sc. programme aims to provide advanced theoretical and practical knowledge in the continuously growing areas of biology applied to biomedical research, and make students able to propose and to act with the purpose of further advancing their knowledge and practical experience. From this perspective students will be addressed to a specific teaching project whose target is to strengthen the attitude to develop new ideas and new tools in the most advanced aspects of biomedical research.

Professional profile and employment opportunities

The M.Sc graduates in BARB achieve a specific and updated knowledge of theoretical and experimental features of the field of biomedical research, based on the acquisition of biological principles which govern mechanisms and vital processes in humans.
Theoretical acquisitions are accompanied by detailed know-how of the most advanced technologies used in biomedical research relevant to aspects of basic research as well as research applied to Health Service and biomedical industry, able to provide the gruaduate with a high degree of professional self-determination and the capability to get involved in the progress of biomedical research and all its applications to the practical field.
The Master graduate in BARB will be able to:
1) work in public and private agencies involved in biomedical research activity both in european and non-european countries such as Universities, hospitals, research centers, State and Regional institutions, pharmaceutical companies and others;
2) get involved in the development of new biomedical and healthcare technologies in the industrial field;
3) contribute with managerial role in work organization in public and private laboratories of clinical analysis.
The M.Sc. graduate in BARB can enroll, by passing the exam for the profession, in the Biologists' Professional Register (section A), with the title of "Biologist", to perform the activities recognized by the Italian law.

Notes

To obtain the degree, students are required to demonstrate an English language proficiency at level B2 within the Common European Framework of Reference for Languages (CEFR). This level can be assessed in the following ways:
- by submitting the language certificate achieved no more than three years prior to the submission, at level B2 or higher, recognised by the University (the list of recognised language certificates can be found at https://www.unimi.it/en/study/language-proficiency/placement-tests-entry-tests-and-english-courses). The language certificate must be uploaded during the admission process;
- by taking the Placement Test, organised by SLAM exclusively during the first year, from October to January. Students who fail to reach level B2 will have to attend an English course organised by SLAM. The Placement Test is compulsory for all students who do not have a valid language certificate.

Students who do not take the Placement Test within the deadline and students who fail the SLAM end-of-course test within six attempts will have to obtain a language certificate within the year in which the language exam is scheduled.

Level of English assessed through a computer-based test during the bachelor's degrees obtained at the University of Milan: English levels B2 achieved no more than four years previously are deemed valid. The verification is automatic with no need to attach any certificate during the application phase.

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 30 different 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

BARB 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. BARB 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 Belgium, Netherland, Norway, UK- where courses taught in English are active – France, Germany, Poland, Spain and Portugal (see http://eng.dbs.unimi.it/ecm/home/erasmus/outgoing-students/biological-sciences). 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 BARB 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). The Biological Erasmus and international mobility tutor is Dr. Cristina Bonza (cristina.bonza@unimi.it)

How to participate in Erasmus mobility programs

The students of the University of Milan can participate in mobility programmes, which last 3 to 12 months, through a public selection procedure.

Ad hoc commissions will evaluate:

• 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, 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

International Mobility Office
Via Santa Sofia 9 (second floor)
Tel. 02 503 13501-12589-13495-13502
E-mail: mobility.out@unimi.it
Desk opening hours: Monday to Friday 9 am - 12 noon

1st COURSE YEAR Core/compulsory courses/activities common		
Learning activity	**Ects**	**Sector**
English proficiency B2 (3 ECTS)	3	ND
EPIDEMIOLOGIC AND PREVENTIVE SCIENCES	6	MED/42
HUMAN ANATOMY AND EXPERIMENTAL MODELS IN BIOMEDICINE	6	BIO/06
MOLECULAR BIOLOGY APPLIED TO THE BIOMEDICAL RESEARCH	6	BIO/11
PATHOLOGY	6	MED/04
PRINCIPLES OF PHYSIOLOGY	6	BIO/09
SYSTEM PHARMACOLOGY	6	BIO/14
Total compulsory credits	39	

Further elective courses		
CELLULAR MICROBIOLOGY AND IMMUNOLOGY	6	BIO/19
DIFFERENTIATION BIOLOGY AND CELL THERAPIES	6	BIO/17
HUMAN AND MOLECULAR GENETICS	6	MED/03, BIO/18
MEMBRANE BIOPHYSICS AND SIGNAL TRANSDUCTION	6	FIS/07
METHODS IN MATHEMATICS AND STATISTICS	6	MAT/06, MAT/07
CELLULAR AND MOLECULAR PATHOLOGY	6	MED/04
CELLULAR AND MOLECULAR PHARMACOLOGY	6	BIO/14
CELLULAR AND MOLECULAR PHYSIOLOGY	6	BIO/09
CELLULAR, MOLECULAR AND FUNCTIONAL APPROACHES TO GENETIC DISEASE	6	BIO/14
CLINICAL BIOCHEMISTRY AND MOLECULAR BIOLOGY	6	BIO/12
CLINICAL MICROBIOLOGY AND HYGIENE	6	MED/07, MED/42
ECOTOXICOLOGY	6	BIO/14

HUMAN AND EXPERIMENTAL NEUROANATOMY		6	BIO/16
NEUROPHYSIOLOGY		6	BIO/09
PHYSIOLOGY AND PHARMACOLOGY OF THE ENDOCRINE SYSTEM		6	BIO/09, BIO/14
TECHNIQUES FOR ADVANCED BIOMEDICAL RESEARCH		6	BIO/09
End of course requirements			
FINAL EXAM		39	NA
	Total compulsory credits	39	