UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2019/20
MASTER DEGREE
Pharmaceutical Biotechnology (Classe LM-9)
enrolled from 2014/15 academic year

HEADING

Degree classification - Denomination and code:	LM-9 Pharmaceutical, veterinary and medical biotechnologies
Degree title:	Dottore Magistrale
Curricula currently available:	Biotechnology in drug research and development / Development and production of biotechnological drugs / PHARMACOGENOMICS AND PRECISION THERAPEUTICS
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:	E51

PERSONS/ROLES

Head of Interdepartmental Study Programme

Prof.ssa Laura Calabresi

Tutors - Faculty

Per l'area biologica: prof.ssa Laura Calabresi laura.calabresi@unimi.it, prof. Ivano Eberini ivano.eberini@unimi.it

Per l'area chimica: prof.ssa Paola Conti paola.conti@unimi.it

Degree Course website

http://www.farmacia.unimi.it

http://www.unimi.it/studenti/matricole/77648.htm

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

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Expected learning outcomes

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Professional profile and employment opportunities

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EXPERIENCE OF STUDY ABROAD AS PART OF THE TRAINING PROGRAM

The University of Milan supports the international mobility of its students, offering them the opportunity to spend periods of study and training abroad, a unique opportunity to enrich their curriculum in an international context.

Study and internships abroad

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How to participate in Erasmus mobility programs

To gain access to mobility programs for study purposes, lasting 3-12 months, the enrolled students of the University of Milan must attend a public selection that starts usually around the month of February each year through the presentation of specific competition announcements, which contain information on available destinations, respective duration of the mobility, requirements and deadlines for submitting the online application.

The selection, aimed at evaluating the proposed study abroad program of the candidate, knowledge of a foreign language, especially when this is a preferential requirement, and the motivations behind the request, is performed by specially constituted commissions.

Each year, before the expiry of the competition announcements, the University organises information sessions for the specific study course or groups of study courses, in order to illustrate to students the opportunities and participation rules.

To finance stays abroad under the Erasmus + program, the European Union assigns to the selected students a scholarship that - while not covering the full cost of living abroad - is a useful contribution for additional costs as travel costs or greater cost of living in the country of destination.

The monthly amount of the communitarian scholarship is established annually at national level; additional contributions may be provided to students with disabilities.

In order to enable students in economic disadvantaged conditions to participate in Erasmus+ program, the University of Milan assigns further additional contributions; amount of this contributions and criteria for assigning them are established from year to year.

The University of Milan promotes the linguistic preparation of students selected for mobility programs, organising every year intensive courses in the following languages: English, French, German and Spanish.

The University in order to facilitate the organisation of the stay abroad and to guide students in choosing their destination offers a specific support service.

More information in Italian are available on www.unimi.it > Studenti > Studiare all¿estero > Erasmus+

For assistance please contact:
Ufficio Accordi e relazioni internazionali
via Festa del Perdono 7 (ground floor)
Tel. 02 503 13501-12589-13495-13502
Fax 02 503 13503
E-mail: mobility.out@unimi.it
Desk opening hour: Monday-friday 9 - 12

ACTIVE CURRICULA LIST

Biotechnology in drug research and development Course years currently available: 1st , 2nd
Development and production of biotechnological drugs Course years currently available: 1st , 2nd
PHARMACOGENOMICS AND PRECISION THERAPEUTICS Course years currently available: 1st

Procedure for choosing a curriculum

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CURRICULUM: [E51-C] Biotechnology in drug research and development

Qualifying Training Objectives

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Skills acquired

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Professional profile and employment possibilities

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1st COURSE YEAR Core/compulsory courses/activities Curriculum-specific features Biotechnology in drug research and development

Learning activity	Ects	Sector
Biology of development and differentiation	6	BIO/13
Biotechnology in Pharmacology	8	BIO/14
Metabolic and Functional Biochemistry	6	BIO/10
Molecular basis of hormone and drug action	8	MED/13, BIO/14
MOLECULAR VIROLOGY	6	BIO/19, MED/07

Pathophysiology		6	MED/04
Physiology of Integrated systems		6	BIO/09
Purification and formulation of biotechnological drug products		8	CHIM/09, CHIM/08
Structural Bioinformatics and Molecular Modeling		10	BIO/10, CHIM/06, CHIM/08
	Total compulsory credits	64	

2nd COURSE YEAR Core/compulsory courses/activities Curriculum-specific features Biotechnology in drug research and development			
Learning activity		**Ects**	**Sector**
Advanced course in Biotechnology and Pharmacology		7	BIO/14
Innovative biotechnological drugs		9	(3) CHIM/06, (6) BIO/14, (6) CHIM/08
	Total compulsory credits	16	

Further elective courses Curriculum-specific features Biotechnology in drug research and development		
Experimental laboratory of Biotechnology	9	ND

End of course requirements Curriculum-specific features Biotechnology in drug research and development			
FINAL EXAM		21	ND
Lab training		10	ND
	Total compulsory credits	31	

CURRICULUM: [E51-D] Development and production of biotechnological drugs

Qualifying Training Objectives

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Skills acquired

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Professional profile and employment possibilities

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1st COURSE YEAR Core/compulsory courses/activities Curriculum-specific features Development and production of biotechnological drugs			
Learning activity		**Ects**	**Sector**
Biology of development and differentiation		6	BIO/13
Biotechnology in Pharmacology		8	BIO/14
Clinical Pharmacology and Applied Biochemistry		9	MED/03, BIO/10, BIO/14
Metabolic and Functional Biochemistry		6	BIO/10
MOLECULAR VIROLOGY		6	BIO/19, MED/07
Pathophysiology		6	MED/04
Physiology of Integrated systems		6	BIO/09
Preparation and development of drugs with biotechnological methods		9	CHIM/11, CHIM/08
Purification and formulation of biotechnological drug products		8	CHIM/09, CHIM/08
	Total compulsory credits	64	

2nd COURSE YEAR Core/compulsory courses/activities Curriculum-specific features Development and production of biotechnological drugs			
Learning activity		**Ects**	**Sector**
Manufacturing of biotechnological drug products		7	CHIM/09
Quality control and analysis for biopharmaceuticals		9	(6) BIO/14, (3) CHIM/06, (6) CHIM/08
	Total compulsory credits	16	

Further elective courses Curriculum-specific features Development and production of biotechnological drugs		
Experimental laboratory of Biotechnology	9	ND

End of course requirements Curriculum-specific features Development and production of biotechnological drugs			
FINAL EXAM		21	ND
Lab training		10	ND
	Total compulsory credits	31	

CURRICULUM: [E51-E] PHARMACOGENOMICS AND PRECISION THERAPEUTICS

Qualifying Training Objectives

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Skills acquired

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Professional profile and employment possibilities

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1st COURSE YEAR Core/compulsory courses/activities Curriculum-specific features PHARMACOGENOMICS AND PRECISION THERAPEUTICS

Learning activity		Ects	Sector
Bioinformatics and molecular modeling		8	BIO/10, CHIM/06, CHIM/08
Communicable and non-communicable diseases		8	MED/04, BIO/19
Integrated systems physiology		6	BIO/09
Molecular biochemistry and functional biology		10	BIO/10, BIO/13
Omics: from bench to bedside		6	BIO/10, MED/04
Pharmacogenomics, clinical pharmacology, and orphan drugs		7	BIO/14
Protein engineering, drug delivery and regulatory aspects		11	CHIM/09, CHIM/08
	Total compulsory credits	56	

2nd COURSE YEAR (available as of academic year 2020/21) Core/compulsory courses/activities Curriculum-specific features PHARMACOGENOMICS AND PRECISION THERAPEUTICS

Learning activity		Ects	Sector
Biomarkers: from identification to exploitation		10	(4) MED/13, (6) BIO/14, (6) CHIM/08
Cell therapy and gene silencing		7	BIO/19, BIO/14, BIO/13
Nanotechnology based medicinal products		7	CHIM/06, BIO/14, CHIM/09
	Total compulsory credits	24	

Further elective courses Curriculum-specific features PHARMACOGENOMICS AND PRECISION THERAPEUTICS

Experimental Laboratory of Biotechnology		9	ND

End of course requirements Curriculum-specific features PHARMACOGENOMICS AND PRECISION THERAPEUTICS

Final Exam		21	ND
Lab Training		10	ND
	Total compulsory credits	31	

COURSE PROGRESSION REQUIREMENTS

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