



UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2019/20
BACHELOR
Biotechnology (Class L-2)
enrolled from 2019/20 academic year

HEADING

Degree classification - Denomination and code:	L-2 Biotechnologies
Degree title:	Dottore
Curricula currently available:	Agrifood biotechnology / Comparative animal biotechnology / Pharmaceutical biotechnology / Molecular biotechnology and bioinformatics
Length of course:	3 years
Total number of credits required to complete programme:	180
Years of course currently available:	1st
Access procedures:	Cap on student, student selection based on entrance test
Course code:	K06

PERSONS/ROLES

Head of Interdepartmental Study Programme

Prof.ssa Donatella Taramelli

Tutors - Faculty

Prof. Fabio Luzi, Prof. Paolo Landini, Prof. Francesco Molinari, Prof. Angelo Poletti, Prof.ssa Gabriella Tedeschi, Prof.ssa Maria Antonietta Vanoni, Prof. Alessio Scarafoni (per mobilità ERASMUS), Prof.ssa Marina Camera, Dr. Fabio Forlani, Prof.ssa Elena Crotti, Prof.ssa Gabriella Consonni.

Degree Course website

<http://www.biotechnologia.unimi.it>

Via Celoria, 20 Phone 800188128 (da cellulare 199188128) Verificare gli orari di apertura dello sportello sul sito www.unimi.it e <https://www.unimi.it/it/studiare/servizi-gli-studenti/segreterie-informastudenti/sedi-e-orari-segreterie-studenti>

<https://www.unimi.it/it/studiare/immatricolarsi-e-iscrivervi>

Via Celoria, 2 Phone 02503 16820 Ricevimento studenti: libero c/o palazzina ex DISMA, 1° piano Email: alessio.scarafoni@unimi.it

Via Mangiagalli, 25 Phone 02503 19122 Ricevimento studenti: su appuntamento c/o DeFENS, via Mangiagalli 25, Milano - stanza 3023 Email: elena.crotti@unimi.it

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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Notes

In order to get their degree, students are required to certify their knowledge of the English language at the B1 level. This level can be certified in one of the following ways:

- By submitting their language certificate, taken no more than 3 years before its submittal and attesting a B1 or higher level (for the list of the language certificates which are accepted by the University of Milan, please refer to the website: <http://www.unimi.it/studenti/100312.htm>). Students can submit their language certificate during the immatriculation procedure or send it to the Language Centre of the University of Milan (SLAM) via the Infostudente service.

- By sitting the placement test run by SLAM, during the first year exclusively, from September to December. Should they not pass the Placement Test, students will have to attend the English

language course organized by SLAM. All students who do not have a valid language certificate must sit the Placement Test. Those students who do not sit the Placement test by December or do not pass the end of course test in one of the 6 attempts granted will have to get a language certificate outside the University of Milan within their degree.

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

1st COURSE YEAR Core/compulsory courses/activities common to all curricula		
Learning activity	Ects	Sector
English assessment B1 (1 ECTS)	1	L-LIN/12
General and inorganic chemistry	8	CHIM/03
General e Cellular Biology	10	BIO/13
Genetics	8	AGR/07, BIO/18
Informatics and Statistics for Biotechnologies (common)	6	MAT/09, FIS/08, MAT/01, FIS/07, MAT/02, FIS/06, MAT/03, FIS/05, MAT/04, MAT/05, FIS/04, MAT/06, FIS/03, FIS/02, MAT/07, FIS/01,

		MAT/08, SECS-S/02, SECS-S/01, INF/01
Mathematics for Biotechnology	6	MAT/09, MAT/01, MAT/02, MAT/03, MAT/04, MAT/05, MAT/06, MAT/07, MAT/08
Organic chemistry	8	CHIM/06
Physics	6	FIS/08, FIS/07, FIS/06, FIS/05, FIS/04, FIS/03, FIS/02, FIS/01
	Total compulsory credits	53

2nd COURSE YEAR (available as of academic year 2020/21) Core/compulsory courses/activities common to all curricula

Learning activity	Ects	Sector
Biochemistry	9	BIO/10
Fundamentals of economy and Bioethics	6	MED/02, SECS-P/06, IUS/01, AGR/01, IUS/04
General Microbiology	9	BIO/19
Molecular Biology	9	BIO/11
	Total compulsory credits	33

Further elective courses common to all curricula

End of course requirements common to all curricula

FINAL EXAM	5	ND
Lab training	8	ND
	Total compulsory credits	13

ACTIVE CURRICULA LIST

Agrifood biotechnology Course years currently available: 1°
 Comparative animal biotechnology Course years currently available: 1°
 Pharmaceutical biotechnology Course years currently available: 1°
 Molecular biotechnology and bioinformatics Course years currently available: 1°

Procedure for choosing a curriculum

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CURRICULUM: [K06-E] Agrifood biotechnology

2nd COURSE YEAR (available as of academic year 2020/21) Core/compulsory courses/activities Curriculum-specific features Agrifood biotechnology

Learning activity	Ects	Sector
Applied molecular biotechnologies	11	BIO/10
Botany and cropping systems	9	AGR/02, BIO/01, AGR/04
Chemistry and Biochemistry of Agri-Food Molecules	8	BIO/10, CHIM/06
Plant physiology and biochemistry	7	AGR/13
	Total compulsory credits	35

3rd COURSE YEAR (available as of academic year 2021/22) Core/compulsory courses/activities Curriculum-specific features Agrifood biotechnology

Learning activity	Ects	Sector
Biotechnology for plant protection	10	AGR/11, AGR/12
Careers in biotechnology	2	ND
In vitro plant breeding	5	AGR/03
Microbial agrobiotechnology	6	AGR/16
Plant genomics and breeding	11	AGR/07
	Total compulsory credits	34

CURRICULUM: [K06-F] Comparative animal biotechnology

2nd COURSE YEAR (available as of academic year 2020/21) Core/compulsory courses/activities Curriculum-specific features Comparative animal biotechnology

Learning activity	Ects	Sector
Animal physiology and assisted reproduction	9	VET/10, VET/02
Comparative and laboratory animal pathology	7	VET/03
Development, morphology and function of organs and systems	8	VET/01

3rd COURSE YEAR (available as of academic year 2021/22) Core/compulsory courses/activities
Curriculum-specific features Comparative animal biotechnology

2nd COURSE YEAR (available as of academic year 2020/21) Core/compulsory courses/activities
Curriculum-specific features Pharmaceutical biotechnology

Learning activity		Ects	Sector
ANALYTICAL METHODS FOR PHARMACEUTICAL BIOTECHNOLOGIES		7	CHIM/01, CHIM/08
Human physiology and basic anatomy		10	BIO/09
Methods in Cell Biology and Biochemistry		7	(0) BIO/10, (0) BIO/13
Pharmacology		8	BIO/14
	Total compulsory credits	32	

Learning activity	Ects	Sector
Generale Pathology, Immunology and Medical Microbiology	11	MED/04
Medicinal Chemistry and Bioprocesses	10	CHIM/1
Pharmaceutical Technology and Legislation of Biotechnological Medicinal Products	6	CHIM/0
Pharmacological and toxicological biotechnology	10	BIO/14

Learning activity		Ects	Sector
Generale Pathology, Immunology and Medical Microbiology		11	MED/04, MED/07
Medicinal Chemistry and Bioprocesses		10	CHIM/11, CHIM/08
Pharmaceutical Technology and Legislation of Biotechnological Medicinal Products		6	CHIM/09
Pharmacological and toxicological biotechnology		10	BIO/14
	Total compulsory credits	37	

2nd COURSE YEAR (available as of academic year 2020/21) Core/compulsory courses/activities
Curriculum-specific features Molecular biotechnology and bioinformatics

Learning activity		Ects	Sector
Animal cell biotechnology		6	BIO/17, BIO/13
Chemical methods for biotechnology		8	CHIM/02, CHIM/06
Fermentation Biotechnology		6	BIO/11, CHIM/11, BIO/18
Plant Biology and Physiology		8	BIO/18, BIO/01, BIO/04
		Total compulsory credits	28

Learning activity	Ects	Sector
Biochemistry and molecular biology: applications in biotechnology	12	BIO/11, BIO/10
Bioinformatics and Computational biology	12	(6) BIO/11, (6) BIO/10, (12) INF/07
Careers in biotechnology	2	ND
Microbial biotechnology	6	BIO/19, BIO/18
Plant industrial biotechnology	9	AGR/07, BIO/18

Learning activity		Ects	Sector
Biochemistry and molecular biology: applications in biotechnology		12	BIO/11, BIO/10
Bioinformatics and Computational biology		12	(6) BIO/11, (6) BIO/10, (12) INF/07
Careers in biotechnology		2	ND
Microbial biotechnology		6	BIO/19, BIO/18
Plant industrial biotechnology		9	AGR/07, BIO/18
	Total compulsory credits	41	

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Learning activity	Prescribed foundation courses	O/S
Biochemistry	General and inorganic chemistry	Recommended
	General e Cellular Biology	Recommended
	Physics	Recommended
	Organic chemistry	Recommended
	Genetics	Recommended
Molecular Biology	Biochemistry	Recommended
	Genetics	Recommended
Plant Biology and Physiology	General and inorganic chemistry	Core/compulsory
	General e Cellular Biology	Core/compulsory
	Organic chemistry	Recommended

	Genetics	Recommended
Fermentation Biotechnology	Biochemistry	Recommended
	General Microbiology	Recommended
Biochemistry and molecular biology: applications in biotechnology	Biochemistry	Recommended
	Molecular Biology	Recommended
	General and inorganic chemistry	Recommended
	Genetics	Recommended
Plant industrial biotechnology	Genetics	Recommended
Microbial biotechnology	General Microbiology	Recommended
Molecular genetics and animal models	Genetics	Core/compulsory
Pharmaceutical Technology and Legislation of Biotechnological Medicinal Products	Pharmacology	Core/compulsory
	General and inorganic chemistry	Core/compulsory
	Organic chemistry	Core/compulsory
ANALYTICAL METHODS FOR PHARMACEUTICAL BIOTECHNOLOGIES	Biochemistry	Core/compulsory
	General and inorganic chemistry	Core/compulsory
	Physics	Core/compulsory
	Organic chemistry	Core/compulsory
Pharmacological and toxicological biotechnology	Biochemistry	Core/compulsory
	Pharmacology	Core/compulsory
	Human physiology and basic anatomy	Core/compulsory
Pharmacology	General e Cellular Biology	Core/compulsory
Medicinal Chemistry and Bioprocesses	Biochemistry	Core/compulsory
	General and inorganic chemistry	Core/compulsory
	Organic chemistry	Core/compulsory
Human physiology and basic anatomy	General e Cellular Biology	Core/compulsory
	Physics	Recommended
Microbial agrobiotechnology	Biochemistry	Recommended
	Molecular Biology	Recommended
	General Microbiology	Core/compulsory
Applied molecular biotechnologies	Biochemistry	Recommended
Informatics and Statistics for Biotechnologies (common)	Mathematics for Biotechnology	Core/compulsory
Methods in Cell Biology and Biochemistry	Biochemistry	Recommended
	Molecular Biology	Recommended
	General e Cellular Biology	Recommended
Organic chemistry	General and inorganic chemistry	Core/compulsory
Generale Pathology, Immunology and Medical Microbiology	Biochemistry	Core/compulsory
	Human physiology and basic anatomy	Core/compulsory
	General Microbiology	Core/compulsory