



**UNIVERSITA' DEGLI STUDI DI MILANO**  
**PROGRAMME DESCRIPTION - ACADEMIC YEAR 2025/26**  
**BACHELOR**  
**BIOTECHNOLOGY (Classe L-2 R)**  
**Enrolled in academic year 2025/26**

### **HEADING**

|  |  |
|--|--|
| <b>Degree classification - Denomination and code:</b>          | L-2 R  |
| <b>Degree title:</b>   | Dottore  |
| <b>Curricula currently available:</b>                          | COMPARATIVE ANIMAL BIOTECNOLOGY / BIOTECNOLOGY FOR THE SUSTAINABILITY OF THE AGRI-FOOD SYSTEM / PHARMACEUTICAL BIOTECNOLOGY / MOLECULAR-BIOINFORMATICS |
| <b>Length of course:</b>                                       | 3 years  |
| <b>Total number of credits required to complete programme:</b> | 180  |
| <b>Years of course currently available:</b>                    | 1st  |
| <b>Access procedures:</b>                                      | Cap on student, student selection based on entrance test   |
| <b>Course code:</b>  | KAA  |

### **PERSONS/ROLES**

#### **Head of Interdepartmental Study Programme**

Prof. Angelo Poletti

#### **Tutors - Faculty**

Tutor per l'orientamento (gli studenti dovranno farvi riferimento in base al cognome)

A-C Dr. Fabio Forlani

D-F Prof.ssa Gabriella Tedeschi

G-L Prof. Paolo Landini

M-O Prof.ssa Elena Crotti

Q-S Prof. Maurizio Crestani

T-U Prof.ssa Maria Antonietta Vanoni

V-Z Prof. Luigi Sironi

Tutor per la mobilità internazionale e l'Erasmus

Prof.ssa Veronica Gregis (referente curriculum Molecolare-Bioinformatico)

Dr. Fabio Forlani (referente curriculum Agroalimentare)

Prof.ssa Carlotta Giromini (referente curriculum Biotecnologia Animale Comparata)

Prof. Riccardo M. Cristofani (referente curriculum Farmaceutico)

Tutor per i piani di studio

Prof.ssa Marina Camera

Prof.ssa Paola Casati

Prof.ssa Daniela Maggioni

Dr.ssa Sarah Sertic

Dr.ssa Lisa Vallone

Tutor per stage e tirocini

Prof.ssa Sara Borin

Prof.ssa Gabriella Consonni

Prof. Lucio Conti

Prof.ssa Mariarita Galbiati

Tutor per trasferimenti/riconoscimento crediti

Prof.ssa Marina Camera

Prof. Alberto Alzati

Prof.ssa Paola Casati

Prof.ssa Daniela Maggioni

Dr.ssa Sarah Sertic

Dr.ssa Lisa Vallone

Tutor per laboratori e altre attività  
Prof.ssa Raffaella Gandolfi  
Dr.ssa Chiara Magni  
Prof.ssa Paola Rusmini  
Prof.ssa Tiziana Brevini

#### **Degree Course website**

<https://biotecnologia.cdl.unimi.it/it>

#### **Academic Committee: Prof. Marina Camera (Chair), Prof. Alberto Alzati, Prof. Paola Casati, Prof. Daniela Maggioni, Dr. Sarah Sertic, Dr. Lisa Vallone**

Ricevimento studenti - Previo appuntamento c/o Segreteria Didattica Interdipartimentale Scienze del Farmaco e Biotecnologia, Via Golgi n. 19 Email: [marina.camera@unimi.it](mailto:marina.camera@unimi.it)

#### **Biotechnology Academic Office**

Via Golgi 19 (Ed. 1 - ingresso D), Milano lun, merc, ven 9:30-11:30; mar e gio 13:30-15:30 <https://informastudenti.unimi.it/saw/ess?AUTH=SAML>

#### **Erasmus tutor: Prof.ssa Veronica Gregis**

Via Celoria, 26 - Corpo A Phone 02503 15014 Ricevimento studenti: libero su appuntamento per e-mail  
Email: [eronica.gregis@unimi.it](mailto:eronica.gregis@unimi.it)

#### **Representative for disability services and specific learning disabilities (SLD): Prof. Elena Crotti**

Via Mangiagalli 25, Milano Phone 02503 19122 Ricevimento studenti: libero su appuntamento per e-mail  
Email: [elena.crotti@unimi.it](mailto:elena.crotti@unimi.it)

#### **Student registrar**

Via Celoria 18, Milano Phone 02503 25032 <https://www.unimi.it/it/node/360> <https://www.unimi.it/it/node/359>

## **CHARACTERISTICS OF DEGREE PROGRAMME**

### **Initial knowledge required**

#### Admission requirements

Admission to the degree programme in Biotechnology is capped pursuant to Law no. 264 of 2 August 1999. Applicants must hold an upper secondary-school diploma or equivalent foreign qualification pursuant to Ministerial Decree no. 270 of 22 October 2004.

Candidates will be required to sit an admission test aimed at ascertaining their educational background and aptitude.

#### Admission assessment

The test required for admission to the degree programme in Biotechnology is TOLC-S, an online test delivered by the Consortium of Inter-University Integrated Access Systems (CISIA - <https://www.cisiaonline.it/>), which must be taken before enrolment.

Test structure and topics: <https://www.cisiaonline.it/area-tematica-tolc-scienze/struttura-della-prova-e-sillabo/>.

The TOLC test includes an additional English section. The score in this section is a self-assessment tool and does not affect the merit ranking, nor does it replace the for-credit assessment of English language proficiency required by the degree programme (see the language assessment section).

You may sit the TOLC-S at the University of Milan or any other venue among those listed in the test calendar available at <https://tolc.cisiaonline.it/calendario.php>.

Registration procedures and deadlines will be provided in the call for applications posted to the University website at <https://biotecnologia.cdl.unimi.it/it/iscriversi>.

Only students placing themselves high enough in the merit ranking will be eligible for enrolment in the degree programme in Biotechnology.

#### Additional learning requirements (OFA) and remedial activities

Students who have not achieved at least 11 points in the basic mathematics module of TOLC-S will be required to fulfil additional learning requirements (OFA). Students with additional learning requirements will have to carry out remedial activities organised by the University in the period between October-December, and then take a test to prove they have filled the gaps in their knowledge. Students may not sit any second-year exams before passing the compulsory Mathematics exam. Learn more at <https://biotecnologia.cdl.unimi.it/it/studiare/le-matricole>.

#### Admission of transfer or graduate students

Transfer students from a degree programme of the University of Milan, or another university, and graduate students will be waived from the test requirements only if admitted to years subsequent to Year I. To this end, they will have to submit a specific request for prior assessment of their academic records using the online service as shown in the call for applications.

These candidates must provide a full transcript of records (listing exams, subject areas, credits, grades) and attach the course syllabi. For more details, please refer to the call for applications.

### **Compulsory attendance**

Attendance is mandatory for laboratory courses.

### **Internship criteria**

Students must complete an internship at the University or other public or private institution. As part of the internship, they will be required to attend an interdisciplinary theoretical and practical biotechnology laboratory in Year III. The Interdepartmental Academic Board requires students to earn at least 90 credits (ECTS) before applying for an internship, and 115 credits (ECTS) before starting the internship. Learn more at <https://biotecnologia.cdl.unimi.it/it/studiare/laurearsi>. Internship activities usually include: experimental laboratory or field activities, with data processing; monitoring of production activities or processes, with data collection and processing, including information from specific databases. For off-campus internships at University-affiliated institutions, activities must be agreed both with the supervisor (academic tutor) and the company tutor, in compliance with the timeline set out in the agreement between the University and the institution. At the end of the internship, the supervisor will certify its completion, and generate the certificate that will allow the student to earn ECTS.

### **Degree programme final exams**

Upcoming graduates must pass a final oral examination before a board of faculty members and possibly external experts, known as a dissertation defense. The dissertation, covering internship activities, may be written in Italian or English under the guidance of an academic supervisor, who will appoint a colleague from the faculty or an external expert as co-supervisor. In awarding credits for the final exam, the board will assess both the quality of the paper, its presentation and defense. The final dissertation completes the student's training as part of the three-year programme. It must be original work in line with the number of credits established by academic regulations. As decided by the Academic Board and posted on the website (<https://biotecnologia.cdl.unimi.it/it>), the degree board will assign a score based on the supervisor's assessment of the internship, the final paper and its presentation (5 points), as well as their assessment of the candidate's cultural, intellectual and oral skills (3 points). The degree mark will reflect the student's academic records (weighted average of exam grades plus one point for on-track students, and one or two points for any successfully completed ERASMUS programmes), as well as the score assigned by the supervisor and the degree board.

### **Campus**

Course venue: Città Studi teaching facilities

### **Laboratories**

The degree programme is laboratory-intensive. Laboratory courses are compulsory and must be attended in each relevant year. During laboratory practicals, students will learn the rules of safe behaviour.

### **Notes**

In order to obtain their degree, students must be proficient in English at a B1 level under the Common European Framework of Reference for Languages (CEFR). This proficiency level may be certified as follows:

- By submitting a language certificate attesting B1 or higher level in English and issued no more than three years before the date of submission. You will find the list of language certificates recognized by the University at: <https://www.unimi.it/en/node/39322>). The certificate must be uploaded during the enrolment procedure, or subsequently to the portal <http://studente.unimi.it/uploadCertificazioniLingue>;

- By taking a placement test offered by the University Language Centre (SLAM) between October and December of the first year. Students who fail the test will be required to take a SLAM course.

The placement test is mandatory for all those who do not hold a valid certificate attesting to B1 or higher level.

Those who have not taken the placement test by the end of December or fail the end-of-course exam six times must obtain the necessary certification privately before graduating.

## ***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 organisations.

Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

The University of Milan is a member of the 4EU+ European University Alliance that brings together eight public multidisciplinary universities: University of Milan, Charles University of Prague, Heidelberg University, Paris-Panthéon-Assas University, Sorbonne University of Paris, University of Copenhagen, University of Geneva, and University of Warsaw. The 4EU+ Alliance offers integrated educational pathways and programmes to promote the international mobility of students (physical, blended and virtual).

### **Study and internships abroad**

The study opportunities within the ERASMUS+ Programme, the specific participation rules and the student selection criteria are described in the notice that the University generally publishes in January, and are illustrated during specific meetings advertised on the website of the Degree Course and that of the University. Agreements have been stipulated with various universities, distributed throughout Europe (for a total of 13 countries), mainly in Spain, Germany, France, Holland, Belgium and the United Kingdom, selected based on educational affinity with the course of study and relevance in specific scientific sectors. The activities that can be carried out abroad are, as a rule, related to the topics and areas of study covered in the various curricula on which the Degree Course is structured. The purpose of the mobility is to carry out training activities abroad to replace part of one's study plan, including carrying out the internship.

The definition of the study program (Learning Agreement, LA) must necessarily take place in collaboration with the Erasmus person in charge of the study course, both as regards the choice of exams and the organisation of internships. The program must include training activities for a number of credits proportional to the duration of the stay, in accordance with the general provisions of the University of Milan.

To carry out an experimental activity abroad as a part or all of the internship included in the study plan, a letter of consent will be required from a professor of the partner university to host the student in their laboratories and by a teacher of the Course of Studies who will act as tutor and/or speaker. These letters must be forwarded to the ERASMUS Coordinator.

All activities will be recognized in the student's career, provided they have been completed with positive results (achievement of at least 70% of the credits required by the LA) and certified by the host University at the end of the student's stay. The Interdepartmental Teaching Committee will decide on the recognition of credits and exam grades taken based on a predefined conversion scale. Furthermore, participation in Erasmus+ programs will be taken into consideration in defining the degree grade, depending on the duration and quality of the period spent abroad.

### 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 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 organises 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;

Student Desk booking through InformaStudenti

| <b>1st COURSE YEAR Core/compulsory courses/activities common to all curricula</b> |             |                    |
|---|-------------|--------------------|
| <b>Learning activity</b>  | <b>Ects</b> | <b>Sector</b>      |
| English assessment B1 (1 ECTS)  | 1           | ND                 |
| General and inorganic chemistry   | 8           | CHIM/03            |
| General e Cellular Biology  | 10          | BIO/13             |
| Informatics and Statistics for Biotechnologies                                    | 6           | (2) SECS-S/02, (2) |

|  |                          |   |
|--|--------------------------|---|
|  |                          | SECS-S/01, (2)<br>INF/01                    |
| Mathematics for Biotechnology  | 6                        | MAT/05                                      |
| Organic chemistry  | 8                        | CHIM/06                                     |
| Physics  | 6                        | FIS/07                                      |
|  | Total compulsory credits | 45  |
| <b><i>Elective courses common to all curricula</i></b>   |                          |   |
| <b>The student must choose one of the following courses</b>  |                          |   |
| Genetics   | 8                        | (4) AGR/07, (4)<br>BIO/18                   |
| Genetics   | 8                        | (4) AGR/07, (4)<br>BIO/18                   |
| <b><i>2nd COURSE YEAR (available as of academic year 2026/27) Core/compulsory courses/activities common to all curricula</i></b> |                          |   |
| <b>Learning activity</b>   | <b>Ects</b>              | <b>Sector</b>                               |
| Biochemistry   | 9                        | BIO/10                                      |
| Fundamentals of economy and Bioethics  | 6                        | (3) MED/02, (1)<br>SECS-P/06, (2)<br>AGR/01 |
| General Microbiology   | 9                        | (4) AGR/16, (5)<br>BIO/19                   |
| Molecular Biology  | 9                        | BIO/11                                      |
|  | Total compulsory credits | 33  |
| <b><i>Further elective courses common to all curricula</i></b>   |                          |   |
| <b>Lo studente deve acquisire 12 crediti a scelta.</b>   |                          |   |
| <b><i>End of course requirements common to all curricula</i></b>   |                          |   |
|  | 8                        | ND  |
|  | 5                        | ND  |
|  | Total compulsory credits | 13  |

### **ACTIVE CURRICULA LIST**

COMPARATIVE ANIMAL BIOTECHNOLOGY Course years currently available: 1°

BIOTECHNOLOGY FOR THE SUSTAINABILITY OF THE AGRI-FOOD SYSTEM Course years currently available: 1°

PHARMACEUTICAL BIOTECHNOLOGY Course years currently available: 1°

MOLECULAR-BIOINFORMATICS Course years currently available: 1°

#### **Procedure for choosing a curriculum**

The course is divided into a common period, lasting three semesters, in which students acquire the basic molecular, cellular and methodological skills essential for further study. In the following three semesters, the student will be able to choose one of the following curricula to deepen some of their own and professionalising aspects of biotechnology:

- Biotechnology for the sustainability of the agri-food system
- Comparative animal biotechnology curriculum
- Pharmaceutical biotechnology curriculum
- Molecular-bioinformatics curriculum

The choice of curriculum will be formalized with the presentation of the study plan at the end of the first semester of the second year. After that, the student will have the possibility to change the curriculum upon presentation of a motivated request to the Interdepartmental Didactic Board.

Each curriculum has the objective of offering students the opportunity to acquire skills and improve in the areas of Biotechnology that best meet their interests, as specified in the following paragraphs.

#### **CURRICULUM: [KAA-A] COMPARATIVE ANIMAL BIOTECHNOLOGY**

|  |                          |                           |
|--|--------------------------|---------------------------|
| <b><i>2nd COURSE YEAR (available as of academic year 2026/27) Core/compulsory courses/activities Curriculum-specific features COMPARATIVE ANIMAL BIOTECHNOLOGY</i></b> |                          |                           |
| <b>Learning activity</b>   | <b>Ects</b>              | <b>Sector</b>             |
|  | 10                       | (4) VET/01, (6)<br>VET/02 |
|  | 7                        | (3) VET/10, (4)<br>VET/01 |
|  | 11                       | (7) VET/03, (4)<br>VET/05 |
|  | Total compulsory credits | 28                        |
| <b><i>3rd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities Curriculum-specific features COMPARATIVE ANIMAL BIOTECHNOLOGY</i></b> |                          |                           |

| Learning activity | Ects                     | Sector                 |
|-------------------|--------------------------|------------------------|
|                   | 12                       | (5) VET/06, (7) VET/05 |
|                   | 12                       | (6) AGR/18, (6) VET/04 |
|                   | 9                        | (6) VET/07, (3) VET/08 |
|                   | 8                        | (5) AGR/17, (3) AGR/20 |
|                   | Total compulsory credits |                        |
|                   | 41                       |                        |

**CURRICULUM: [KAA-B] BIOTECHNOLOGY FOR THE SUSTAINABILITY OF THE AGRI-FOOD SYSTEM**

**2nd COURSE YEAR (available as of academic year 2026/27) Core/compulsory courses/activities Curriculum-specific features BIOTECHNOLOGY FOR THE SUSTAINABILITY OF THE AGRI-FOOD SYSTEM**

| Learning activity | Ects                     | Sector                  |
|-------------------|--------------------------|-------------------------|
|                   | 10                       | (3) BIO/01, (7) AGR/13  |
|                   | 6                        | BIO/10                  |
|                   | 8                        | (5) BIO/10, (3) CHIM/10 |
|                   | 7                        | (5) BIO/10, (2) CHIM/11 |
|                   | Total compulsory credits |                         |
|                   | 31                       |                         |

**3rd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities Curriculum-specific features BIOTECHNOLOGY FOR THE SUSTAINABILITY OF THE AGRI-FOOD SYSTEM**

| Learning activity | Ects                     | Sector                             |
|-------------------|--------------------------|------------------------------------|
|                   | 10                       | (5) AGR/11, (5) AGR/12             |
|                   | 6                        | AGR/16                             |
|                   | 11                       | AGR/07                             |
|                   | 11                       | (3) AGR/02, (3) AGR/04, (5) AGR/03 |
|                   | Total compulsory credits |                                    |
|                   | 38                       |                                    |

**CURRICULUM: [KAA-C] PHARMACEUTICAL BIOTECHNOLOGY**

**2nd COURSE YEAR (available as of academic year 2026/27) Core/compulsory courses/activities Curriculum-specific features PHARMACEUTICAL BIOTECHNOLOGY**

| Learning activity | Ects                     | Sector   |
|-------------------|--------------------------|--|
|                   | 8                        | BIO/09   |
|                   | 12                       | (3) BIO/10, (2) BIO/09, (2) BIO/16, (5) BIO/13 |
|                   | 10                       | BIO/14   |
|                   | 6                        | (2) CHIM/01, (4) CHIM/08                       |
|                   | Total compulsory credits |  |
|                   | 36                       |  |

**3rd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities Curriculum-specific features PHARMACEUTICAL BIOTECHNOLOGY**

| Learning activity | Ects                     | Sector                   |
|-------------------|--------------------------|--------------------------|
|                   | 8                        | MED/04                   |
|                   | 10                       | BIO/14                   |
|                   | 9                        | (4) CHIM/11, (5) CHIM/08 |
|                   | 6                        | CHIM/09                  |
|                   | Total compulsory credits |                          |
|                   | 33                       |                          |

**CURRICULUM: [KAA-D] MOLECULAR-BIOINFORMATICS**

**2nd COURSE YEAR (available as of academic year 2026/27) Core/compulsory courses/activities Curriculum-specific features MOLECULAR-BIOINFORMATICS**

| Learning activity | Ects | Sector                   |
|-------------------|------|--------------------------|
|                   | 6    | BIO/17                   |
|                   | 8    | (5) BIO/01, (3) BIO/04   |
|                   | 9    | (2) CHIM/11, (7) BIO/19  |
|                   | 8    | (6) CHIM/02, (2) CHIM/06 |

|   |                          |                        |
|---|--------------------------|------------------------|
|   | Total compulsory credits | 31                     |
| <b>3rd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities Curriculum-specific features MOLECULAR-BIOINFORMATICS</b> |                          |                        |
| <b>Learning activity</b>  | <b>Ects</b>              | <b>Sector</b>          |
|   | 12                       | (9) BIO/10, (3) FIS/07 |
|   | 7                        | BIO/11                 |
|   | 9                        | BIO/18                 |
|   | 10                       | BIO/11                 |
|   | Total compulsory credits | 38                     |

### **COURSE PROGRESSION REQUIREMENTS**

The students have to successfully complete the propaedeutic exams listed in right column, before those listed in left column of the following table.

In the event that the list of propaedeutic exams changes, the students will have to comply with the list approved in the previous Academic Year

| <b>Learning activity</b>                       | <b>Prescribed foundation courses</b> | <b>O/S</b>      |
|--|--------------------------------------|-----------------|
|  | Genetics                             | Core/compulsory |
|  | Genetics                             | Core/compulsory |
|  | General e Cellular Biology           | Core/compulsory |
|  | General and inorganic chemistry      | Core/compulsory |
|  | Organic chemistry                    | Core/compulsory |
|  | Physics                              | Core/compulsory |
|  | Biochemistry                         | Core/compulsory |
|  | General Microbiology                 | Core/compulsory |
|  |                                      | Core/compulsory |
|  | Biochemistry                         | Core/compulsory |
|  |                                      | Core/compulsory |
|  |                                      | Core/compulsory |
|  | Biochemistry                         | Core/compulsory |
|  | General and inorganic chemistry      | Core/compulsory |
|  | Organic chemistry                    | Core/compulsory |
|  | Biochemistry                         | Core/compulsory |
|  | General and inorganic chemistry      | Core/compulsory |
|  |                                      | Core/compulsory |
|  | Organic chemistry                    | Core/compulsory |
|  | General e Cellular Biology           | Core/compulsory |
|  | General and inorganic chemistry      | Core/compulsory |
| Organic chemistry                              | General and inorganic chemistry      | Core/compulsory |
| Informatics and Statistics for Biotechnologies | Mathematics for Biotechnology        | Core/compulsory |