

UNIVERSITY OF NAPLES FEDERICO II
SCHOOL OF MEDICINE

DEPARTMENT OF MOLECULAR MEDICINE AND MEDICAL
BIOTECHNOLOGY

Student Guide

DEGREE/MASTER'S DEGREE IN MEDICAL
BIOTECHNOLOGY

Class of Bachelors/Masters Degrees LM/9

Masters in Medical Biotechnology

General information on the Study Programme

The course of study in brief

Brief introduction to the salient features of the Study Program and any curricula

The master's degree course aims to train graduates having an in-depth knowledge of the molecular, cellular and genetic aspects underlying prokaryotic and eukaryotic organisms. In particular, graduates will be able to generate and deepen knowledge on the structure, function and analysis of biological macromolecules and the related cellular processes. The course provides competencies on the fundamental human or animal pathological processes, with reference to their cellular and molecular deregulated mechanisms, as well as skills on congenital or acquired pathological processes in which it is possible to intervene with a biotechnological approach, in full compliance with current bioethical regulations. Graduates will also acquire both the ability to recognize, through specific diagnostic investigations, the interactions between foreign microorganisms and human or animal organisms, and the use of bioinformatics tools for accessing databases to acquire and use scientific information.

The study program includes 10 courses with relative final exam. Additional 10 ECTS are foreseen for the student's elective activities and 25 ECTS for internship and final exam. All students are required to write an experimental thesis in Italian or English to obtain the master's degree.

There are two curricula: "**medical**" in Italian and '**advanced technologies**' (entirely in English). In detail, two compulsory bimodular exams of the second year, for a total of 20 ECTS, differentiate the '**advanced technologies**' curriculum from the '**medical**' one. Regardless of the chosen curriculum, the degree awarded will be in "Medical Biotechnology". The Didactic Coordination Commission of the Degree Course will certify the study program and relative features taken by the students who choose the 'advanced technologies' curriculum, including the English usage.

Employment opportunities

The expected employment opportunities are:

- a) Academic and scientific research career at national and international Universities and Research Institutions;
- b) Manager/researcher at national and international biotech and pharmaceutical companies;
- c) Laboratory worker/manager (according to current legislation) at laboratories of public and private health facilities.
- d) Manager/researcher in the regulatory field for facilities involved in production programs under Good Manufacturing Procedures (GMP) conditions, activities with Genetically Modified Micro-Organisms (GMMOs) and preclinical and clinical trials;
- e) Executive/manager in structures responsible for monitoring biotechnological processes taking into account the ethical, technical and legal implications;
- f) Manager/researcher responsible for the development of health and patent regulations in the biotechnological sector.

Knowledge required for the access: terms and conditions for admission

Access to the master's degree Course in Medical Biotechnology is free if specific requirements are matched.

To be admitted to the Master's Degree in Medical Biotechnology, students must have a degree that has provided sufficient knowledge in the disciplines listed below:

- mathematics, chemistry and physics;
- biological disciplines (biology, biochemistry, molecular biology, genetics, microbiology, bioinformatics);
- morphological and physiological disciplines
- medical disciplines

- pharmacological and toxicological disciplines
- English language, with a focus to scientific lexicon.

In detail, it is mandatory to have achieved at minimum of 55 ECTS in the SSD shown below:

30 ECTS in SSD BIO;

5 ECTS in MED SSDs;

10 ECTS in CHIM SSD;

5 ECTS in FIS SSD;

5 ECTS in MAT SSDs.

Additional curricular requirements will be verified through an assessment of the individual student's personal career by a special Commission.

Bachelor graduates in "Biotecnologie per la Salute" who obtained their degree at the Federico II University are automatically admitted to the CdS in Medical Biotechnology.

Study Plan

Curriculum "Medical"

To view the study plan, please refer to the **Course Requirements** section of the following link <http://www.scienzebiotecnologiche.unina.it/mediche> and click to the item **Medical Curriculum**.

Or at:

<https://www.mmbm.unina.it/didattica/corsi-di-laurea/lauree-magistrali/1484538-biotecnologie-mediche/>

Curriculum "Advanced Technologies"

To view the study plan, please refer to the **Course Requirements** section of the following link <http://www.scienzebiotecnologiche.unina.it/mediche> and click to the item **Advanced Technologies Curriculum**.

Or at:

<https://www.mmbm.unina.it/didattica/corsi-di-laurea/lauree-magistrali/1484538-biotecnologie-mediche/>

Elective Courses

To view the elective courses please refer to the **Activity 2023-2024** section of the following link <http://www.scienzebiotecnologiche.unina.it/mediche> and click to the item **Elective Courses**.

Or at:

<https://www.mmbm.unina.it/didattica/corsi-di-laurea/lauree-magistrali/1484538-biotecnologie-mediche/>

Notes to the Study Plan

The training activities shared by the two curricula aim to offer an in-depth knowledge of the multidisciplinary techniques characterizing biotechnological operations in the field of human health, making the graduate able to operate even in concrete situations, with appropriate knowledge of the regulations and deontological and bioethical problems.

The CdS also offers numerous elective courses covering multiple arguments to satisfy individual student's requirements and interests.

As far as the **'medical' curriculum** is concerned, the CdS guarantees the acquisition of skills regarding the cellular and molecular aspects of the main hereditary or acquired human pathologies, as well as the ability to select and use multiple biotechnological approaches to implement/improve the related diagnostic and therapeutic strategies.

Alternatively, with the **'advanced technologies' curriculum** the CdS provides advanced skills on the main highly innovative technologies applicable to research projects (basic or translational) in academia and industry. Furthermore, teaching will be carried out entirely in English, an additional tool to improve employment opportunities also abroad. Given the variety of topics covered in the two curricula and the teaching in English in the advanced technologies curriculum, the CdS will offer elective exams that can be selected by the students based on their specific interests and inclinations.

Personalization of the study plan

The study plan, in addition to the fundamental (shared) courses and those characterizing each of the 2 *curricula* (Curricular courses), provides the choice for 2 further elective courses. To this aim, the Didactic Coordination Commission proposes a list of teachings that allow to deepen aspects of the disciplines representing the indispensable cultural background for each student. Usually, one course is chosen at the beginning of the third semester, and the other at the beginning of the fourth semester.

The list of [elective courses](#) is particularly wide and varied, and is updated every academic year.

Curricular internship activities

The experimental activities for the final exam must be carried out by the graduating student with a high degree of autonomy. These activities may also be carried out at other universities (Italian or foreign) or at affiliated laboratories of public or private structures, subject to approval by the Thesis and Internship Commission of the Degree Course and attribution of an internal supervisor who follows the student's activities. Given the complexity of research activity in the biotechnological field, the Degree Program advises students to prepare their thesis in the same laboratory chosen for the internship activities to maximize the time to adequately investigate the scientific problem.

Assistance for external training periods is provided by the Thesis and Internship Commission, chaired by Prof. Rosamarina Melillo and including Prof. Silvia Parisi and Paola Costanzo. This Commission works in concert with the University's Student Internship Office. The external internship is used by 20 to 30 students per year, is always supervised by a professor of the CdS, and often leads to the preparation of an experimental thesis. Multiple scientific institutes and university departments in the Cappella dei Cangiani area in Naples welcome students for internships. In addition, contacts were deepened with biotech companies in the area to offer internship periods.

<http://www.unina.it/didattica/offer-didattica/tirocini-studenti>

Activities for the preparation and execution of the final exam

The Master's Degree in Medical Biotechnology is obtained after passing a final test, consisting in the discussion of a written report focused on an experimental project facing a scientific problem pertaining to the training areas of the Degree Program. To access the final exam, the student must have acquired all the ECTS envisaged by the teaching regulations, with the exception of those envisaged for the final exam itself.

The final exam of the master's degree in Medical Biotechnology involves the preparation and public discussion of a written thesis describing the experimental activities carried out by the student. The Degree Commission, formed in accordance with the University Regulations, discusses the results presented with the candidate and assigns the degree score according to current regulations.

Training periods abroad – ERASMUS programmes

Assistance for the international mobility of degree program students is provided by the Erasmus Commission, chaired by Prof. Gerolama Condorelli and including Profs. Danilo Fiore and Raffaella Pero. As part of this course of study, there are currently 16 international agreements with European universities for the Erasmus+ and/or Erasmus Traineeship programs.

Details on training activities abroad and active exchanges (continuously updated) are available on [the dedicated web page of the University Portal](#) and in the [Erasmus Section](#) of the departmental website.

Orientation and Tutoring

Entrance orientation

[Admission Orientation](#) initiatives are coordinated with the other study programs within [the Department of Molecular Medicine and Medical Biotechnology](#), the School of Medicine and Surgery, and the University. Particular attention is paid to the opportunity to exploit Orientation opportunities as models of scientific dissemination. The Degree Course in Medical Biotechnology also offers the possibility of requesting *on-demand Orientation activities* dedicated to high school students.

The in-coming orientation info are also shared in the website:

www.scienzebiotecnologiche.unina.it

of the Didactic Area of Biotechnological Sciences containing all the information concerning the Degree and master's degree Courses of classes L2 and LM7-8-9.

Regarding the CdS in Medical Biotechnology, Dr. Angela Canzio is the contact person of the Orientation desk (email address: angela.canzio@unina.it).

Orientation and ongoing tutoring

Our experience indicates that there are no major problems of ongoing orientation and tutoring. This because the students are 'experts' and their majority already had the chance to know some of the professors during their bachelor degree.

The following have a key role in ongoing orientation and tutoring: a) the Coordinator of the Degree Program ; b) the supervisors of the experimental theses (students spend 1-2 years part-time in the laboratories for internship activities and the preparation of the thesis); c) the thesis and internships commission (see specific framework B5); d) the Erasmus commission.

Outgoing orientation and placement activities

The Degree Course organizes orientation and *placement initiatives* in close coordination with the other study programs of the Department of Molecular Medicine and Medical Biotechnology, and with the College of Studies in Health Biotechnology. Outgoing orientation initiatives are advertised on the Degree Course website and on its social channels.

Calendar, deadlines and dates to remember

Terms and deadlines

First and second year enrollment is active from September 1st to March 31. Related procedures are disclosed in a specific Guide to enrollment and payment of fees published at the URL:

<https://www.unina.it/didattica/sportello-studenti/guide-dello-studente>

Further deadlines (i.e. submission of study plans, submission of ERASMUS applications, etc.) are indicated on the Study Program website:

www.scienzebiotecnologiche.unina.it/mediche/

Calendar of teaching activities and exams

The detailed Calendar, updated in real time, can be consulted on the website

<http://www.scienzebiotecnologiche.unina.it/mediche> or

<https://www.mmbm.unina.it/didattica/corsi-di-laurea/lauree-magistrali/1484538-biotecnologie-mediche/>

The compact organization of the study plan offers 5 exam sessions, which fall at the end of the first (January -February) and second (June-July-September) semester. As consequence, the exams are not held during the lessons. Extraordinary exam sessions (May and November) will be dedicated to the students who have already completed attendance of the lessons of the two-year study period.

Exam sessions are typically scheduled at the beginning of the first semester (October) for the entire calendar year, and the relative [exam calendar](#) is promptly published and updated in real time on the Degree Course website (www.scienzebiotecnologiche.unina.it/medical/).

Timetable of training activities

The detailed timetable, updated in real time, is available on the website

<http://www.scienzebiotecnologiche.unina.it/mediche>

Or at

<https://www.mmbm.unina.it/didattica/corsi-di-laurea/lauree-magistrali/1484538-biotecnologie-mediche/>

The lessons are held in the CESTEV classroom on the *Campus* of the School of Medicine and Surgery; typically, lessons are held from October to mid-January (I semester) and from March to mid-June (II semester). [The class calendar](#) is published on the Degree Course website before the beginning of each semester, and updated in real time.

Graduation session calendar

Very brief description of the structuring of the final exam sessions calendar: sessions.

The detailed Calendar, updated in real time, can be consulted on the website

<http://www.scienzebiotecnologiche.unina.it/mediche>

or

<https://www.mmbm.unina.it/didattica/corsi-di-laurea/lauree-magistrali/1484538-biotecnologie-mediche/>

The graduation sessions available for the acquisition of the master degree in Medical Biotechnology are distributed in the months of March, June, July, September, October, and December. The

[graduation session](#) calendar is prepared in advance and updated in real time on the Degree Course website at the beginning of the academic year.

Referents of the Study Programme

Teaching Coordinator: Prof. Gerolama Condorelli
tel. 081/5452921
e-mail: gerolama.condorelli@unina.it



Contact for the ERASMUS Program: Prof. Gerolama Condorelli
tel. 081/5452921
e-mail: gerolama.condorelli@unina.it

Responsible for Internships: Prof. Rosa Marina Melillo
email rosmelillo@unina.it

Didactic manager: Dr. Nausicaa Zendrini
e-mail: nausicaa.zendrini@unina.it

e-mail for the degree course general information: biotecnologiemediche@unina.it

Student Representatives:

ROBERTO MIANO (rob.miano@studenti.unina.it)
NIVES PIACENTINO (n.piacentino@studenti.unina.it)
ANDREA COSTAGLIOLA (andrea.costagliola@studenti.unina.it)
MARIA LUGIA MARESCA (marial.maresca@studenti.unina.it)

Curriculum "Advanced Technologies"

CAMILLA CANALE (c.canale@studenti.unina.it)

Committees and Coordinators:

Cycle coordinators

1 year – first semester: Prof. Massimo Mallardo (massimo.mallardo@unina.it)

1 year – second semester: Prof. Mario Capasso (mario.capasso@unina.it)

2 year – first semester: Prof. Stefano D'Errico (stefano.derrico@unina.it)

2 year – second semester: Prof.ssa Rosamarina Melillo (rosmelillo@unina.it)

Elective Courses Coordinator: Barbara Lombardo (barbara.lombardo@unina.it)

- Commission for Thesis and Internship Activities.

Rosa Marina Melillo, Silvia Parisi, Paola Costanzo- Student representative: Marialuigia Maresca (marial.maresca@studenti.unina.it)

Objectives: 1) identify laboratories available to host students for internship and thesis work; 2) expand the thesis offer by promoting the execution of thesis at research centers and companies affiliated with Federico II; 3) monitor effectiveness and implement changes to the thesis and internship regulations.

- Credit Recognition and Access Commission.

Gerolama Condorelli, Raffaella Pero, Danilo Fiore, Fabiana Passaro

Objectives: 1) evaluate the applications for admission of foreign students presented through the "universality" portal; 2) verify that all the students who access the first year of the CdSM in Medical Biotechnology have obtained the compulsory ECTS credits for each discipline according to the current regulation; 3) evaluate the applications presented by students for the recognition of credits acquired in previous master's degree courses.

- Commission internationalization and teaching innovation.

Gerolama Condorelli, Raffaella Pero, Danilo Fiore Student representative: andrea.costagliola@studenti.unina.it

Objectives: 1) implement the number of incoming students; 2) activate new international mobility agreements for students of the CdSM in Medical Biotechnology; 3) increase the number of visiting professors; 4) activate double degree programs.

- Training Events Commission.

Massimo Zollo, Gabriella De Vita, Claudia De Lorenzo Student representative: Roberto Miano rob.miano@studenti.unina.it

Objectives: 1) Promotion of training events for CdSM students with foreign companies and visiting guests; 2) activation of a seminar cycle on "Biotech Hot topics" with internal and/or external speakers with mandatory student attendance.

- Commission "reception of foreign students"

Chiara Pagliuca, Barbara Lombardo, Maurizio Renna, Giorgia Oliviero

Student representative: Camilla Canale c.canale@studenti.unina.it

Objectives: 1) verify the number of foreign students enrolled in the master's degree course; 2) provide support to foreign students to smoothly integrate the courses of study: provide precise information regarding course timetables, dates and procedures for exams; 3) verify that foreign students enrolled in the degree course attend the teaching activities; 4) improve the integration of foreign students in the didactic and social reality of the CdSM in medical biotechnology.

- Placement commission

Massimo Zollo, Lucio Pastore

Objectives: 1) identify companies interested in training medical biotechnologists; 2) organize career days with companies; 3) organize training events for the research of the first work experience: suggestions on the preparation of CVs, on how to face a job interview and how to understand which path (academic or industrial) is best suited to the individual student; 4) create a database with CVs of graduate students; 5) activate "**In-company training experience**" in the last three months before graduation ("internship" formula) and after the degree.

- Website Commission Giovanni Paoletta, Roberta Russo, Federica Zarrilli, Leandra Sepe: Student representative: Daisy De Luca dai.deluca@studenti.unina.it

Objectives: 1) verify the information on the website; 2) update its contents; 3) verify that the contents are in Italian and in English; 4) improve the graphics and accessibility of the website.

- Review Commission

Prof. Giovanni Paoletta (President)

Prof. Nicola Zambrano (CCD Coordinator Biotechnology for Health)

Prof. Gerolama Condorelli (CCD Coordinator Medical Biotechnology)

Prof. Lucio Pastore (Professor of the CdS)

Prof. Massimo Zollo (Professor of the CdS)

Prof. Giorgia Oliviero (Professor of the CdS)

Dr. Nausicaa Zandrini (teaching manager)

Roberto Miano (student)

Contacts and Structures

Indication of the Headquarters: Via Tommaso De Amicis, 95, 80131, Naples

[Where we are](#)

Study Course website: www.scienzebiotecnologiche.unina.it/mediche/

Department website: <https://www.mmbm.unina.it/>

School website: www.medicina.unina.it

University website: www.unina.it

Orientation Portal: www.orientation.unina.it

Official social channels: <https://www.facebook.com/biomediche>

Teachings tabs

The content and objectives of the courses together with the name of the professor in charge of the course, the method of carrying out and verification can be consulted at the link:

<https://www.mmbm.unina.it/didattica/corsi-di-laurea/lauree-magistrali/1484538-biotecnologie-mediche/>