

University of Campania

“Luigi Vanvitelli”

*Department of Environmental,  
Biological and Pharmaceutical  
Sciences and Technologies*

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### Where we are located

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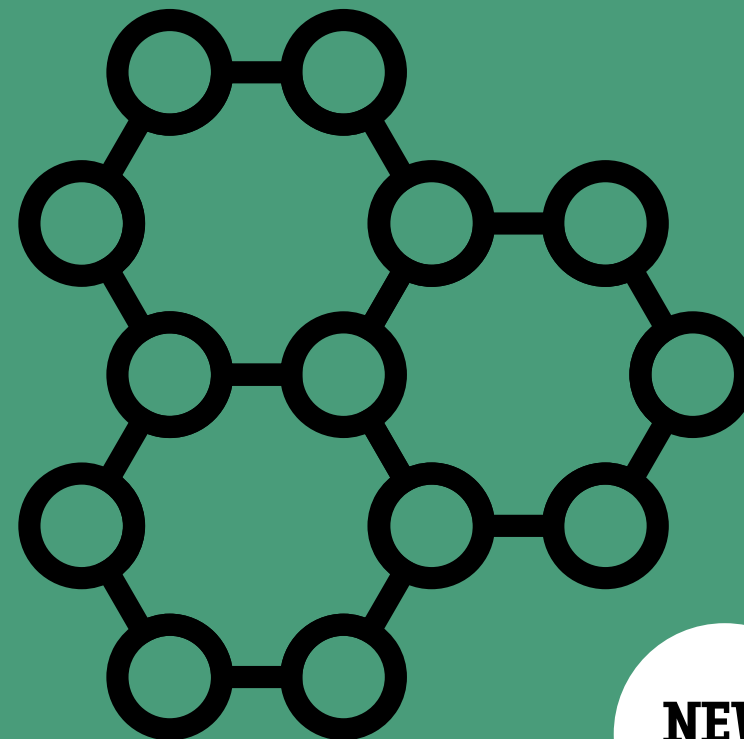
### How to reach us

Scan the QR code to connect to the  
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**NEW  
COURSE!**

# Molecular Biotechnology

*Second Cycle Degree, 2 years*

*English language*



Università  
degli Studi  
della Campania  
Luigi Vanvitelli

*Department of  
Environmental, Biological  
and Pharmaceutical Sciences  
and Technologies*

## The Course

The Second Cycle Degree Course in Molecular Biotechnology is designed to provide the cultural background of multidisciplinary biotechnologies for the production of goods and services using biological systems. In particular, the course prepares skilled graduates in the field of biotechnologies specialised in the study, prevention and diagnosis of human diseases, with particular regard to the development of innovative drugs. The Master programme provides interdisciplinary classes applied to various fields of molecular biotechnology, with emphasis on research, diagnostics and therapy. Training activities are also organised as stages to be carried out at research institutes or companies operating in the biotechnology, pharmaceutical, diagnostic and biomedical sectors. Training may be combined with research activities in selected laboratories with the aim of generating experimental data for the preparation of the thesis to be discussed in the final exam. Cooperation with researchers of National Research Council Institutes (e.g.: Institute of Genetics and Biophysics - IGB; Institute of Protein Biochemistry) on teaching and research activities is an opportunity for graduates to acquire knowledge in a broader range of fields related to Molecular Biotechnology, and skills to operate in various areas of academic and industrial research at national and international levels.



## Professional profile

The Molecular Biotechnology graduate is an expert in the main biotechnological disciplines fully capable to perform, as a research team member or independently, analysis, research and biotechnological productions in the following sectors:

- Manipulation of cells, tissues, animal models and microorganisms;
- Pharmacology and molecular toxicology;
- Design and production of gene therapy vectors;
- Genetic and molecular diagnostics;
- Design, production and control of biotechnological drugs;
- Production and control of bioactive natural products.

## Acquired skills and competences

Graduates in Molecular Biotechnology possess an excellent background in theoretical and applicative aspects of biomolecular sciences and biotechnologies related to human health, which provide skills to carry out basic and/or applied research in health sectors.

Moreover, the skills and competences acquired by the graduates in Molecular Biotechnology can also be appreciated in international contexts.



## Employment opportunities

Graduates in Molecular Biotechnologies will be able to operate at high levels of responsibility in the following fields:

- Chemical, cosmetics, pharmaceutical and biotechnology industries;
- University research centres, National Research Council or other public and private research institutions;
- Public and private laboratories;
- Hospitals;
- Regulatory authorities.

Graduates in Molecular Biotechnologies can be registered in the professional register of biologists.

## MOLECULAR BIOTECHNOLOGY (LM9) Study Plan A.Y. 2018/19

\*Type of activity

C (B) = Characterizing - Basic disciplines applied to biotechnologies;  
C (BC) = (30 credits minimum) Characterizing - biotechnological disciplines; C (ML) = Characterizing - Laboratory medicine and diagnostics; C (F) = Characterizing Pharmaceutical disciplines; AI = Similar and integrative.

\*\*Elective courses

Laboratory of Molecular Biology, 4 CFU  
Cellular and Molecular Neurobiology and Neuropathology, 4 CFU.  
Courses from the Study Plan of the Master Course in Medicine and Surgery, "Università della Campania Luigi Vanvitelli", may be chosen as elective courses.

### First Year (56 CFU) - First semester

Courses	SDS	Credits	Type of activity*
<b>Scientific English</b>	LIN/12	5	
<hr/>			
<b>Cellular and Clinical Biochemistry</b>		12	
Cellular Biochemistry	BIO/10	6	C (BC)
Clinical Biochemistry	BIO/12	6	C (ML)
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<b>Industrial Biochemistry and Biotechnological Processes</b>		9	
Industrial biochemistry and biotechnology	BIO/10	6	C (BC)
Biotechnological industrial processes	ING-IND/25	3	AI
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<b>Molecular Microbiology</b>	BIO/19	6	C (BC)

### Second semester

Courses	SDS	Credits	Type of activity
<b>Structural analysis of Biomolecules</b>		10	
Biomolecular structure determination by NMR and X-RAY	CHIM/03	8	C (B)
Interaction and stability of macromolecules	CHIM/02	2	AI
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<b>Molecular bases of Cell Function: methodological aspects and biomedical perspectives</b>	BIO/13	6	AI
Innovative methods and models to study genetic diseases		3	
Analysis of the structures and mechanisms controlling the cell function		3	
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<b>Elective courses**</b>		8	

### Second Year (64 CFU) - First Semester

Courses	SDS	Credits	Type of activity
<b>Human and Medical Genetics</b>		12	
Human Genetics	BIO/18	6	C (BC)
Medical Genetics	MED/03	6	C (ML)
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<b>Molecular Pathology and Immunology</b>	MED/04	8	C (BC)
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<b>Pharmacotherapeutics and Biopharmaceuticals</b>	BIO/14	8	C (F)
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<b>Design and Synthesis of Bioactive Compounds</b>		8	
Design of bioactive compounds	CHIM/08	6	C (F)
Synthesis of bioactive compounds	CHIM/06	2	AI

### Second Semester

Courses	SDS	Credits	Type of activity
<b>Anatomic Pathology</b>	MED/08	6	C (ML)
<hr/>			
<b>Stage</b>		2	
<hr/>			
<b>Master Thesis</b>		20	