



**UNIVERSITÀ
DI SIENA
1240**

General information

Denomination
Master's Degree (I Level): MOLECULAR PATHOLOGY AND PREDICTIVE MEDICINE: FROM DIAGNOSIS TO RESEARCH
Learning objectives
The educational objectives of the Master are to train professionals who work in the field of precision medicine, deepening their scientific and technical knowledge of Molecular Pathology with particular reference to molecular diagnostics in the various fields of human pathology. The learner will acquire skills in the field of precision medicine, a sector in continuous evolution and growth and which requires specialized and professionalizing training courses. The Master will provide updates on the most current and innovative indications and molecular investigation methodologies for the determination of predictive parameters of response to target therapy, both on tissue and/or cytological sample and on liquid biopsy, and on the analysis of omics data, a background necessary for interdisciplinarity in the diagnosis and treatment of the patient.
Credits
60
Hours
1500
Duration in months
12
Deadline for applications
15/12/2025
Start date
January 2026
Data fine
January 2027
Absence percentage

20%
Website
Expected languages Italian, English
Department Department of Medical Biotechnology (DBM)
Teaching Contacts Prof. Cristiana Bellan mail Cristiana.bellan@unisi.it

Support and agreement

Support and agreement No support or convention
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Access qualifications

Class	Description	Type Degree
Class L1	Biotechnology	L
Class L-2	Biotechnology (new system pursuant to Ministerial Decree 270/04)	L
SNT1 class	Nursing health professions and obstetric health professions	L
Class L/SNT1	Health, nursing and obstetric health professions (new system pursuant to Ministerial Decree 270/04)	L
SNT3 class	Technical health professions	L
L/SNT3 Class	Technical health professions (new system pursuant to Ministerial Decree 270/04)	L
Class L12	Sciences	L
Class L-13	Biological Sciences (new system pursuant to Ministerial Decree 270/04)	L
Class L-27	Chemical sciences and technologies (new system pursuant to Ministerial Decree 270/04)	L
Class L-29	Pharmaceutical sciences and technologies (new system pursuant to Ministerial Decree 270/04)	L
Class L-31	Computer science and technology (new system pursuant to Ministerial Decree 270/04)	L

Class LM-6	Biology (new system pursuant to Ministerial Decree 270/04)	LM
Class LM-8	Industrial biotechnology (new system pursuant to Ministerial Decree 270/04)	LM
Class LM-9	Medical, veterinary and pharmaceutical biotechnology (new system pursuant to Ministerial Decree 270/04)	LM
Class LM-18	Computer Science (new system pursuant to Ministerial Decree 270/04)	LM
Class LM-21	Biomedical engineering (new system pursuant to Ministerial Decree 270/04)	LM
Class LM-41	Medicine and Surgery (new system pursuant to Ministerial Decree 270/04)	LM
LM/SNT3 Class	Technical Health Professions Sciences	LM
LM/SNT1 Class	Nursing and Midwifery Sciences	LM
Class LS6	Biology	LS
Class LS9	Medical, Veterinary and Pharmaceutical Biotechnology	LS
Class LS14	Pharmacy & Industrial Pharmacy	LS
LS26 Class	Biomedical Engineering	LS
LS35 Class	Computer engineering	LS
Class LS46	Medicine and surgery	LS
SNT LS3 class	Technical Health Professions Sciences	LS
SNT LS1 class	Nursing and Midwifery Sciences	LS
-	Pharmaceutical biotechnology	V.O.
-	Medical biotechnology	V.O.
-	Pharmacy	V.O.
-	Biomedical Engineering	V.O.
-	Medical Engineering	V.O.
-	Medicine and surgery	V.O.
-	Sciences	V.O.
-	Biology	DU
-	Nurse	DU
-	Medical and scientific sales representatives	DU
-	Biomedical Engineering	DU
-	Computer engineering	DU
-	Biomedical Laboratory Technician	DU
-	Biomedical Laboratory Health Technician	DU
-	Pharmaceutical technologies	DU
Legend of degree classes - L: bachelor's degree - LS: specialist degree - LM: master's degree - O.V. degree under the old system - DU: university diploma		
- Other diplomas referred to in laws no. 42 of 26 February 1999, no. 251 of 10 August 2000 transposed by law no. 1 of 8 January 2002 (only for the health professions of nursing, midwifery, rehabilitation, health technician, prevention techniques and for graduates in social work)		
Action on patient		

No
Mannequin alternative No
Register registration No
Professional qualification No
Specialization No

Application for admission or enrolment

Admission procedures Exhaustion
Minimum number of participants 5
Maximum number of subscribers 20
Notes Documents attached to the application form: CURRICULUM VITAE ET STUDIORUM

Application fees

Total amount in € 3000.00
First instalment amount in € 1500.00
Amount of the second instalment in € 1500.00

Second instalment deadline

Thursday 30 July 2026

Training**Teaching methods**

Distance learning (online lessons in synchronous mode)

Internal venue

DEPARTMENT OF MEDICAL BIOTECHNOLOGY, University of Siena

Area Title: ONCOLOGICAL MOLECULAR PATHOLOGY**Total credits area:** 10**Professors in charge:** Bellan Cristiana - Giordano Antonio - Mari Francesca*Didactic activity:* OUTLINE OF SYSTEMIC PATHOLOGICAL ANATOMY*University credits:* 3*SSD code:* MED/08 (PATHOLOGICAL ANATOMY)*Educational activity:* GENETICS OF TUMORS*University credits:* 1*SSD code:* MED/03 (MEDICAL GENETICS)*Educational activity:* THE CLINICIAN'S POINT OF VIEW*University credits:* 4*SSD code:* MED/06 (MEDICAL ONCOLOGY)*Didactic training activity:* PROGNOSTIC/PREDICTIVE MARKERS OF RESPONSE TO TARGET THERAPY IN ONCOLOGY*University credits:* 2*SSD code:* MED/08 (PATHOLOGICAL ANATOMY)**Title Area:** PHARMACOGENETICS, PHARMACOGENOMICS AND ONCOLOGICAL PHARMACOLOGY AND MOLECULAR BIOLOGY TECHNIQUES APPLIED TO PATHOLOGICAL ANATOMY**Total credits area:** 4**Professors in charge:** Donnini Sandra - Guazzo Raffaella*Educational activity:* PHARMACOGENETICS, PHARMACOGENOMICS AND ONCOLOGICAL PHARMACOLOGY*University credits:* 1*SSD code:* BIO/14 (PHARMACOLOGY)

Educational activity: MOLECULAR BIOLOGY TECHNIQUES APPLIED TO PATHOLOGICAL ANATOMY

University credits: 2

SSD Code: MED/46 (TECHNICAL SCIENCES OF MEDICINE AND LABORATORY)

Educational activity: MOLECULAR TECHNIQUES IN SITU AND ELECTRON MICROSCOPY

University credits: 1

SSD code: MED/46 (TECHNICAL SCIENCES OF MEDICINE AND LABORATORY)

Area Title: LIQUID BIOPSY

CFU total area: 3

Professors in charge: Antonuzzo Lorenzo - Frullanti Elisa - Palmieri Maria

Educational activity: THEORETICAL BASES OF LIQUID BIOPSY

University credits: 1

SSD code: BIO/18 (GENETICS)

Educational activity: BASIC FUNDAMENTALS OF LIQUID BIOPSY AND ITS APPLICATIONS

University credits: 1

SSD code: BIO/18 (GENETICS)

Didactic activities: INDICATIONS FOR LIQUID BIOPSY IN MOLECULAR ONCOLOGICAL DIAGNOSTICS

University credits: 1

SSD code: MED/06 (MEDICAL ONCOLOGY)

Title Area: BIOINFORMATICS AND FUNCTIONAL PROCESSING OF OMICS DATA

Total ECTS area: 3

Professors in charge: Bianchi Laura - Bini Luca

Didactic activity: DATA ANALYSIS FROM OMICS SCIENCES (TRANSCRIPTOMICS - PROTEOMICS)CFU : 1

SSD CODE: BIO/10 (BIOCHEMISTRY)

Educational activity: BASIC FOUNDATIONS OF BIOINFORMATICS

University credits: 1

SSD Code: SECS-S/01 (STATISTICS)

Teaching activity: OMICS SCIENCES

University credits: 1

SSD Code: BIO/10 (BIOCHEMISTRY)

Area Title: ADVANCED BIOTECHNOLOGY APPLICATION TO DIAGNOSTICS AND RESEARCH

Total credits area: 4

Professors in charge: Barbarino Marcella - Cortellino Salvatore - Giordano Antonio - Graziano Antonio

Educational activity: BIOTECHNOLOGY APPLIED TO RESEARCH 1

CFU: 1

SSD code: MED/08 (PATHOLOGICAL ANATOMY)

Educational activity: BIOTECHNOLOGY APPLIED TO RESEARCH 2

CFU: 1

SSD code: BIO/11 (MOLECULAR BIOLOGY)

Educational activity: EXPERIMENTAL PATHOLOGY AND TUMOR MICROENVIRONMENT

University credits: 1

SSD Code: MED/04 (GENERAL PATHOLOGY)

Educational activity: BIOCHEMICAL AND CELLULAR TECHNOLOGIES

University credits: 1

SSD Code: BIO/11 (MOLECULAR BIOLOGY)

Choice of internship/traineeship

INTERNSHIP

Internship/traineeship procedures

Master's students will be engaged in understanding the meaning and application of the principles and techniques of analysis used in molecular biology laboratories applied to histopathological diagnostics and applied research. Students will have the opportunity to deal with the latest techniques for the determination of prognostic and predictive parameters of response to target therapy already in use in routine practice (Real Time, NGS, Nanostring) and with the molecular techniques applied in biomedical research.

Carrying out structures

the internship will take place at the Laboratories of the Department of Medical Biotechnology of the University of Siena and at other locations that will be identified later. There is the possibility of recognition of the internship in locations other than Siena, with which special agreements will be stipulated based on the needs of the candidates and with the opinion of the Director of the Master. The internship activities will be defined by a special program by the Academic Board

Credits awarded internship/traineeship

26

Internship/Internship Hours

650

Internship/traineeship end date

December 2026

Teachers in charge of internships/internships:

Bellan Cristiana - Giordano Antonio

Intermediate verification tests (Modalities)

intermediate tests will be carried out through a written test with 10 multiple-choice questions. The intermediate tests do not involve the acquisition of University Educational Credits (CFU) as they constitute an element of evaluation by the Examining Committee according to the final exam.

Assessment methods

Thesis or final paper, Interview aimed at verifying the knowledge acquired

Credits awarded to the final exam

10

Collegial bodies
Teaching Board

Body composed of all area managers

Board of Directors

Yes