



**UNIVERSITÀ
DI SIENA
1240**

General Information

Title
Postgraduate Master's Programme (Second-level): DRUG DESIGN AND SYNTHESIS
Educational Objectives
The Postgraduate Master's Programme in Drug Design and Synthesis (MDDS) at the University of Siena is a European-level programme that trains specialists in Drug Discovery and Biotechnology for the pharmaceutical industry. The curriculum integrates medicinal chemistry, synthesis, analysis, quality control, computational techniques and sustainable strategies. Classes are taught by academic experts and industry professionals from across Europe, with a focus on key topics in modern Drug Discovery. A strong industrial component ensures practical, career-oriented training. Students complete their education through a research internship at a partner company, university or research institution, gaining hands-on experience with real-world projects. The programme equips graduates with the skills required to enter the pharmaceutical and biotechnology sectors, contributing to innovation and sustainability in drug development.
Credits (CFU/ECTS)
60
Total Hours
1500
Programme Duration (months)
12
Application/Enrolment Deadline
1 March 2027
Start Date
April 2027
End Date
April 2028
Maximum Percentage of Permitted Absences
20%

Website
https://www.mdds.unisi.it/
Language of Instruction
Italian, English
Department
Department of Biotechnology, Chemistry and Pharmacy (Dipartimento di Biotecnologie, Chimica e Farmacia - DBCF)
Teaching Contact
Prof.ssa Elena Petricci - e-mail elena.petricci@unisi.it

Agreements and Partnerships

Agreements or Partnerships
No agreements or partnerships

Admission Requirements

Class	Description	Degree Type
LM-6	Biology (new university system pursuant to d.m. No. 270/2004)	LM
LM-7	Agricultural Biotechnology (new university system pursuant to d.m. No. 270/2004)	LM
LM-8	Industrial Biotechnology (new university system pursuant to d.m. No. 270/2004)	LM
LM-9	Medical, Veterinary and Pharmaceutical Biotechnology (new university system pursuant to d.m. No. 270/2004)	LM
LM-13	Pharmacy and Industrial Pharmacy (new university system pursuant to d.m. No. 270/2004)	LM
LM-21	Biomedical Engineering (new university system pursuant to d.m. No. 270/2004)	LM
LM-22	Chemical Engineering (new university system pursuant to d.m. No. 270/2004)	LM
LM-54	Chemical Sciences (new university system pursuant to d.m. No. 270/2004)	LM
LM-71	Industrial Chemistry Science and Technology (new university system pursuant to d.m. No. 270/2004)	LM
LS14	Pharmacy and Industrial Pharmacy	LS
LS26	Biomedical Engineering	LS

LS27	Chemical Engineering	LS
LS62	Chemical Sciences	LS
LS81	Industrial Chemistry Science and Technology	LS
-	Biotechnology	V.O.
-	Agro-industrial Biotechnology	V.O.
-	Pharmaceutical Biotechnology	V.O.
-	Industrial Biotechnology	V.O.
-	Chemistry	V.O.
-	Pharmaceutical Chemistry and Technology	V.O.
-	Industrial Chemistry	V.O.
-	Pharmacy	V.O.
-	Biomedical Engineering	V.O.
-	Chemical Engineering	V.O.
-	Materials Science	V.O.
-	Biological Sciences	V.O.
Degree class abbreviations - L: Bachelor's Degree; LS: Specialist Degree; LM: Master's Degree; V.O.: Pre-reform Degree; DU: University Diploma		
The qualifications listed above refer to the Italian higher education system. Applicants holding an academic qualification obtained abroad may apply provided that it is deemed comparable, solely for admission purposes, in terms of level, nature, content and academic rights, to the Italian qualification required for admission to the Course.		
Applicants who have not yet obtained the qualification required for admission may be admitted conditionally. Admission shall be confirmed upon attainment of the required qualification and, in any event, no later than the date of the admission tests or the assessment of applicants' curricula.		

Application for Admission or Enrolment

Admission/Enrolment Procedure
Admission
Documents to be attached
Curriculum vitae et studiorum
Abstract of the degree thesis
Any publications
Any other qualifications

Selection Procedure	
Curriculum Vitae Assessment	Wednesday, 17 March 2027
Assessment of Supporting Documents	
Qualification Category	Score out of 30
Academic qualification	18
Specialisation diplomas or certificates and professional qualifications	5
Additional qualifications	7
Minimum Number of Enrolments	
5	
Maximum Number of Places Available	
20	

Enrolment Fees

Total Amount (€)
3500
First Instalment (€)
2500
Second Instalment (€)
1000
Second Instalment Deadline
Tuesday, 8 June 2027

Programme Structure

Mode of Delivery
Blended (teaching activities are delivered partly in person and partly online under the guidance of the lecturer)
Venue
Department of Biotechnology, Chemistry and Pharmacy

Subject Area: NEW SUSTAINABLE METHODOLOGIES FOR API PRODUCTION

Total Subject Area Credits: 6

Subject Area Coordinators: Petricci Elena

Learning Activity: BIOCATALITIC PROCESS FOR API PRODUCTION

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/08 - MEDICINAL CHEMISTRY

Learning Activity: GREEN METHODOLOGIES FOR THE SYNTHESIS OF PHARMACEUTICALLY ACTIVE COMPOUNDS LAB

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/06 - ORGANIC CHEMISTRY

Learning Activity: GREEN METHODOLOGIES FOR THE SYNTHESIS OF PHARMACEUTICALLY ACTIVE COMPOUNDS

Credits (CFU/ECTS): 2

Italian Scientific-Disciplinary Sector - SSD: CHIM/06 - ORGANIC CHEMISTRY

Learning Activity: SUSTAINABLE APPROACHES TO THE DEVELOPMENT OF NEW ANTIBODY-DRUG CONJUGATES

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/06 - ORGANIC CHEMISTRY

Learning Activity: SELECTIVITY AND EFFICIENCY OF ORGANOMETALLIC PROCESSES AND THEIR APPLICATION TO THE SYNTHESIS OF COMPLEX MOLECULES

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/06 - ORGANIC CHEMISTRY

Subject Area: NEW TRENDS IN MEDICINAL CHEMISTRY

Total Subject Area Credits: 6

Subject Area Coordinators: Cini Elena

Learning Activity: CHEMODIVERSITY OF SECONDARY METABOLITES

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/08 - MEDICINAL CHEMISTRY

Learning Activity: IMPORTANT FACTORS IN CNS AND PERIPHERAL DRUG DISCOVERY PROJECTS

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/08 - MEDICINAL CHEMISTRY

Learning Activity: NEW FRONTIERS: NUTRACEUTIC, METABOLONIC AND PROTEOMIC

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/08 - MEDICINAL CHEMISTRY

Learning Activity: MAJOR CLASSES OF ANTIBACTERIAL DRUGS

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: MED/07 - MICROBIOLOGY AND CLINICAL

Learning Activity: STEREOSELECTIVE O-GLYCOSYLATION REACTIONS

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/06 - ORGANIC CHEMISTRY

Learning Activity: DEVELOPMENT OF A VACCINE

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: BIO/14 - PHARMACOLOGY

Subject Area: ANALYTICAL ISSUES IN MEDICINAL CHEMISTRY

Total Subject Area Credits: 5

Subject Area Coordinators: Maramai Samuele

Learning Activity: QUALITY CONTROL IN PHARMA AND BIOTECHNOLOGICAL SECTORS

Credits (CFU/ECTS): 2

Italian Scientific-Disciplinary Sector - SSD: CHIM/08 - MEDICINAL CHEMISTRY

Learning Activity: PROCESS VALIDATION

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/01 - ANALYTICAL CHEMISTRY

Learning Activity: ANALYTICAL TECHNIQUES IN MEDICINAL CHEMISTRY

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/01 - ANALYTICAL CHEMISTRY

Learning Activity: RISK ASSESSMENT OF HAZARDOUS SUBSTANCES AND MIXTURES

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/09 - PHARMACEUTICAL TECHNOLOGY AND APPLIED CHEMISTRY

Subject Area: DRUG DESIGN AND OPTIMIZATION

Total Subject Area Credits: 5

Subject Area Coordinators: Docquier Jean Denis

Learning Activity: IN SILICO APPROACHES TO VACCINES DEVELOPMENT

Credits (CFU/ECTS): 1

Italian Scientific-Disciplinary Sector - SSD: CHIM/09 - PHARMACEUTICAL TECHNOLOGY AND APPLIED CHEMISTRY

Learning Activity: IN SILICO SCREENING

Credits (CFU/ECTS): 2

Italian Scientific-Disciplinary Sector - SSD: CHIM/08 - MEDICINAL CHEMISTRY

<i>Learning Activity:</i> LIGAND- AND STRUCTURE-BASED DESIGN <i>Credits (CFU/ECTS):</i> 1 <i>Italian Scientific-Disciplinary Sector - SSD:</i> CHIM/08 - MEDICINAL CHEMISTRY
<i>Learning Activity:</i> MAIN ISSUES AND NEW APPROACHES FOR ADME PREDICTION <i>Credits (CFU/ECTS):</i> 1 <i>Italian Scientific-Disciplinary Sector - SSD:</i> CHIM/09 - PHARMACEUTICAL TECHNOLOGY AND APPLIED CHEMISTRY
Subject Area: MANAGMENT AND REGULATORY ISSUES Total Subject Area Credits: 3 Subject Area Coordinators: Dimitri Nicola
<i>Learning Activity:</i> SOME ECONOMICS OF PHARMACEUTICALS <i>Credits (CFU/ECTS):</i> 1 <i>Italian Scientific-Disciplinary Sector - SSD:</i> SECS-P/01 - ECONOMICS
<i>Learning Activity:</i> MANAGEMENT AND COMMUNICATION SKILLS <i>Credits (CFU/ECTS):</i> 1 <i>Italian Scientific-Disciplinary Sector - SSD:</i> M-PSI/06 – WORK AND ORGANISATIONAL PSYCHOLOGY
<i>Learning Activity:</i> INTELLECTUAL PROPERTIES <i>Credits (CFU/ECTS):</i> 1 <i>Italian Scientific-Disciplinary Sector - SSD:</i> CHIM/08 - MEDICINAL CHEMISTRY
Internship/Placement Internship
Internship/Placement Activities An internship of at least 625 hours is required on a topic consistent with the teaching modules into which the Master's Programme is divided. The internship may be completed during a different period agreed with the host company.
Internship/Placement Venue The internship may be carried out at university departments, research centres and/or partner companies.
Credits Awarded for the Internship/Placement 25
Internship/Placement Hours 625
Internship/Placement Completion Date April 2028

Internship/Placement Supervisors:

Cini Elena - Maramai Samuele - Petricci Elena

Intermediate Assessment Methods

The following intermediate assessments are included in the Master's Programme: multiple-choice tests; group work involving presentations of the projects developed. Completion of the intermediate assessments does not lead to the award of University Credits (CFU/ECTS), as they constitute an element of assessment by the Examination Committee for the final assessment.

Final Assessment Method

Dissertation or final project; written examination aimed at assessing the knowledge acquired

Credits Awarded for the Final Assessment

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Governing Bodies

Teaching Board

Body composed of all Area Coordinators

Executive Board

No