



UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2025/26
MASTER DEGREE
SUSTAINABLE INDUSTRIAL CHEMISTRY (Classe LM-71 R)
Enrolled in the academic year 2025-2026

HEADING

Degree classification - Denomination and code:	LM-71 R
Degree title:	Dottore Magistrale
Length of course:	2 years
Credits required for admission:	180
Total number of credits required to complete programme:	120
Years of course currently available:	1st
Access procedures:	Open, subject to entry requirements
Course code:	FBD

PERSONS/ROLES

Degree Course website

<https://industrialchemistry.cdl.unimi.it/en>

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<https://www.unimi.it/en/international/coming-abroad/international-students-office-welcome-desk>

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CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The Master's Degree program in Sustainable Industrial Chemistry, entirely taught in English, is designed to train high-quality human capital, capable to take on the challenges of the global economy, favouring access of graduates in Industrial Chemistry to the world labour market. The key role given to English in this learning program is justified by the fact that English has long since represented a global communication tool in economy and society, which will contribute to the achievement of the prefixed quality objectives.

The Master's Degree Course in Sustainable Industrial Chemistry aims at preparing chemists with a good knowledge of theory and practical aspects of the industrial production in different areas of chemistry, specifically concerning the product-process relationship, as well as of economics and management. The students could also learn to work independently and to take full responsibility of projects and structures.

The Master's Degree program in Sustainable Industrial Chemistry complies with the European standards of reference for Sciences and Technologies of Industrial Chemistry and provides technical skills in the disciplines of chemistry and industrial chemistry and in their applications.

In particular, the educational program of the master's degree course is designed to provide:

- skills related to self-directed and independent work, enabling to hold positions of full responsibility in the implementation of industrial and research projects and structures;
- knowledge and understanding to undertake professional careers in the area of industrial chemistry, by independently managing diversified activities, such as the characterization of new products and materials, the experimentation of new technologies, and the activities related to the development and pilot phase in view of the industrial production;
- the ability to interact during the decision-making process with different corporate functions (engineering, marketing etc.) involved in the process of research, development and marketing of active principles, especially those characterized by high added value;
- the competencies required to work in the creative process and in the managerial and operational phases of research in chemistry and industrial chemistry either in public or private laboratories (either European or extra-European), research centres, research and development organizations; to participate in the theoretical and practical development of new chemical technologies and to meet requirements of research and development, quality control within specific legal frameworks or production processes in industries and public institutions;
- written and oral communication skills in English, to enable students to communicate independently and fluently with foreign partners.

Euromaster®.

The Master's Degree Course in Sustainable Industrial Chemistry of the Università degli Studi di Milano has been among the first ones in Italy to gain the EuroMaster Label. The EuroMaster Label is assigned by a special jury purposely appointed by the European Thematic Association (<https://ectn.eu/>), gathering European universities and chemical societies. The EuroMaster Label certifies the educational qualification provided by the Master Degree Course as a master degree recognized by the European Universities and gives the right to access the post-graduate courses of chemistry at the European level.

Expected learning outcomes

Graduates in Sustainable Industrial Chemistry have the skills and knowledge to undertake highly qualified professional activities in business management and in the operation of research laboratories in the field of chemistry, industrial and pharmaceutical chemistry and possess the knowledge to develop industrial chemical processes from the laboratory scale to the pilot plant. Their competences in corporate management are characterized by high knowledge of science and technologies of chemistry and industrial chemistry. They are able to organize the research work, to define the development lines and their plans, to ensure integration of the different research sectors, to guarantee the scientific upgrade as well as to verify the results obtained and to promote their development and application and will have the ability to adapt to the continuous evolution of the chemical disciplines and to interact with professional having similar background.

In the field of knowledge and understanding they are able to solve problems in scientific disciplines and in particular in the field of industrial chemistry, demonstrating familiarity with the scientific approach typical of the professions of research, development, production, quality control and regulatory activities. For the application of knowledge and understanding the graduate students can apply their interdisciplinary and multidisciplinary skills and advanced abilities to professional issues directly and indirectly related to the industrial chemical sector, demonstrating the mastery and innovation necessary to solve complex and unpredictable problems in their specialized field of work or study. Autonomy of judgment and the ability to plan and conduct scientific experiments are acquired in the experimental laboratory activities, in the seminars organized

during the academic year, and in particular in the experimental training internship activity for the thesis. Moreover, the communication skills acquired provide the graduates to interact with other people, conduct and direct disciplinary and interdisciplinary research activities in collaboration with foreign partners, through the use of the English language, coordinate work groups, communicate ideas, problems, solutions and results of their research, acquire and disseminate scientific information through the use of databases and online data banks. Finally, also learning skills are developed with the aim of encouraging the development of students' potential for autonomous reflection and independent study, as well as the acquisition of methodological and theoretical abilities and skills that allow to easily enter in the world of work or to continue with studies in the context of Doctoral or Specialization Schools.

Professional profile and employment opportunities

Typically, the graduates in Sustainable Industrial Chemistry are characterized by the following professional profiles:

INDUSTRIAL CHEMIST

function in a work context:

the industrial chemist designs and develops new products and materials, mainly in the industrial field, and defines the production and control criteria. He/she defines the strategies and procedures for the synthesis, transformation and purification of chemical compounds, the techniques for chemical and physical analysis, the scientific method of investigation and data management. He/she can carry out activities of promotion and development of scientific and technological innovation, as well as management and design of technologies, and exercise functions of high responsibility in the sectors of industry, environment, health, cultural heritage and public administration and also in all sectors of "green" chemistry for the protection of the environment and to promote the energy transition.

skills associated with the function:

the industrial chemist has a specialized knowledge of chemistry, industrial chemistry and chemical plant engineering, of the sectors of synthesis of new products and new materials and their scale-up. In addition, he/she has a notable competence in the chemical analytical methods, in information technologies and knows English language.

career opportunities:

the industrial chemist can access public and private research institutions, public administrations, professional companies and national or international consultancy firms, companies, industries and research laboratories. He/she can find employment in the basic chemical industry, fine chemical industry, in research and development laboratories and in general in work environments that require in-depth knowledge in the sectors of industrial chemistry and chemical plant engineering requiring high qualification. In the public sector, industrial chemists can work in technical and ecological offices of local authorities, in provincial hygiene and prophylaxis laboratories and/or in accident prevention services. The freelance profession is generally carried out as a consultant for design, plant management, authorization practices in the environmental field and risk analysis as well as with assignments by the courts to carry out technical and legal assessments relating to damage to plants or ecological issues. Furthermore, the graduate in Sustainable Industrial Chemistry can continue his or her studies in PhD courses or Specialization Schools in the scientific field.

HEAD/DIRECTOR of the RESEARCH and DEVELOPMENT LABORATORY

function in a work context:

the Head/Director of the Research and Development laboratory directs the research activities for the creation and development of new industrial products and the improvement of the related processes, in line with the company strategies; manages the research and production sectors and gives the indications for a constant updating of the development of the technological assets of the company; assigns the necessary technical resources to the various projects, proposing investments in research and formulating the related budgets. He also provides for the testing and control of the chemical production plants, ensuring their safety, verifying that products, processes and formulations comply with current regulations and safety standards.

skills associated with the function:

this professional figure must possess, in addition to a deep knowledge of industrial chemistry, plant engineering and management, a specialized knowledge of the problems related to chemical synthesis and scale-up, as well as the regulations regarding safety and related legislation. He/she is able to set up research plans and the execution of the necessary tests and experiments, choosing methods, means and times; he/she is competent in the problems related to the implementation of research projects with regard to times and costs and knows how to process, interpret and evaluate the experimental results obtained. The positions of manager and director of a research and development laboratory also require management skills, autonomy and assumption of responsibility together with good competence in the use of current information technologies and English language.

career opportunities:

this professional figure can find employment in work environments that require high qualifications such as research and development laboratories of private chemical, chemical-pharmaceutical, petrochemical, cosmetic, food, plastic, formulation, dye, detergent, glue or environmental companies.

CHEMICAL PLANT DIRECTOR/OPERATOR

function in a work context:

the Chemical Plant Operator is the professional figure who, within a chemical industry, ensures, directly and through the service structures, the management of the production plants, the level of efficiency and the availability of the plants necessary to allow the achievement of the objectives in terms of production volume, production cost, quality level, work safety and environmental protection. In particular: he/she manages the progress of the processing phases, from preparation to dosing; he/she controls the different phases of the product being processed; he/she takes care of the loading and unloading of

raw materials and finished products; he/she diagnoses faults and anomalies in the operation of the plants and also takes care of the waste treatment and elimination processes according to current legislation.

skills associated with the function:

this professional figure must have specialized knowledge of industrial chemistry, plant engineering and problems related to products, raw materials and processes. He/she knows the problems and methods related to quality control, has a good knowledge of the safety standards and procedures for the management of plants, including automated ones. The position of plant manager also requires management, relational, autonomy and responsibility skills together with good competence in the use of current information technologies and English Language.

career opportunities:

the Director/operator of chemical plants finds employment in work environments that require high qualifications in production plants of private chemical, chemical-pharmaceutical, petrochemical, cosmetic, food, plastic materials, formulations, colorants, detergents, and building additives companies.

PRODUCTION MANAGER

function in a work context:

the Production Manager follows the operation of the plants in compliance with safety and the environment, according to the production plan and in function of the market needs and takes care of everything that is necessary for their safety. He/she collaborates in the study of solutions for the continuous improvement of the reliability and energy efficiency of the plants. Furthermore, he guarantees the supplies to the customers in terms of quality, compliance with the specifications and safety.

skills associated with the function:

this professional figure must have knowledge of industrial chemistry and problems related to the procedures and techniques of producing goods and services (chemical products, raw materials, processes). He/she must also be an expert in quality control and have good knowledge of safety and environmental sustainability standards and procedures, to be applied within the production departments. Plant management skills are also required, as well as skills that allow to interact effectively with others. Finally, the professional figure requires good competence in the use of current information technologies and the English language.

career opportunities:

the Production Manager can find employment in work environments that require high qualifications in private chemical, chemical-pharmaceutical, petrochemical, cosmetic, food, plastic, formulation, dye, detergent and building materials companies.

SCIENCE INFORMER AND COMMUNICATOR

function in a work context:

this graduate increases scientific knowledge in the chemistry field, uses and transfers this knowledge in industry, medicine, pharmacology and other production sectors. He/she spreads to operators in the industrial field the characteristics and properties of his company's products. The function of the scientific informer and communicator is to propose the adoption of specific products, develop the scientific information activity at the interested companies to ensure their correct use.

skills associated with the function:

the skills needed by the scientific information representative in carrying out his/her work are not only scientific knowledge, but also commercial skills. In particular, he/she must have good basic knowledge of chemistry, knowledge of pharmaceutical, cosmetic, food products and their correct use. Knowledge of technical English language and computer science, the ability to communicate complete this professional profile.

career opportunities:

the scientific information representative works for cosmetic, pharmaceutical, food, plastic, dye, detergent, glue or environmental companies, or in general for all companies in the chemical sector and/or for specialist magazines.

The Master's Degree in Sustainable Industrial Chemistry constitutes a preferential title to access the PhD programmes in the area of industrial chemistry. For the graduate of this class, enrolment in the National Federation of the Order of Chemists and Physicists is possible, after passing the State Exam.

Initial knowledge required

Requirements and knowledge required for access

The curricular prerequisites to access the Master's Degree Course in Industrial Chemistry are those peculiar of the L-27 class of degree courses, and in particular:

- at least 20 credits in disciplines of mathematics (from MAT/01 to MAT/09), physics (from FIS/01 to FIS/08) and information technology (INF/01; ING-INF/05);
- at least 70 CFU in discipline groups belonging to the distinguishing areas included in the L-27 Class Table (Analytical and Environmental chemistry - CHIM/01 and CHIM/12; Inorganic and Physical chemistry - CHIM/03 and CHIM/02; Industrial chemistry and engineering - CHIM/04, CHIM/05, ING-IND/21-22, ING-IND/25; Organic chemistry and Biochemistry CHIM/06- BIO/10-12).

Moreover, also a minimum English language proficiency at minimum level B2 within the Common European Framework of Reference for Languages (CEFR) is required.

The above disciplinary credits are fully recognized to graduates of the undergraduate programs of Class L-27 of the Università degli Studi di Milano. All other students must demonstrate to have the curricular requirements of the graduates of the class L-27. Different curricular profiles will be evaluated by the Admission Commission.

Methods for verifying knowledge and personal preparation

Before the enrolment knowledge assessment, students must submit an application for admission, through an online procedure, during the period and according to the methods indicated on the website <https://industrialchemistry.cdl.unimi.it/en/enrolment> where it is also possible to find all the updated information on the admission and subsequent enrolment procedures. Graduates who intend to graduate by December 31, 2026 may also submit an application for admission.

The verification of knowledge and personal preparation will be verified through an interview with the Admission Commission, composed by teachers appointed by the Teaching Council, who will ascertain student personal skills on topics related to fundamental aspects of core chemistry disciplines of the degree in Industrial Chemistry. The failure of the interview prevents the access to the MSc in Sustainable Industrial Chemistry for the current year.

The interview is scheduled in June, July, September and December and can be carried out before graduation, subject to the possession of the curricular requirements indicated above.

For non-EU students, who may have visa and/or residence permit problems, an interview will also be scheduled in May. Furthermore, it will be possible for them to schedule the interview remotely using a videoconferencing platform. It is recommended to all foreign students to take advantage of this early-bird possibility to avoid problems in obtaining all the documentation useful for the enrolment.

FOR A BETTER TEACHING PLANNING ALL CANDIDATES, INCLUDING THOSE EXPECTING to graduate before December 31st, 2025, ARE STRONGLY SUGGESTED TO APPLY FOR the INTERVIEW in July or September.

MOREOVER, proficiency in English at a B2 level or higher, under to the Common European Framework of Reference for Languages (CEFR), is required for admission.

The B2-level requirement will be ascertained by the University Language Centre (SLAM) upon admission as follows:

- by a language certification at or above B2, obtained no more than 3 years earlier. For the list of language certifications recognized by the University please review: <https://www.unimi.it/en/study/language-proficiency/placement-tests-and-english-courses/english-entry-tests>. The certification must be uploaded when submitting the online application;
- by the English level achieved during a Bachelor's degree programme through SLAM courses and tests. The certificates must be less than four years old, and will be assessed administratively, without the applicant having to attach any certificates;
- by the entrance test, which will be delivered by the SLAM. More information are given on the SLAM website.

All those who fail to submit a valid certificate or do not meet the required proficiency level will be invited to take the test through the admission procedure.

Candidates who do not sit or pass the entrance test will have until 31 December 2025 to obtain and submit one of the recognized certifications to the SLAM. Students who do not meet the requirement by 31 December will not be admitted to the Master's degree programme and cannot sit further tests.

For further information, please visit the SLAM website: <https://www.unimi.it/en/study/language-proficiency/placement-tests-entry-tests-and-english-courses>

Finally, graduates who have successfully passed the verification interview will be able to ENROL after 5 working days from the date of the verification, within the terms indicated on the website <https://www.unimi.it/en/study/bachelor-and-master-study/degree-programme-enrolment/enrolment-masters-programme/open-admission-master-programmes>

Compulsory attendance

Attendance to laboratory activities is mandatory, in all other cases it is strongly recommended.

Internship criteria

Laboratory stage and Research Thesis Laboratory characteristics

In the second year of the course, an experimental internship (15 CFU) is expected, followed by a thesis laboratory (24 CFU), preparatory to the preparation of the degree thesis, which consists of a written dissertation on original industrial chemistry research carried out by the student, under the guidance of a Supervisor and, if necessary, a Co-Supervisor and carried out in the research laboratory specified in the application for admission. The duration of the experimental internship and the thesis laboratory is at least one calendar year, including attendance of the courses scheduled in the same year.

The Master Thesis could be:

- Internal Experimental Thesis
- External Experimental Thesis

The Internal Experimental Thesis are carried out at the Department of Chemistry of the Università degli Studi di Milano or in other Departments belonging to the Faculty of Sciences and Technology. As part of these internal thesis, in agreement with the thesis supervisor, it will be possible to carry out internships at public or private entities or companies, under the guidance of an external supervisor. The duration of the internship may correspond to a maximum of 20 CFU, even in non-continuous periods. These internship periods must in any case be approved by the Teaching Council of the Chemistry Department.

The External Experimental Thesis are carried out at other university structures, at other public Institutions or at highly qualified public and private (non-profit) research centres, with adequate facilities and personnel capable of adequately

supporting the research. The possibility of an external Thesis is evaluated, case by case, by the Teaching Council of the Department of Chemistry.

To apply for an External Thesis the following documents must be provided:

- justification of the application to an external experimental thesis (one printed page) signed by the student and undersigned by the Supervisor (an Official Supervisor, according to the rules further below);
- detailed research plan (one printed page);
- a declaration of the referent person of the hosting structure about the availability to host at no-cost the student and to guarantee the use, free-of-charge, of any facility and instrumentation.

The applications must be submitted well in advance, to obtain the approval of the Teaching Council. Please consult in advance the Thesis Commission and the Rules you can find on the Course website.

Students on internships at external organizations or companies and students in external experimental thesis are required to report on a fortnightly basis, to the supervisor and to another competent teacher, appointed by the Thesis and Internship Commission after consulting the supervisor, on the experience and activities conducted outside the Department.

The Master Thesis Supervisor (Relatore) is responsible to the Teaching Council for the scientific research activity assigned to the student and for its correct execution. The Professors and Researchers in chemistry, afferent to the Teaching Council or to the Department of Chemistry or other Departments of the Faculty of Science and Technology, are eligible as Supervisors. The Supervisor can be assisted by a maximum of two co-tutors.

In addition to all the Professors and Researchers, the following people are eligible as co-tutors of Master Thesis:

- Professors and Researchers of other Universities and Polytechnic Schools, in Italy and abroad;
- persons with the Master Degree, with a recognized activity as experts;
- the employees of Università degli Studi di Milano, enrolled as non-teaching personnel at D level or higher and having a recognized activity as experts;
- the National Research Council (CNR) Researchers working within the Department of Chemistry;
- the experts selected by the hosting institutions as referents for External Thesis.

For any other case, the Teaching Board will consider the scie

Degree programme final exams

To be admitted to the final exam, the student must have passed all the exams required by the study plan.

The final exam consists in the discussion of the degree thesis in front of a specific Commission of the Teaching Council. The thesis must be of a theoretical and/or experimental nature making an original contribution to scientific knowledge in the industrial chemistry field. The Degree Thesis has to be written in English. The preparation of a summary in English (maximum 5 typed pages) is also required, to be delivered according to the timing indicated on the website:

<https://industrialchemistry.cdl.unimi.it/en/study/graduating>

SESSIONS FOR FINAL DEGREE EXAMS

July 2026

October 2026

December 2026

February 2026

April 2027

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

Students enrolled in the Sustainable Industrial Chemistry course are encouraged to apply to the Erasmus + actions, where various positions are available in 20 European universities. They can earn their credits by following courses and/or by

performing part of their experimental thesis abroad. Before leaving, students must submit a Learning Agreement to be approved by the Teaching Board: this approval is mandatory for the acquisitions of the credits.

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

1st COURSE YEAR Core/compulsory courses/activities common		
Learning activity	Ects	Sector
Advanced Industrial Chemistry with Laboratory	9	CHIM/04
Chemical Processes and Industrial Plants	6	CHIM/04
Economics and management	6	SECS-P/08
	Total compulsory credits	21
Elective courses		
TABLE 1 - ELECTIVE 9 CFU COURSES		
Student must earn 9 credits by selecting 1 of the following courses		
Advanced functional materials for industrial applications with lab	9	CHIM/03
Applied Organic Chemistry with Laboratory	9	CHIM/06
Chemical technologies for the energy transition with Laboratory	9	CHIM/02
TABLE 2 – ELECTIVE 6 CFU COURSES A		
Student must earn 6 credits by selecting 1 of the following courses		
Advanced Methods in Organic Synthesis (borrowed from LM in Chemical Sciences - Class LM-54)	6	CHIM/06
Analytics for Chemical Industry	6	CHIM/01
Catalytic Methodologies in Organic Synthesis (borrowed from LM in Chemical Sciences - Class LM-54)	6	CHIM/06
Concepts and Methods in Organic Synthesis	6	CHIM/06
Environmental control and sustainability management	6	CHIM/01
Environmental electrochemistry	6	CHIM/02
Formulation science and technology	6	CHIM/02
Heterogeneous catalysis	6	CHIM/02
Machine learning for chemical sciences and industry	6	CHIM/02
Metal Science and Corrosion	6	CHIM/02
Nanotechnology for advanced materials	6	CHIM/03
Polymorphism and crystal forms in industry (alternated activation; NOT activated in 2025/2026)	6	CHIM/03
Recovery and recycling of critical materials and chemical for waste management	6	CHIM/03

Sustainable synthetic methodologies in homogeneous catalysis	6	CHIM/03
Synthetic Methods in Biotechnology	6	CHIM/06
Technology-driven organic synthesis (borrowed from LM in Chemical Sciences - Class LM-54)	6	CHIM/06
TABLE 3 – ELECTIVE 6 CFU COURSES B		
Student must earn 12 credits by selecting 2 courses from TABLE 2 or TABLE 3		
Plastics Degradation and its environmental impact (alternated activation; activated in 2025/2026)	6	CHIM/04
Polymer testing and analysis (alternated activation; NOT activated in 2025/2026)	6	CHIM/04
Process Development	6	CHIM/04
Recycle and Life Cycle Assessment (LCA) of products and processes	6	CHIM/04
TABLE 4 – ELECTIVE 6 CFU COURSES C		
Student must earn 6 credits by selecting 1 course from TABLE 4		
Chemistry digitalization for industry 4.0	6	ING-IND/25
Design and Optimization of Chemical Plants	6	ING-IND/25
Fermentation biotechnology (borrowed from MD in Biotechnology for the bioeconomy - Class LM-7)	6	CHIM/11
Industrial Processes and Scale-up	6	ING-IND/25
Medicinal Chemistry (borrowed from LM in Chemical Sciences - Class LM-54)	6	CHIM/08
Patents and Management of Innovation (borrowed from LM in Chemical Sciences - Class LM-54)	6	SECS-P/07
TABLE 5		
Student must earn 12 credits by selecting 2 related and integrative courses from TABLE 5		
(Bio)nanotechnology (borrowed from LM in Chemical Sciences - Class LM-54)	6	FIS/03
C language programming (borrowed from LM in Chemical Sciences - Class LM-54)	6	INF/01
Chemical safety	6	IUS/07
Chemometrics (borrowed from LM in Chemical Sciences - Class LM-54)	6	SECS-P/01
Energy economics (borrowed from MD in Environmental and food economics - Classe LM-76)	6	SECS-P/01
Information Technology (borrowed from BD in Communication and Society - Classe L-20)	6	INF/01
Programming for Chemistry (borrowed from LM in Chemical Sciences - Class LM-54)	6	INF/01
Protein biochemistry (borrowed from MD in Molecular biology of the cell - Class LM-6)	6	BIO/10
Protein engineering and molecular enzymology (borrowed from LM in Molecular biotechnology and bioinformatics - Classe LM-8)	6	BIO/10
Technological properties of minerals, cements and ceramics (borrowed from LM in Earth Sciences - Class LM-74)	6	GEO/06, GEO/09
2nd COURSE YEAR (available as of academic year 2026/27) Elective courses		
<p>***** FREE CHOISE ACTIVITIES *****</p> <p>The student must earn 12 credits by choosing freely between all the activated activities offered by the University (even if they are held in Italian), provided their consistency with the educational project, which will be validated by the Educational Plans' Commission. In the case of activities held in Italian language, the exam could be taken in English or Italian, according to student choice.</p> <p>However, the Teaching Council suggests using the courses of the Master Degrees in Sustainable Industrial Chemistry or Scienze Chimiche, consistent with the educational project.</p>		
Further elective courses		
STUDENTS MUST ACQUIRE 3 CREDITS according to the following rules:		
1) students holding an Italian high school diploma or university degree must obtain 3 credits in Chemical regulation and legislation;		
2) students not holding an Italian high school diploma or university degree must obtain 3 credits ALTERNATIVELY in Chemical regulation and legislation or in Additional language skills: Italian.		
Additional Language Skills: Italian (3 ECTS)	3	ND
Chemical regulation and legislation	3	NA
End of course requirements		
Experimental research stage	15	NA
Thesis work and final dissertation	24	NA
	Total compulsory credits	39