

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
SCUOLA POLITECNICA E DELLE SCIENZE DI BASE

DEPARTMENT OF CHEMICAL SCIENCES

Student's Guide

2nd Cycle Master

Industrial Chemistry for Circular and Bio Economy

Degree programme class: LM-71

A quick guide to the programme

The programme at a glance

The Master's Degree in Industrial Chemistry for Circular and Bio Economy (LM-71 class) is a joint degree of Università di Napoli Federico II and Politecnico di Torino. The Master is taught in English. The Educational Objectives of the Master's Degree is to provide an in-depth preparation for the development of new processes and products for the chemical industry in Circular and Bio Economy based perspective. This starts from an operational research phase, at the laboratory level, and moves on to the implementation and management of pilot plants, up to the understanding of the structure and operation of industrial plants. Students will be prepared to operate, respecting ethical constraints, especially in the field of research and development, acquiring the necessary tools to develop, manage and evaluate products, materials, and processes on an industrial scale, always remaining within the limits of sustainable chemistry. The possibility to participate in challenges proposed by the industries of the sector will allow the student to achieve an in-depth expertise to be used on the job market.

The traineeship and the thesis will complete the student's cultural training. The internship and thesis activities will be conducted in close collaboration with companies operating in the sector of Circular and Bio Economy.

Job opportunities

The Master's Degree in Industrial Chemistry for Circular and Bio Economy allow to find employment in technical and managerial roles of high responsibility in the fields of research, innovation, development, production, design, evaluation of products, chemical processes and materials.

The graduates with the Master's Degree can find employment

- in chemical/biotechnological/pharmaceutical industries
- at recycling or waste treatment plants
- in private and public chemical laboratories
- in public administration offices/control bodies.

Moreover, they will be able to carry out activities as professionals after obtaining the Qualification and enrolment in the Register of the Orders of Chemists and Physicists.

In particular:

- a. the graduate in Industrial Chemistry for Circular and Bio Economy who performs the role of Researcher-Technologist for the development of chemical and biotechnological processes of the circular economy and bioeconomy will be able to find employment at: universities, research organizations, industrial R&D laboratories;
- b. the graduate in Industrial Chemistry for Circular and Bio Economy who plays the role of Manager of the management of chemical and biotechnological processes for the Circular Economy and Bioeconomy may be employed at: Chemical, Biotechnological, Pharmaceutical, Recycling, Waste Treatment Plants;
- c. the graduate in Industrial Chemistry for Circular and Bio Economy who plays the role of expert in the evaluation and control of the impacts of chemical and biotechnological processes may be employed by: Public and Private Analysis Laboratories, Plant Design Companies, Public Institutions for the control and management of Environment and Health.

Admission to the programme and prerequisites

Certified English language proficiency at the B2 level is required.

Admission is also permitted if at least 1 of the following curricular requirements is met:

Requirement 1: Candidates who have graduated in Italy in the Class ex D.M. 270/04: L-27 Chemical Sciences and Technologies;

Requirement 2: Candidates with an Italian degree in classes different from those specified in Requisite 1 (for example: ex D.M. 270/04: L-2 Biotechnology or L13- Biological Sciences) but who have acquired the following CFU:

at least 8 CFU in the subject areas: MAT/01 to 09; at least 6 CFU in the subject areas: FIS/01 to 08; at least 15 CFU in the subject areas: CHIM/01 to 07; at least 15 CFU in the subject areas: AGR/16, BIO/10, BIO/11, CHIM/11, ING-IND/25, ING-IND/27.

Requirement 3: candidates with a foreign university degree with a curriculum corresponding, in terms of content, to requirements 1 or 2 indicated above

Verification of personal preparation is mandatory in all cases, and only students who meet the curricular requirements may enter.

Enrolment is limited to a maximum of 30 participants..

Candidates for enrolment in the degree program who meet the admission requirements submit their curriculum to the CCD (Commissione di Coordinamento Didattico, Didactic Coordination Commission) . The CCD, after verification of the requirements, admits the candidates to the personal preparation evaluation and motivation (see the detailed procedure on website: www.scienzechimiche.unina.it/iccbe)

Study plan

Note to the study plan

Since the Course of Study is expected to enrol students with different cultural backgrounds, two alignment paths (Biology or Chemistry) are provided to ensure the achievement of the specific objectives of the training path. The CCD will assign the students to each path based on their curriculum.

The alignment courses of the first semester are provided in a mixed mode (MOOC on Federica Web Learning platform - <https://www.federica.eu/>, online tutoring, laboratory in presence).

Before the starting of the first semester the students will attend an online section where the instruction about the structure of courses and how to attend them will be provided.

After the first semester, students follow a common training in presence. The lectures of second semester of first year will be at Federico II, the lectures of third semester of second year will be taken at Politecnico di Torino. The second semester of second year is dedicated to the traineeship and thesis which can be done at Federico II, at Politecnico di Torino or at companies.

First Year

Alignment path: Biology

Bioinorganic Chemistry and Industrial Enzymology	11 CFU
Complements of Microbiology and Biotechnology	10 CFU

Alignment path: Chemistry

Complements of Physical and Analytical Chemistry	11 CFU
Complements of Inorganic and Organic Chemistry	10 CFU

Common Path

Circular Platforms for energy and materials Recovery	10 CFU
Industrial Chemistry	8 CFU
Polymers: production, recycle and characterization	6 CFU
Green Unit Operations	9 CFU
Industrial Biotechnology	7 CFU
Additional language skills (Italian) or Further knowledge of computer science	3 CFU

SECOND YEAR

Green plants design	11 CFU
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Industrial green simulation process	7 CFU
Elective courses/Challenge	6+6/12 CFU
Traineeship	4 CFU
Thesis	22 CFU

More information on the website www.scienzechimiche.unina.it/iccb

Customizing the study plan

At the end of the second semester the students have to send to Degree Programme Director the choice of the Challenge Course or of the two elective courses using the form present on the website (www.scienzechimiche.unina.it/iccbe)

Traineeship opportunities

1. The students enrolled in the course may decide to carry out internships or training stages at organizations or companies that have an agreement with the University. The internship or stage activities are compulsory, and they contribute to the attribution of credits for the Other educational activities chosen by the student included in the study plan, as provided for by Art. 10, paragraph 5, letters d and e, of the D.M. 270/2004 .
2. The modalities of carrying out and the characteristics of internships and stages are regulated by the CCD (see Graduation thesis and exam)
3. The University of Naples Federico II and the Politecnico di Torino, through the Student Internship Office (UNINA) <http://www.orientamento.unina.it/tirocini-per-iscritti/> and the Career Service Office (POLITO) <https://careerservice.polito.it/studenti/tirocini> , ensure a constant contact with the world of work, in order to offer students and graduates of the Universities concrete opportunities of internship and stage and to favour their professional placement.

Graduation thesis and exam

The Graduation Thesis consists of a presentation of the Thesis to a special Degree Committee appointed by the CCD.

After earning 55 CFUs, the student enrolled in the second year may apply to the Degree Committee for assignment of the internship and thesis. The Commission assigns the traineeship and the thesis by identifying the supervisor and two counter-reporters who will verify the thesis work.

The thesis is carried out within research groups of the two universities, institutions, or external companies. In case the research activity is carried out outside the two universities, a co-rapporteur is also appointed who is responsible for the student's activity with the institution or company.

The graduation grade, expressed in 110ths, will be established by the Graduation Committee on the basis of the weighted average of the scores obtained by the student in the profit exams taken (expressed in 110ths), and on the basis of the result of the Final Examination

International exchange programmes (Erasmus programme)

Students who intend to spend a period abroad under the Erasmus+ program for study (or Erasmus mobility for traineeship purposes) can find detailed information and the list of active agreements at the address:

http://www.scienzechimiche.unina.it/en_GB/didattica/erasmus

The Politecnico di Torino and the University of Naples Federico II are involved in several international agreements to promote student mobility. Student mobility at UNINA is entrusted to the International Relations Office of the Research and Third Mission Department (<https://www.unina.it/-/768443-ufficio-relazioni-internazionali>) , while at POLITO it is entrusted to the Incoming Mobility Office (https://international.polito.it/admission/prospective_students/contact_us) and the Outgoing Mobility Office of the Internationalization Area

(<https://www.polito.it/international/mobilita/outgoing/?lang=en>).

Orientation and Tutoring

Orientation to incoming students

The CCD organizes orientation initiatives in close coordination with the other courses of the Department of Chemical Sciences and the School of Polytechnics and Basic Sciences. The calendar of the orientation initiatives is available at the link

<http://www.scienzechimiche.unina.it/orientamento-dsc>

Degree Programme Director can be contacted for information or it possible to have information at the link <http://www.orientamento.unina.it/orientati-con-noi/>

Tutoring and counselling

The orientation and tutoring in itinere is developed through the active involvement of tutors responsible for providing students with guidelines and suggestions on the development of their university career, but also to grasp the difficulties encountered during their training path. The regulatory aspects are carried out by the CDS Coordinator.

The website:

www.scienzechimiche.unina.it/iccbe

provides the Student's Guide, the regulations concerning the modalities of carrying out thesis activities and the contextual attribution of the grade, the modalities of internships, the calendars of exams, the calendar of graduation exams, and other useful information for students.

Additional support services, aimed at reducing the drop-out phenomenon through different levels of intervention are also provided at UNINA by the University SINAPSI Centre (www.sinapsi.unina.it) and at POLITO by Special Needs Unit (<https://didattica.polito.it/sostegno/>),

Career orientation and job placement

Frequent meetings are organized at the University and School facilities with companies interested in recruitment, as well as job fairs and job meetings. Meetings with representatives of the Professional Associations and the Industrial Union are organized periodically.

The portal Orienta UNINA at link <http://www.orientamento.unina.it/placement/> has a special section in which recruitment events, job fairs and opportunities for job placement are reported by companies.

The Politecnico di Torino centrally manages, through the Career Service office, all the connection activities between the students of the University and the world of work. In this context, there are active programs of accompaniment to work, the details of which are illustrated and available on the website <https://careerservice.polito.it/> .

Calendar of educational activities and timeline

Application timeline

The call for applications is issued in late June and is posted on the website:

www.scienzechimiche.unina.it/iccbe

Registration and enrollment normally takes place from September 1 to October 31 of each year, in ways that are publicized with a specific Enrollment and Fee Payment Guide published at URL:

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

Additional deadlines (study plan submission deadlines, ERASMUS application deadlines, etc.) are noted on the Course of Study website:

www.scienzechimiche.unina.it/iccbe

Academic Calendar: courses and exams

The detailed Calendar, updated in real time, can be found at an external link.

www.scienzechimiche.unina.it/iccbe

Course Timetable

The detailed Timetable, updated in real time, can be found at an external link.

www.scienzechimiche.unina.it/iccbe

Graduation dates

The detailed Calendar, updated in real time, can be found at an external link.

www.scienzechimiche.unina.it/iccbe

Contact persons

Degree Programme Director: Prof. Martino Di Serio; tel. 081/674414; e-mail: diserio@unina.it

Contact person for International Students: Prof. Roberta Marchetti

Contact person for training activities: Prof. Rocco Di Girolamo, Prof. Fabio Deorsola

Orientation Referent: Prof. Angela Arciello

Representative of the student body: to be elected

Student Administration Offices: CARMELA MIRELLA SECONDULFO;
e-mail: carmelamirella.secondulfo@unina.it; segrmmff@unina.it

Services for students with special needs and with specific learning disabilities:
UNINA SINAPSI, e-mail: accoglienza.sinapsi@unina.it;
POLITO Special Needs Unit https://didattica.polito.it/specialneeds/en/chi_siamo

Sites and links

Site: Università degli Studi di Napoli Federico II, Complesso Monte Sant'Angelo, via Cintia
Coordinate: 40°50'19.81"N14°11'06.04"E

Department of Chemical Sciences

Website <http://www.scienzechimiche.unina.it/iccbe>

Department website <http://www.scienzechimiche.unina.it>

School website <http://www.scuolapsb.unina.it>

Unina website <http://www.unina.it>

Orientation website <http://www.orientamento.unina.it>
<http://www.scienzechimiche.unina.it/orientamento-dsc>

Course description

The content and the objectives of the courses together with the name of the course holder, the mode of execution and verification can be found at the link <http://www.scienzechimiche.unina.it/iccbe>