UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2018/19
MASTER DEGREE IN
INDUSTRIAL CHEMISTRY (Classe LM-71)
Immatricolati dall'a.a.

HEADING	
Degree classification - Denomination and code:	LM-71 Industrial chemistry
Degree title:	Dottore Magistrale
Length of course:	2 years
Credits required for admission:	180
Total number of credits required to complete programme:	120
Course years currently available:	1st , 2nd
Access procedures:	open, subject to entry requirements
Course code:	F7Y

PERSONS/ROLES

Head of Study Programme

Prof. Laura Maria Raimondi

Tutors - Faculty

Prof. Laura Prati, Sandra Rondinini, Pierfausto Seneci

Degree Course website

http://www.ccdchim.unimi.it

*** Quality Manager ***

Prof. Claudia Bianchi

Department of Chemistry

Via Golgi, 19 - 20133 MILANO http://www.chimica.unimi.it

ENROLMENTS AND ADMISSIONS

http://www.unimi.it/studenti/matricole/77648.htm

Main Student Office

Via Celoria, 22 - 20133 MILANO Monday - Wednesday - Friday from 9:00 to 12:00, Tuesday – Thursday from 13:30 to 15:30 http://www.unimi.it/studenti/segreterie/773.htm http://www.unimi.infostudente.it (registration required)

Student Office of the Department of Chemistry

Via Golgi 19 - 20133 MILANO Tel. Tel. 02 50314419 From Monday to Friday from 10:00 to 12:00, by appointment outside of these hours available upon request http://users.unimi.it/chimp Email: didattica.dipchi@unimi.it, skype: segreteriachimica

CHARACTERISTICS OF DEGREE PROGRAMME

Introduction

The Master’s Degree Course in 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, and learn to work independently and to take full responsability of projects and structures.

The Master’s Degree program in Industrial Chemistry, entirely taught in English, is designed to train high-quality human capital, capable to take on the challenges of the global economy, favoring access of graduates in Industrial Chemistry to the world labor 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.

EUROMASTER®. The Master’s Degree Course in Industrial Chemistry (up to 2013/14, Chimica Industriale e Gestionale) 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, gathering European universities and chemical societies. The EuroMaster Label certifies the educational qualification provided by the Master's Degree Course in Industrial Chemistry as a master's degree recognized by the European Universities and gives the right to access the post-graduate courses of chemistry at the European level.

General and specific learning objectives

The Master's Degree program in 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.

The educational program of the master's degree course is designed to provide:

- skill 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 centers, 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.

Expected learning outcomes

Graduates in the 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 plant pilot.

Their competences in corporate management are characterized by high knowledge of science and technologies of chemistry and industrial chemistry. They are capable 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 and disciplines and to interact with professional having similar background.

Professional profile and employment opportunities

Graduates in the Industrial Chemistry will be able to carry out, among others, the following activities: promotion and development of the scientific and technological innovation; planning and management of industrial technologies; holding functions of high responsibility in the industrial, environmental, health care, and public service sectors.

Graduates in the Industrial Chemistry are expected to find employment in: research and development in chemical industries; design and management of pilot plants, chemical plants; industries and research centers working in diversified sectors of either conventional or innovative fields.

The acquired competences allow graduates to have open access to several industrial sectors such as those of polymeric materials, food industry, agrochemicals, additives, auxiliaries, materials for electronics, ecology, intellectual property (patents) and business management.

The Master's Degree in Industrial Chemistry constitutes a preferential title to access the PhD programme in the area of industrial chemistry.

For the graduate of this class, enrollment in the National Order of Chemists is possible, after passing the State Exam.

Pre-requisites for admission

The curricular prerequisite 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, information technology and physics
- 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 e CHIM/02
- industrial and technology CHIM/04, CHIM/05 and ING-IND/21-22, ING-IND/25;
- organic chemistry and biochemistry CHIM/06, BIO/10-12

The minimum entry requirement in English proficiency is level B1 ("lower intermediate") of the Common European Framework.

Programme structure

The master degree in Industrial Chemistry is structured in Semesters

The subdivision of the courses into 1st- and 2nd-year semesters is:

1st YEAR

1st Semester
Advanced industrial chemistry with Laboratory (9 CFU), Economics and management (6 CFU), Chemical processes and industrial plants (6 CFU), 1 course from Related and Integrative
2nd Semester
Students must earn 9 CFU by selecting 1 course from those included in Table 1, and 24 CFU by selecting 3 courses of 6 CFU taken from Table 2 and 1 course from Related and Integrative
2ND YEAR
1st Semester
Students must earn 18 CFU by selecting 1 course of 6 CFU from Table 2, and 2 freely selectable courses (included those held in Italian) of 6 CFU. and start the Thesis laboratory
2st Semester
Thesis Laboratory, preparation of the dissertation and final defense of the Thesis

Students must also earn 3 CFU of English Proficiency during the course of their studies

Libraries

The Chemistry Library is located on the 1st floor of the Department of Chemistry. The library offers the following services:
- Internet point
- Data retrieval
- Electronic Journals
- Book loan
- Document Delivery
- Bibliographic Information
- Photocopies

For further information on these services you may refer to the website of the facility http://www.sba.unimi.it/Biblioteche/chimica/1873.html

Notes

For information on course schedules, course contents and all matters related to teaching please refer to the Student Office of the Department of Chemistry (main entrance, via Golgi 19 – open to the public on weekdays from 10:00 to 12.00; appointments outside of these hours are available upon request.

Subjects organisation

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1st Semester
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2st Semester
Thesis Laboratory, preparation of the dissertation and final defense of the Thesis

Students must also earn 3 CFU of English Proficiency during the course of their studies

Language test / computer literacy test

TEST OF ADVANCED KNOWLEDGE OF LANGUAGES
Students are requested to earn 3 credits of English proficiency before they enter the laboratory thesis. However, it is strongly recommended to acquire these credits in the 1st year of their studies.
This can be done in the following ways:
- by acquiring the B2 level in the test provided by the University and organized by the University Language Service (SLAM) in the period from January to February.
- by presenting an internationally recognized certificate of B2 level, as defined by C.E.F. (Common European Framework), or equivalent (list available on the website of the SLAM http://www.unimi.it/studenti/100312.htm and the Didactic Board http://www.ccdchim.unimi.it).

Students who do not reach the B2 level (or higher) at the test, will have to follow a course organized by SLAM in the first semester of the second year. At the end of the course there will be an evaluation test to which will be admitted only to students with 70% attendance. In case of a negative result, the final test can be supported again in the subsequent sessions of the same year.

Students from a Bachelor's degree of the Faculty of Science and Technology who have supported the Oxford placement test for not more than three years, obtaining the B2 level (or higher) are exempt from the knowledge of the English language.

Compulsory attendance

It is mandatory to attend the Laboratory courses/modules. In all the other cases the attendance is strongly suggested

Testing and assessment procedures

ASSESSMENT PROCEDURE OF THE LEARNING OUTCOMES

The schedule of the examination sessions for the assessment of the learning outcomes is available through the Sifaonline Service. For each course at least one session is scheduled for each of the following months: February, June; July, September, and January Extra sessions might be scheduled in November and at the end of the Easter holidays.

TEACHING AGENDA

Lessons take place as follows:
- 1st Semester: Ocrober 1st, 2018 - January 18th, 2019
- 2nd Semester: March 4th, 2019 - June 14th, 2019

FIXED DATES

- Students have to choose a complete study plan, to be submitted to the Student Bureau (according to the appropriate procedures) accordingly to scheduled dates: http://www.unimi.it/studenti/1162.htm

SESSIONS OF THE FINAL EXAM
- July 2019
- October 2019
- December 2019
- February-March 2020

Procedures for exam registration and admittance

EXAM ENROLMENT

To sit for an examination, the student must enroll for the relevant session, through the SIFA online services: SIFA – Servizi didattici – iscrizione agli esami (http://www.unimi.it/studenti/servizi_online.htm).

Before (or contextually with) the enrolment the student must fill the online questionnaire for the evaluation of the relevant course.

Contextually with the exam enrolment, the student career is checked via the information system. It is strongly suggested to check the effective enrolment for the selected exam by selecting “Informazioni – Visualizza gli appelli a cui sei iscritto” in the left column of the SIFA page for exam enrolling

TEACHING EVALUATION

The online evaluation of a single course is mandatory and enables the enrolment for the said course. Students are strongly suggested to fill the questionnaire before the completion of the teaching activities of each course, even if they do not intend to take soon the exam. The evaluation questionnaire remains anonymous.. Remember that the deadline for enrolments is usually 5 days before the session.

EXAM RECORDING

Exams and tests are recorded electronically. Only the students correctly enrolled via the SIFA online services can be allowed to take any exam.

SPECIAL INSTRUCTIONS

- To take any exam or test, the student must have fulfilled the payment of taxes and contributions, must have passed possible propaedeutic exams, must have all the attendance certificates, where requested.
- It is forbidden to retake an already passed exam, even in the case of educational activities recorded in a previous career.

The violation of the above rules implies the annulment of the exams by Rectoral act.

It is mandatory that, before any exam or test, the board of examiners verifies the personal identity of the candidate, who must exhibits valid identification document. No student can be allowed to take any exam or test in the absence of an identification document .

Procedures for enrolment in courses / seminars / lab activities

Students must enrol to Laboratories via internet at the SIFA online services (http://www.unimi.it/studenti/servizi_online.htm).

Study plan definition and submission for approval

CHOICE AND SUBMISSION OF THE STUDY PLAN

To favor the planning of the educational activities, Students are asked to fill a preliminary study plan to be presented to the Office for Secretary's office of the Study Programme, Department of Chemistry, before October 12th, 2018. Students will receive the necessary form at their admission interview.

OFFICIAL STUDY PLAN

The submission of the study plan is mandatory. The OFFICIAL study plans, that might be different from the preliminary ones, must nonetheless be submitted at the 1st Year, via the web address http://www.unimi.it/studenti/servizi_online.htm, within the term fixed by the Segreteria Studenti, accordingly to scheduled dates (http://www.unimi.it/studenti/1162.htm). For special cases a printed form is available, to be requested and submitted to Segreteria Studenti, Via Celoria, 20. The official study plans may be modified, if needed, in the subsequent years. The modified plans have to be submitted at fixed dates ONLY, as indicated by Segreteria Studenti. The submission/modification of study plans is NOT ALLOWED outside the fixed dates and by students not enrolled for the academic year.

NOTICE: For the admission to the final exam, the list of passed exams must correspond to the last approved official study plan. When applying for the admission to the final exam, in the case of discrepancy between the student' educational career and the relevant study plan, the student cannot be admitted to the final exam. For support and enquiries about the effective correspondence between passed exams and courses selected in the study plan students may refer to Office for Teaching, Department of Chemistry.
For information about dates and procedures for submitting the official study plan, please visit the relevant section of the UNIMI website.

Internship criteria

RULES FOR THE THESIS LABORATORY AND THE FINAL EXAM

The Master Thesis is a written dissertation on original research activities, performed by the student during the 2nd year, under the guidance of a Relatore (Supervisor) and a Correlatore (Co-tutor if any). These activities are carried out in the laboratory indicated in the admission application. The Thesis Laboratory lasts at least one solar year, and includes the attendance at the courses scheduled in that year.
The Master Theses are:
- Internal Experimental Theses
- External Experimental Theses

The Internal Experimental Theses are carried out at the Department of Chemistry of University of Milan and other Department belonging to the Faculty of Sciences and Technology. The External Experimental Theses are carried out at other university structures or at other public Institutions with adequate facilities. The possibility of an external Thesis is evaluated, case by case, by the Teaching Board of Dipartimento di Chimica.
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 Board

THESIS STARTING SESSIONS
The Theses can start on the first day of July, October, December and March. The applications – drafted on the specific form undersigned by the Supervisor – must be submitted at the Office for Didactic, Department of Chemistry, by the first day of the month preceding the starting month, for the necessary approval of the Teaching Board.

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

CO-TUTORS
In addition to all the Professors and Researchers are eligible as co-tutors of Master Theses:
- The 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, with recognized activity in chemical sciences, selected by the hosting institutions as referents for External Theses.

For any other case, the Teaching Board will consider the scientific and technical activity of the proposed co-tutor, on the basis of a brief description of the specific skills and expertise provided by the Supervisor.
The relevant forms may be downloaded from the Office for Teaching web-site (http://users.unimi.it/chimp).
Criteria for admission to degree course final exam

For the admission to the final exam, the student must have passed all the exams in his/her study plan. The final Exam is an oral discussion of the Master Thesis written dissertation.
The teaching schedule and calendar will be available on the web pages of the Master Degree programme and of the Office for Didactics. In addition, they will be put up on the notice board in the entrance-hall of the Department of Chemistry

Criteria for admission to degree course final exam

For the admission to the final exam, the student must have passed all the exams in his/her study plan.
The final Exam is an oral discussion of the Master Thesis written dissertation.

Lecture timetable

The lecture timetable will be available on the url http://www.unimi.it/corsi_istituti/corsiUrlb.jsp and the app "lezioniunimi" for Android, IOS e Windows Phone.

EXPERIENCE OF STUDY ABROAD AS PART OF THE DEGREE PROGRAM

The University of Milan supports the international mobility of its students, offering them the opportunity to spend periods of study and training abroad, a unique opportunity to enrich their curriculum in an international context.

Study and internships abroad

Students enrolled in the Industrial Chemistry course are encouraged to apply to the Erasmus Plus actions, where various positions are available in 24 European universities in France, United Kingdom, North Europe and in the Mediterranean area. 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

To gain access to mobility programs for study purposes, lasting 3-12 months, the enrolled students of the University of Milan must attend a public selection that starts usually around the month of February each year through the presentation of specific competition announcements, which contain information on available destinations, respective duration of the mobility, requirements and deadlines for submitting the online application.

The selection, aimed at evaluating the proposed study abroad program of the candidate, knowledge of a foreign language, especially when this is a preferential requirement, and the motivations behind the request, is performed by specially constituted commissions.

Each year, before the expiry of the competition announcements, the University organises information sessions for the specific study course or groups of study courses, in order to illustrate to students the opportunities and participation rules.

To finance stays abroad under the Erasmus + program, the European Union assigns to the selected students a scholarship that - while not covering the full cost of living abroad - is a useful contribution for additional costs as travel costs or greater cost of living in the country of destination.

The monthly amount of the communitarian scholarship is established annually at national level; additional contributions may be provided to students with disabilities.

In order to enable students in economic disadvantaged conditions to participate in Erasmus+ program, the University of Milan assigns further additional contributions; amount of this contributions and criteria for assigning them are established from year to year.

The University of Milan promotes the linguistic preparation of students selected for mobility programs, organising every year intensive courses in the following languages: English, French, German and Spanish.

The University in order to facilitate the organisation of the stay abroad and to guide students in choosing their destination offers a specific support service.

More information in Italian are available on www.unimi.it > Studenti > Studiare all'estero > Erasmus+

For assistance please contact:
Ufficio Accordi e relazioni internazionali
via Festa del Perdono 7 (ground floor)
Tel. 02 503 13501-12589-13495-13502
Fax 02 503 13503
E-mail: mobility.out@unimi.it
Desk opening hour: Monday-friday 9 - 12

ADMISSION CRITERIA: 1ST YEAR OPEN, SUBJECT TO ENTRY REQUIREMENTS

Practical instructions

INFORMATION AND METHOD FOR ADMISSION TO OPEN ACCESS MASTER DEGREE IN INDUSTRIAL CHEMISTRY FOR ITALIAN AND FOREIGN STUDENTS

The Italian and foreign students with academic qualification awarded in Italy must submit applications for admission respecting the deadlines indicated in the "student area" of the Unimi web portal. Undergraduates who intend to graduate by December 31st, 2018 are also allowed to apply.

The presentation of the application form is compulsory and must be submitted electronically to the following address: http://www.unimi.it/studenti/servizi_online.htm
Admission requires possession of minimum curriculum requirements and suitable personal skills (DM 270/04)

CURRICULAR REQUIREMENTS
The earned credits will be fully recognized to graduates of the undergraduate program of class L-27 of the University of Milan
All other students must demonstrate to have the curricular requirements of the graduates of the class L-27. In particular, they are required to have earned:
- At least 20 credits in mathematics and computer and physical sciences
- At least 70 credits in the core areas of the class: CHIM/01-06, CHIM/12, ING-IND/21-22, ING-IND/25 and BIO/10-12
The minimum requirement for the English language knowledge is the B1 level ("lower intermediate") of the Common European Framework.

CHECK OF PERSONAL SKILLS
The personal skills of each candidate will be ascertained through an interview on topics related to the subjects covered in the fundamental courses of the bachelor's degree in Industrial Chemistry. The interview may also be carried out before graduation (which, for the purpose of registration, has to be achieved by December 31, 2018), subject to the curricular requirements.
The interview will be conducted by the Commission for Access to the Master, composed by teachers appointed by the Teaching Board. The failure of the interview prevents the access to the MSc in Industrial Chemistry for the current year.

The Personal Skill will be verified by the following methods:
a) the European Chemistry Tests granted by the European Chemistry Thematic Network (http://ectn.eu/committees/virtual-education-community/echemtest/) for the accrual of expertise in Chemistry. The test includes questions, in English, with multiple answers, on topics of the four areas of Analytical, Inorganic, Organic and Physical Chemistry. In order to pass the test, students must answer correctly to at least 16% of the questions in each of the four thematic areas.
To perform the test, the Candidate will be asked to show a valid identification document.

b) After passing the test , an interview with the Access Commission will take place on topics related to fundamental aspects of core disciplines of the degree in Industrial Chemistry and to ascertain the knowledge of the English language. The test to verify the personal and language skills is selective even in the case the curricular requirements listed above are recognized; the negative outcome prevents the access for the current year.
FOR A BETTER TEACHING PLANNING ALL CANDIDATES, INCLUDING THOSE EXPECTING to graduate before, December 31st, 2018, ARE STRONGLY SUGGESTED TO APPLY FOR INTERVIEW in September.

For admission in 2018/19 the EchemTest and the interviews to ascertain the curricular requirements and the adequacy of personal skills of candidates will take place on the following dates:

- September 25, 2018, at 8:30 a.m., at the classrooms 306 - 307 - 309 - 310 - 311, Sector Academic Via Celoria 20, Milan. The next day there will be the interview to verify the possession of the curricular requirements and the adequacy of the personal preparation of the candidates.
- December 20, 2018, at 8.30 a.m., at the office professor Michele Ceotto, Department of Chemistry, Via Golgi, 19 - Milan. Followed by the interview to verify the personal preparation of candidates

It is advisable to check for any possible updates about date

N° of places reserved to non-EU students resident abroad

10

Notes

ENROLLMENT IN INDUSTRIAL CHEMISTRY MASTER

Only graduates who have successfully passed the verification test can be enrolled in Industrial Chemistry.
The registration will take place after 5 working days and under the terms and conditions indicated in the "students" section of the Unimi web site
Students of the University of Milan who have applied for admission and who have acquired credits in excess of the 180

required during the bachelor's degree, taking courses and / or laboratories provided for in the master's degree program and passing the related exams, may request the recognition for the achievement of the 120 CFU required.

1st COURSE YEAR Core/compulsory courses/activities

Scheduling	Learning activity	Module/teaching unit	Ects	Sector
1	Advanced industrial chemistry with lab		9	CHIM/04
1	Chemical processes and industrial plants		6	CHIM/04
1	Economics and management		6	SECS-P/08
		Total number of compulsory credits/ects	21	

Elective courses

TABLE 1 - DISTINCTIVE COURSES FROM 9 CFU
Student must earn 9 CFU by selecting one of the following items

2	Applied organic chemistry with lab		9	CHIM/06
2	Energy: source, conversion and storage with lab		9	CHIM/02
2	Inorganic materials with lab		9	CHIM/03

2nd COURSE YEAR Elective courses

FREE CHOICE COURSES

The student must earn 12 credits by choosing freely between all the teachings activated, offered by the University, provided they consistency with the educational project, even if they are held in Italian.
However, it is strongly recommended to use distinctive or, as appropriate, elective or integrative courses of the Related and Integrative courses of Master Degrees in Industrial Chemistry or in Scienze Chimiche consistent with the educational project

UNDEFINED COURSE YEAR - COMPULSORY COURSES/ACTIVITIES

Scheduling	Learning activity	Module/teaching unit	Ects	Sector
1	English proficiency		3	L-LIN/12
		Total number of compulsory credits/ects	3	

Further elective courses

TABLE 2 DISTINCTIVE COURSES
Students must earn 24 CFU by selecting 4 of the following items; at least 1 of them (6 CFU) must belong to CHIM/02, CHIM/03 or CHIM/06 class.

1	Catalytic Methodologies in organic synthesis *Course subscribed by Master in Scienze Chimiche*		6	CHIM/06
1	Concepts and methods in organic synthesis		6	CHIM/06
1	Environmental electrochemistry		6	CHIM/02
1	Industrial processes and scale-up		6	CHIM/04
1	Nanotechnology of inorganic materials		6	CHIM/03
1	Photochemistry *Course subscribed by Master in Scienze Chimiche*		6	CHIM/02
1	Physical chemistry of formulations		6	CHIM/02
1	Recycle and Life Cycle Assessment (LCA) of products and processes		6	CHIM/04
2	Environmental control and sustainability management		6	CHIM/12
2	Heterogeneous catalysis		6	CHIM/02
2	Metal corrosion and protection		6	ING-IND/23
2	Physical chemistry of disperse systems and of interfaces *Course subscribed by Master in Scienze Chimiche*		6	CHIM/02
2	Polymer chemistry		6	CHIM/04
2	Principles and applications of metallorganic chemistry *Not activated for the current academic year*		6	CHIM/03
2	Process development		6	CHIM/04
2	Synthetic methods in biotechnology		6	CHIM/06

INTEGRATIVE AND RELATED COURSES
Student must earn 12 CFU by selecting 2 of the following items following teachings related and integrative.

1	Patents and Management of Innovation *Course subscribed by Master in Scienze Chimiche*		6	SECS-P/07
2	Chemical Safety		6	IUS/07
2	Medicinal chemistry *Course subscribed by Master in Scienze Chimiche*		6	CHIM/08

End of course requirements

	Thesis work and Final dissertation		39	NA
		Total number of compulsory credits/ects	39	