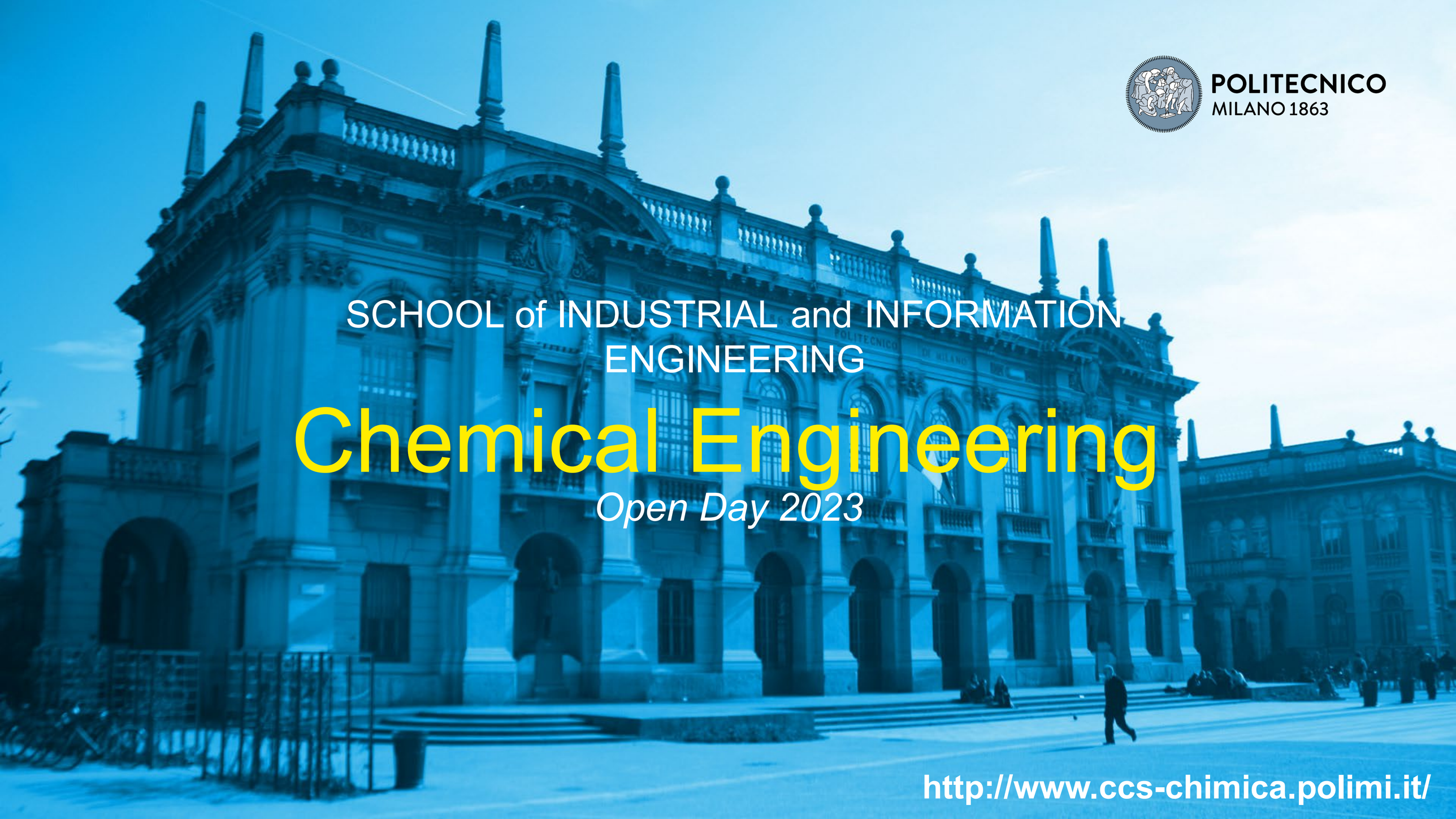


POLITECNICO
MILANO 1863

SCHOOL of INDUSTRIAL and INFORMATION ENGINEERING

Chemical Engineering

Open Day 2023

http://www.ccs-chimica.polimi.it/

POLITECNICO
MILANO 1863

Chemical Engineering: *Context and Challenges*

Sustainable Development Goals

POLITECNICO MILANO 1863

CHEM ENG

SDG and Chemical Engineering

POLITECNICO MILANO 1863

CHEM ENG

CHEM ENG

SDG and Chemical Engineering

- **Fertilizers**
- **Food & Beverage**: sustainable products and processes
- **Packaging** and packaging **recycle**

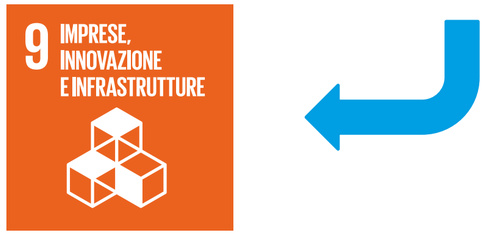
- **Water treatment** technologies
- **Desalting** of ocean water
- Optimization of **water consumption** in production processes

- **Hydrogen** production and use
- **Batteries** and fuel cells
- **Sustainable fuels** production (E-fuels, bio-fuels, ammonia)
- **Wastes conversion, biogas** production

- **Waste materials recycle** (plastics)
- **Bio-polymers** and bio-plastics production
- **Optimization** of processes (to include recycling capabilities)

- **Pollutants reduction** and **abatement**
- Carbon capture sequestration, utilization and storage **(CCSU)**
- Design and optimization of **cleaner processes**

- **Vaccines** and drugs availability
- **Process intensification** and flow chemistry
- **Process adaptation** and flexibility
- **Job creation** from new markets

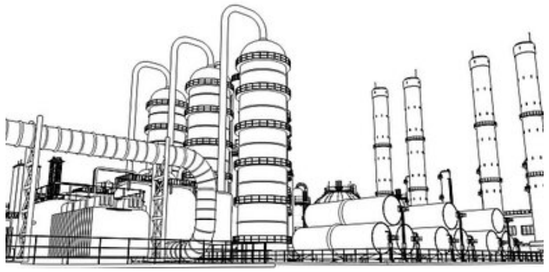


Chemical industry: the big picture

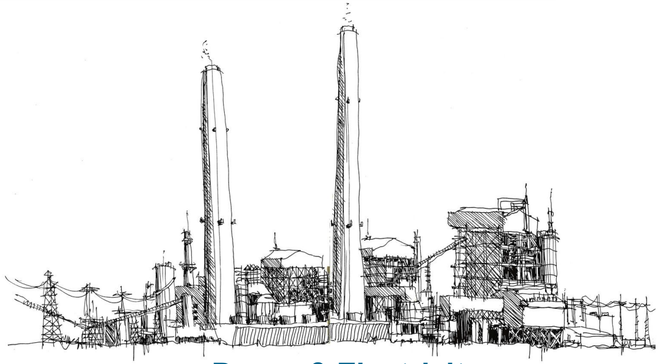
Chimica 1.0 → Chimica del carbone

Chimica 2.0 → Petrolchimica

Chimica 3.0 → Globalizzazione e specializzazione



Chemicals, Fuels, Commodities, Materials



Power & Electricity

Chimica 4.0

Fonte: VCI (Verband der Chemischen Industrie) & Deloitte, Federchimica; anno 2017, ultimo anno disponibile

POLITECNICO
MILANO 1863

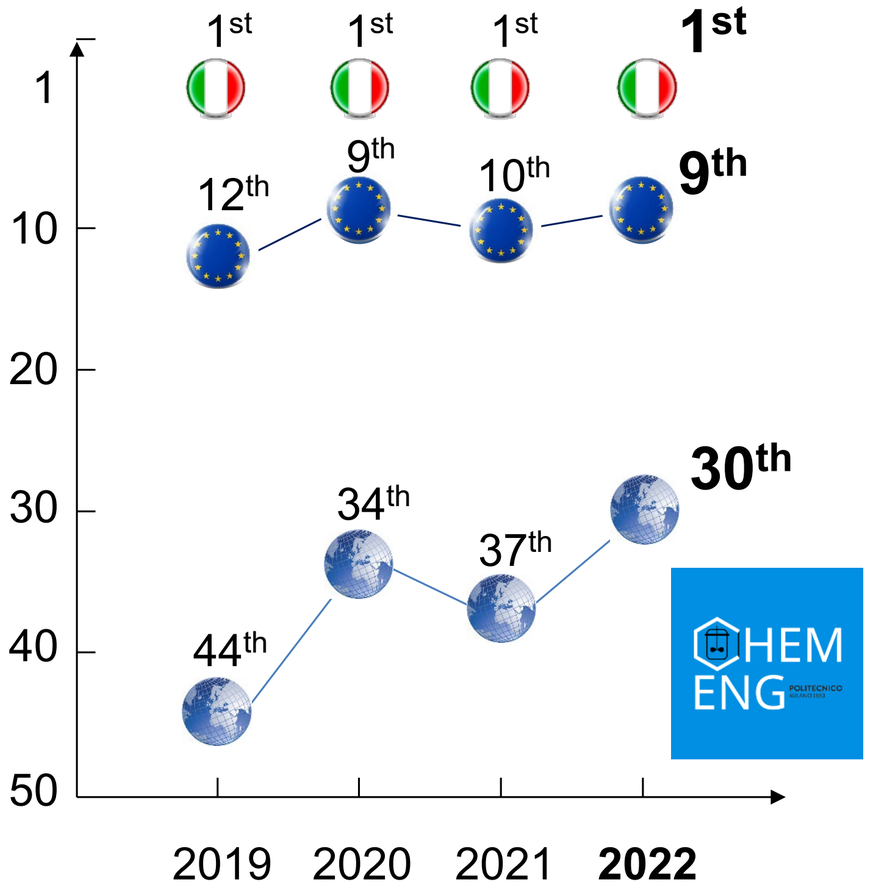
Chemical Engineering @POLIMI

Some numbers

International Rankings

POLITECNICO MILANO 1863

PoliMi, an Italian, European and World leading university



Master Degree in Chemical Engineering

POLITECNICO MILANO 1863

https://www.ccs-chimica.polimi.it/

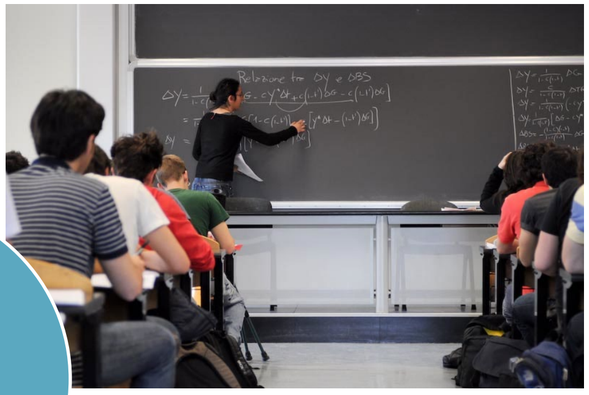
58 Faculties

>80 Courses

>140 Students

>15% Foreign Students

35-50% Female Students



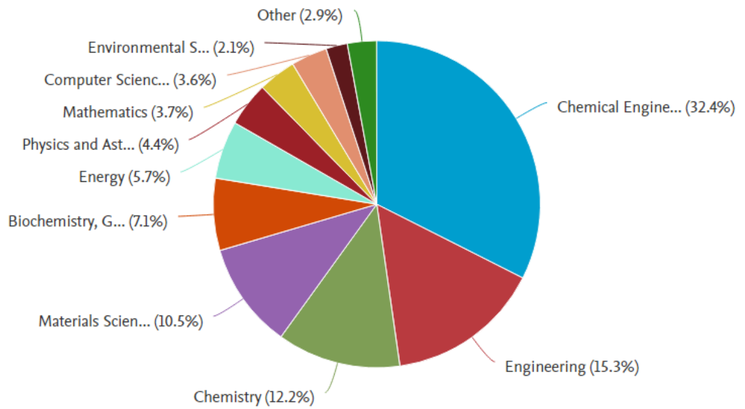
Excellence in Research (Areas)

POLITECNICO MILANO 1863

Keywords

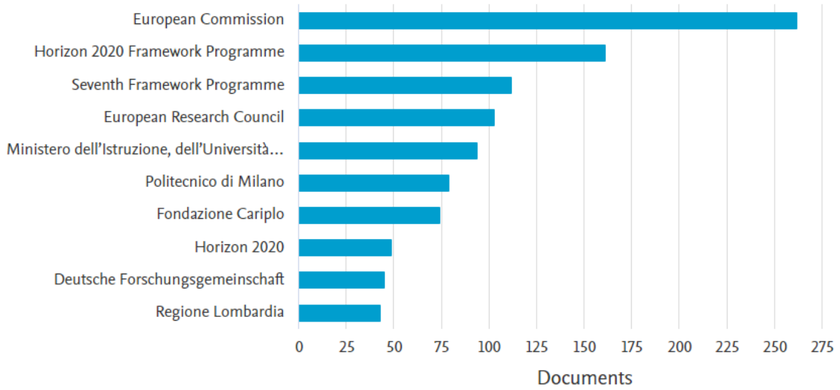
- Chemical process design and optimization
- Industrial separation processes
- Hetereogeneous catalysis
- Homogeneous catalysis
- Sustainable process design
- Energy
- Renewable energy
- Circular economy processes
- Environment and pollution mitigation
- Chemical reaction engineering
- Applied physical chemistry
- Polymers chemistry
- Applied chemical kinetics
- Odour monitoring and modelling
- Drug delivery
- Risk and safety in process industry
- Nanomaterials
- Materials
- Organic and inorganic chemistry
- Analytical chemistry
- Surface chemistry
- Electrochemistry

Documents by subject area

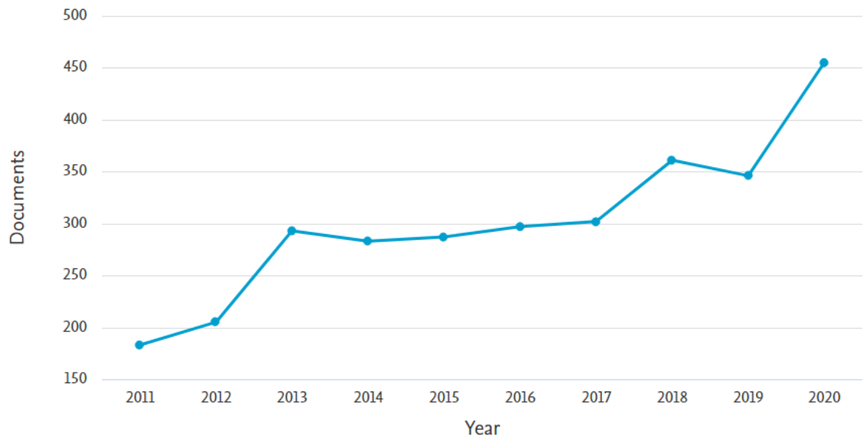


Documents by funding sponsor

Compare the document counts for up to 15 funding sponsors.



Documents by year



Source: scopus.com
Years: 2011-2020
Num. Documents: 3012

Scopus®

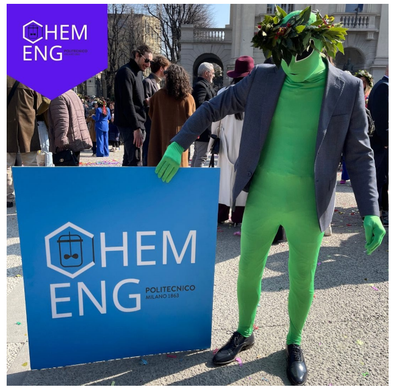
Dept. of Chemistry, Materials and Chemical Engineering (https://www.cmic.polimi.it/en/) | Dept. of Energy (https://www.energia.polimi.it/en/energy-department/)

What do students say about us?

POLITECNICO MILANO 1863

Graduated students in Chemical Engineering

- **~94%** is completely satisfied by the education career
- **97% «Degree fits work»** rating (among the highest at PoliMi)
- **~90%** would chose PoliMi again



On average, our graduates are more satisfied about their education compared to other PoliMi students!

POLITECNICO
MILANO 1863

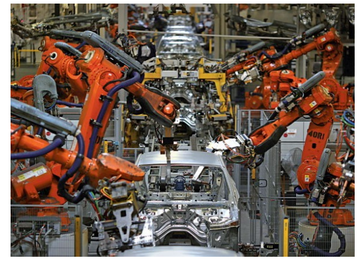
Chemical Engineering @POLIMI

Job Opportunities and Employability

Job opportunities

POLITECNICO MILANO 1863

- **Chemical Industry**
- **Pharmaceutical Industry**
- **Energy Industry**
- **Materials industry**
- **Transport Industry**
- **Safety**
- **Research**
- **Petrochemical Industry**
- **Oil&Gas Industry**
- **Cosmetics Industry**
- **Textile Industry**
- **Food&Beverage Industry**
- **Metals Industry**
- **Environment**



Chemical engineering is the **process engineering**: you learn methodologies of **chemico-physical transformation of matter**, aimed at the production of material goods, supply of services, risk prevention, reduction of environmental impact, ….

Employment Statistics (2021)

POLITECNICO MILANO 1863

CHEM ENG

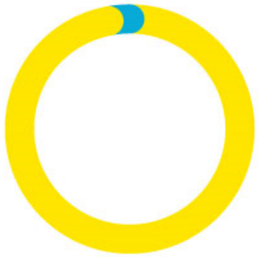
CHEMICAL ENGINEERING

EMPLOYMENT STATISTICS 2022 - MASTER OF SCIENCE GRADUATES

In 2020 131 students (111 Italian and 20 international) obtained the Master's degree in Chemical Engineering.
Total respondents to the annual employment survey were 103.

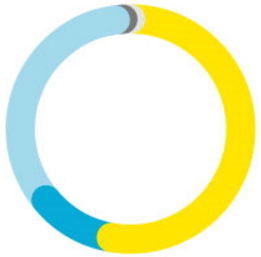
EMPLOYED*	EMPLOYED WITHIN 6 MONTHS*	NET MONTHLY SALARY
100%	87%	€1,694
* 1 year after graduation, except students	* calculated on employed	

EMPLOYMENT STATUS



Employee	97%
Self-employed	3%

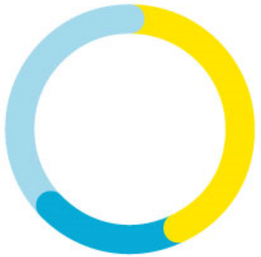
CONTRACT TYPE



Permanent	53%
Fixed-term	11%
Apprenticeship	34%
Internship	1%
Other*	1%

* project based/occasional collaboration

COMPANY SIZE



1-250	43%
251-1000	20%
+1000	37%

WHERE THEY WORK

Italian graduates working abroad	7%
International graduated working in Italy	29%

TOP 5 SECTORS

Chemistry	20%
Pharmaceutical and Cosmetics	15%
Oil&gas	11%
Mechanics and Installation	6%
Business Consultancy	6%

TOP 5 AREAS OF EXPERTISE

Design	52%
Operations	29%
Planning	21%
Research and Development	13%
Quality and Control	13%

CareerService
www.careerservice.polimi.it

...5 Years After (2015 graduates)

POLITECNICO MILANO 1863

WHAT IS THE EMPLOYMENT SITUATION OF CHEMICAL ENGINEERING GRADUATES **5 YEARS AFTER GRADUATION?**

The following data has been extracted from the 2021 Employment Survey on 2015 Graduates, interviewed 5 years from graduation. Full details on the website http://cm.careerservice.polimi.it/en/employment-statistics/
In 2015, 113 Italian students obtained a Master's degree in Chemical Engineering at Politecnico di Milano. Total respondents to the survey were 65 (coverage rate 57%).

EMPLOYMENT RATE

100% HAS INCREASED BY 10%*

NET MONTHLY SALARY

€2,087**

HAS INCREASED BY €617*

PERMANENT CONTRACT

98% HAS INCREASED BY 57%*

WORK IN ITALY

89% HAS DECREASED BY 9%*

SATISFIED WITH SPECIFIC DEGREE: 94%
Education and training acquired at the university is adequate for the current job

DEGREE FITS WORK: 97%
In order to carry out their job, they need their qualification or an equivalent one

* Compared to data from survey submitted 1 year from graduation
** Standard deviation 586

CareerService
www.careerservice.polimi.it

WHAT HAVE CHEMICAL ENGINEERING GRADUATES DONE IN THESE **5 YEARS?**

20%
HAVE WORKED ABROAD FOR AT LEAST 6 MONTHS (GERMANY, SWITZERLAND)

15%
HAVE OBTAINED A NEW DEGREE WHILE WORKING OR BEFORE
9% POST MASTER DEGREE | 6% PHD

2%
HAVE FOUNDED A START-UP

THEY HAVE CHANGED THEIR JOB AN AVERAGE OF 1.7 TIMES

MAIN REASONS:

- TO CHANGE SECTOR/ PROFESSION — 30%
- DISSATISFACTION WITH WORK ENVIRONMENT — 20%
- PROFESSIONAL GROWTH — 18%

THEY HAVE IMPROVED THEIR PROFESSIONAL SITUATION:

- BY DEVELOPING SOFT SKILLS
- ECONOMICALLY
- BY ACCESSING A BETTER POSITION IN THE ORGANIZATION

CHEM ENG

University Report (Job Pricing 2022)

POLITECNICO MILANO 1863

Tabella 6.2 RAL media per tipologia di università, anno 2021, euro

TIPOLOGIA DI UNIVERSITÀ	RAL
Università privata	41.527
Università statale	39.211
Politecnico	42.719

Fonte: Elaborazioni Osservatorio JobPricing su dati JobPricing

Tabella 7.1. RAL media dei laureati per la classe di età 25-34 per ateneo, anno 2021, euro

ATENEO	RAL 25-34 ANNI
Università Commerciale Luigi Bocconi	34.413
Politecnico di Milano	32.891
LUISS Libera università internazionale degli studi sociali Guido Carli	32.769
Università Cattolica del Sacro Cuore	31.735

Job Pricing All About Rewards

CHEM ENG

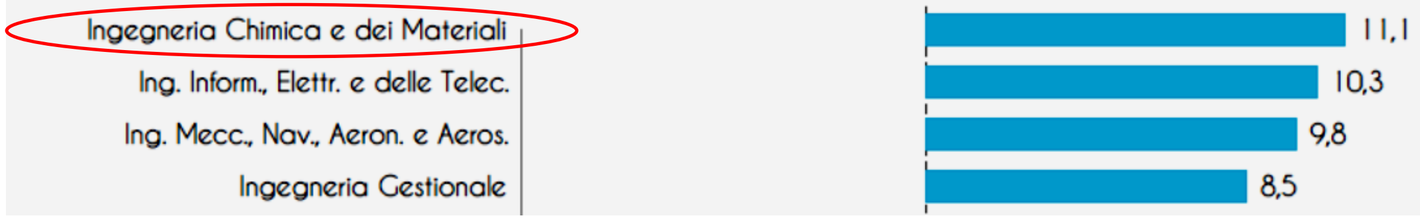
University Report (Job Pricing 2022)

POLITECNICO MILANO 1863

Tabella 6.1. RAL media per la classe di età 25-34 anni per area disciplinare, anno 2021, euro

AREE DISCIPLINARI	RAL MEDIA 25-34 ANNI
Ingegneria chimica e dei materiali	33.519
Ingegneria informatica, elettronica e delle telecomunicazioni	33.293
Ingegneria meccanica, navale, aeronautica e aerospaziale	33.126
Ingegneria gestionale	32.729
Scienze matematiche e informatiche	32.201
Scienze economiche	32.134

Figura 6.1. RAL - Scostamento percentuale dalla RAL media dei laureati per la classe di età 25-34, anno 2021, euro



Job Pricing All About Rewards

POLITECNICO
MILANO 1863

ChemEng@PoliMi

Programme structure

ChemEng @ PoliMi

POLITECNICO MILANO 1863

Others

Laurea – Bachelor of Science *Ingegneria Chimica* (3 years, 180 CFU)

Laurea Magistrale – Master of Science *Chemical Engineering* (2 years, 120 CFU)

Dottorato di Ricerca – Doctor of Philosophy (PhD) *Industrial Chemistry and Chemical Engineering* (3 years)

- In English since 2014
- **NEW structure!!!!!!!**

How did we come up with the new structure of the Master of Science in Chemical Engineering?

ChemEng @ PoliMi

POLITECNICO MILANO 1863

Context and Motivations

Sustainability Goals:
New challenges
Ambitious objectives

Market Needs:
New technologies
New competencies

A top-ranked University:
Excellence
Leadership
Internationalization

Master of Science in Chemical Engineering

1st Year (60 CFU)

- Chemical and Catalytic Reaction Engineering
- Advanced Transport Phenomena
- Applied Physical Chemistry
- Chemical Plants and Process Operations Management
- Process Systems Engineering A+B
- Processes of the Organic Chemical Industry

2nd Year (40 CFU)

Tracks: 25 CFU mandatory + 15 CFU eligible

+ Master Thesis Project (20 CFU)

Process Design

Advanced knowledge and technical tools to operate in the various areas of process engineering (e.g. design equipment, control)

Environment & Energy

advanced knowledge and tools on chemical engineering applications for technologies for environmental protection, for the energy sector and for energy transition

Biochemical & Pharma

Advanced knowledge and technical tools to operate in the pharmaceutical and biotechnology industry

Research & Development

Advanced knowledge related to fundamental subjects of chemical engineering for research, technological development, and innovation

New courses and topics + Laboratory Activities + Innovative Teaching

ChemEng @ PoliMi: structure

POLITECNICO MILANO 1863

1st Year, 60 CFU

	Course (mandatory)	CFU
I Sem	Chemical and Catalytic Reaction Engineering	10
I Sem	Advanced Transport Phenomena	10
I Sem	Applied Physical Chemistry	10
II Sem	Chemical Plants and Process Operations Management	10
II Sem	Process Systems Engineering A Process Systems Engineering B	5 + 5
II Sem	Processes of the Organic Chemical Industry	10
		60

Environment and Energy

POLITECNICO MILANO 1863

Learning objectives:

- To provide the knowledge and tools related to the key role of chemical engineering in the context of environmental protection and energy production technologies
- The knowledge must cover both standard technologies (e.g. oil and gas industry) and those related to the energy transition (green chemistry, sustainability, etc.)

Mandatory courses (25 CFU)

		Scientific Sector (SSD)	
• 5 CFU.	Catalysis for Energy & Environment	- ING-IND/27	I Sem
• 5 CFU.	Thermochem. Proc. for Carbon Neutral En. Transfor.	- ING-IND/25	
• 5 CFU.	Electrochem. Tech. for Energy Production and Storage	- ING-IND/23	
• 5 CFU.	Environmental Impacts	- ING-IND/23	
• 5 CFU.	Life Cycle Assessment of Materials and Processes	- ING-IND/22	II Sem

2nd Year, 25 CFU mandatory + 15 CFU eligible + 20 CFU Thesis

Process Design

POLITECNICO MILANO 1863

Learning Objectives:

- To provide the knowledge and tools required by the many and different areas of chemical processes engineering
- The knowledge inclused the design of facilities and equipments, of chemical plants, their simulation, control and operation, together with economic and management aspects.

Mandatory Courses (25 CFU)

		Scientific Sector	
• 5 CFU.	Sust. process design for nat. gas and energy carriers	- ING-IND/25	I Sem
• 5 CFU.	Proc. Control & Instrum. Lab.	- ING-IND/27	
• 5 CFU.	Process Design: Principles and Methods	- ING-IND/25	
• 5 CFU.	Dynamics and Control of Chem. Processes	- ING-IND/26	II Sem
• 5 CFU.	Mechanical Systems Dynamics	- ING-IND/13	

2nd Year, 25 CFU mandatory + 15 CFU eligible + 20 CFU Thesis

Biochemical and Pharma

POLITECNICO MILANO 1863

Learning objectives

- To provide the knowledge and tools required by the many areas related to biotechnologies, healt and care and in particular of the pharmaceutical and biotechnology industry
- The knowledge includes: processes and equipments of the pharmaceutical industry, DS/DP and packaging, regulatory aspects, process development and technology transfer

Mandatory Courses (25 CFU)

		Scientific Sector	
5 CFU.	Flow Chemistry	- ING-IND/25	I Sem
5 CFU.	Formulation Engineering	- ING-IND/23	
5 CFU.	Manufacturing of Biopharmaceuticals	- ING-IND/23	
5 CFU.	Pharmaceutical Chemistry Technology	- CHIM/07	
5 CFU.	Nanomedicine and Pharmaceutical Innovation	- ING-IND/23	II Sem

2nd Year, 25 CFU mandatory + 15 CFU eligible + 20 CFU Thesis

R&D for industrial applications

POLITECNICO MILANO 1863

Learning Objectives:

- To provide the advanced knowledge of chemical engineering fundamental aspects required by industrial research practices
- The knowledge covers both methodological approaches and specific contents related to chemical kinetics, catalysis, mathematics, chemistry and advanced separation processes

Mandatory Courses (25 CFU)

		Scientific Sector	
• 5 CFU.	Advanced Mathematical analysis	- MAT/05	I Sem
• 5 CFU.	Methods for Catal. Kinetic Investigation	- ING-IND/27	
• 5 CFU.	Chemical Kinetics and Dynamics: Theory and App.	- ING-IND/24	
• 5 CFU.	Adsorption and Membrane Separations	- ING-IND/23	
• 5 CFU.	Applied Chemistry for Technologies	- CHIM/07	II Sem

2nd Year, 25 CFU mandatory + 15 CFU eligible + 20 CFU Thesis

Eligible courses (15 CFU)

POLITECNICO MILANO 1863

Codice	Attività formative	SSD	Denominazione Insegnamento	Sem	CFU
056262	B	ING-IND/22	CORROSION ENGINEERING	1	5,0 [1,0]
099309	B	ING-IND/25	ENTERPRISE RISK MANAGEMENT (ERM)	1	5,0
051191	B	ING-IND/22	FOOD PACKAGING MATERIALS	1	5,0
055571	B	ING-IND/27	FUNCTIONAL CERAMIC MATERIALS PRODUCTION	1	5,0
096125	C	CHIM/07	INTRODUCTION TO GREEN AND SUSTAINABLE CHEMISTRY	1	5,0
096218	B	ING-IND/22	MICROSTRUCTURAL CHARACTERISATION OF MATERIALS	1	5,0
054187	B	ING-IND/22	PRINCIPLES OF POLYMER CHEMISTRY[(a)]	1	5,0 [1,0]
057854	B	ING-IND/25	PROCESSES OF FOOD INDUSTRY	1	5,0
099302	C	CHIM/07	PRODOTTI DA RISORSE RINNOVABILI	1	5,0
055562	B	ING-IND/27	SPECIAL CHEMICAL TECHNOLOGIES: RENEWABLE RAW MATERIALS	1	5,0 [2,0]
097621	C	FIS/03	STATISTICAL PHYSICS	1	10,0
054262	B	ING-IND/17 ING-IND/25	CHEMICAL PROJECTS ENGINEERING AND MANAGEMENT	1	10,0 [5,0]
099306	C	ING-IND/23	APPLIED ELECTROCHEMISTRY	2	5,0
057980	C	ING-IND/13	APPLIED MECHANICS	2	5,0
058039	C	ING-IND/23	BIOTECHNOLOGY AND CLINICAL MANUFACTURING	2	5,0 [1,0]
058011	C	ING-IND/23	MANUFACTURING OF BIOPHARMACEUTICALS	1	5,0 [1,0]
057975	B	ING-IND/27	CATALYTIC TECHNOLOGIES FOR EMISSION CONTROL	2	5,0

[Innovative Teaching]
[Didattica Innovativa]

Other courses (15 CFU)

POLITECNICO MILANO 1863

Codice	Attività formative	SSD	Denominazione Insegnamento	Sem	CFU
057977	B	ING-IND/22	CHEMISTRY AND MATERIALS FOR ENERGY	2	5,0
057979	C	CHIM/07	CHEMISTRY AND TECHNOLOGY FLUORINATED MATERIALS	2	5,0
056270	C	CHIM/07	CHEMISTRY FOR SUSTAINABLE POLYMERS	2	5,0
096284	C	ING-IND/23	ELECTROCHEMISTRY OF MATERIALS	2	5,0
052581	--	M-FIL/02	ETHICS FOR TECHNOLOGY[(b)]	2	5,0 [5,0]
054179	--	IUS/07	IMPLICAZIONI LEGALI DELL'ESERCIZIO DELLA PROFESSIONE (LE RESPONSABILITA' DELL'INGEGNERE)	2	5,0 [5,0]
057983	B	ING-IND/24	MOLECULAR MODELING IN PROCESS ENGINEERING	2	5,0 [3,0]
057984	--	MAT/08	NUMERICAL METHODS FOR MOLECULAR SIMULATION	2	5,0 [2,0]
057978	B	ING-IND/27	PROCESSES FOR HYDROGEN AND ENERGY TRANSITION	2	5,0
054248	--	ING-IND/19	RELIABILITY ENGINEERING AND QUANTITATIVE RISK ANALYSIS A+B	2	10,0 [2,0]
057976	C	ING-IND/23	SCIENZA E INGEGNERIA DELL'ODORE	2	5,0 [2,0]
089650	B	ING-IND/24	SICUREZZA DEI PROCESSI DISCONTINUI	2	5,0
096131	B	ING-IND/24	SICUREZZA DEI REATTORI DISCONTINUI	2	5,0
099300	C	FIS/03	SOFT MATTER: THE STRUCTURE AND RHEOLOGY OF COMPLEX FLUIDS	2	5,0
052583	--	ING-IND/10	SUSTAINABLE DEVELOPMENT[(c)]	2	5,0 [5,0]
055583	B	ING-IND/24 MAT/08	COMPUTATIONAL TECHNIQUES FOR MOLECULAR MODELING	2	10,0 [5,0]

Other courses (15 CFU)

POLITECNICO MILANO 1863

Codice	Attività formative	SSD	Denominazione Insegnamento	Sem	CFU
093555	B	ING-IND/27	MICROBIOLOGIA INDUSTRIALE	2	5,0
089653	B	ING-IND/24	TECNOLOGIE DI PRESIDIO PER I PROCESSI INDUSTRIALI A+B	2	5,0
058041	C	ING-IND/23	ELECTROCHEMICAL TECHNOLOGIES FOR WATER AND WASTEWATER TREATMENT	2	5,0
057901	B	ING-IND/22	MOLECULAR MODELING OF MATERIALS	2	5,0

International Mobility

POLITECNICO MILANO 1863

Course (Mandatory)	CFU
Chemical and Catalytic Reaction Engineering A	5
Advanced Transport Phenomena A	5
Applied Physical Chemistry A	5
Chemical Plants and Process Operations Management	5
Processes of the Organic Chemical Industry A	5

Course (Mandatory)	CFU
Chemical and Catalytic Reaction Engineering B	5
Advanced Transport Phenomena B	5
Applied Physical Chemistry B	5
Chemical Plants and Process Operations Management	5
Processes of the Organic Chemical Industry B	5

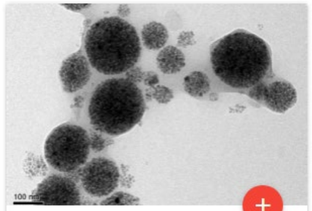
For students participating to **international mobility programs** the mandatory courses (10 CFU) can be subsituted by corresponding 5+5CFU courses.

Excellence in Research (MSc Thesis)

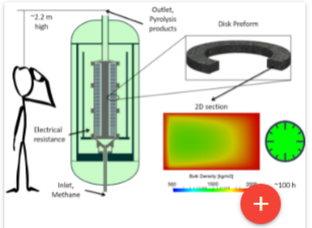
POLITECNICO MILANO 1863

AOCL
Applied Organic Chemistry Laboratory

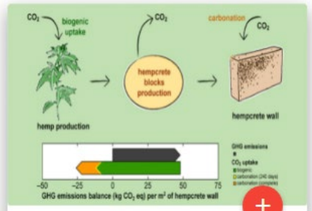
BiocatLab
Laboratorio di Biocatalisi per la Sintesi Organica



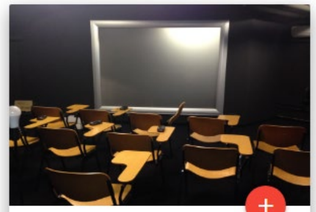
CFALab
Laboratorio di Chimica Fisica Applicata



CRECK
Chemical Reaction Engineering and Chemical Kinetics Group



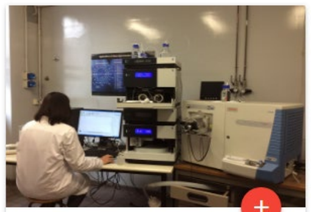
Mat4En2
Materiali per l'Energia e l'Ambiente



eRAM Lab
experimental Risk Assessment and Management Lab

Fluoritech
Fluoritech Laboratory

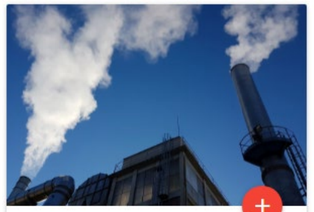
GASP
Group on Advanced Separation Processes & GAS Processing



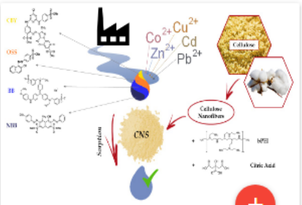
ISCaMaP
Innovative Sustainable Chemistry and Materials and Proteomics

Laboratory of Catalysis and Catalytic Processes | LCCP

NMR Group
NMR Group



Olfattometrico
Laboratorio Olfattometrico

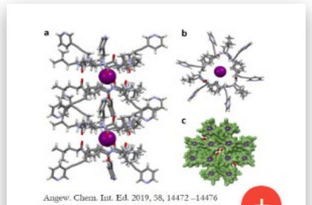


OrganicSCM Lab
Organic Synthesis, Catalysis, and Materials Laboratory

SEE lab
Surface and Electrochemical Engineering Laboratory

Soft Matter
Laboratorio Soft Matter

SuPER TEAM
Sustainable Process Engineering Research Team



SupraBioNanoLab
Laboratory of Supramolecular and Bio-Nanomaterials

SurfaceLAB
Laboratorio di Ingegneria delle Superfici ed Elettrochimica Applicata "Roberto Piontelli"

Dept. of Chemistry, Materials and Chemical Engineering (https://www.cmic.polimi.it/en/) | Dept. of Energy (https://www.energia.polimi.it/en/energy-department/)

How to enroll? Evaluation process

POLITECNICO MILANO 1863

6.1 Access requirements

https://tinyurl.com/2p9axtuk

The admission to the Master of Science degree undergoes an **evaluation process** aimed to determine the eligibility of the applicant. Such a process, in compliance with the existing regulation (**D.M. 22/10/2004 n. 270 art. 6 par. 2 and D.M. 16/3/2007, art.6 par. 1**), is based upon **curriculum requirements** and an **assessment of the preparation of the student**.

The final decision about the admission to the Master of Science degree shall be taken by an **Evaluation Commission** set up by the Board of Studies, according to the academic career of the applicant.
The Commission may take into account valid documentation showing clear exceptional conditions.
Such documentation shall be attached to the admission application.

If the applicant is admitted, compulsory additional subjects shall be communicated together with the admission and before enrolment, in order to provide students with the necessary information for a transparent and rational choice.

Requirements concerning the English language proficiency levels are presented in Paragraph 7.5.

How to enroll? Access requirements

Application for admission

a) Bachelor of Science Degree (Laurea) or higher degree (MSc, Laurea Magistrale).

- The evaluation can be carried out *under reserve* also for students enrolled in Politecnico di Milano or other Universities BSc, if they are candidates in a Graduation session scheduled not later than 6 months, and not later than the deadline for the enrolment to the MSc program.
- The *reserve is lifted* when the BSc is earned.
- If the BSc is not earned before the deadline for the enrolment to the MSc program, the evaluation is lost and a new application for admission must be submitted.

Additional requirements

a1) for Politecnico di Milano Bachelor students from a BSc program in “Ingegneria Chimica”,

- at least 105 CFU must be gained with an average grade >= 25/30 before the end of the fall semester (primo semestre) of the second year
- Bachelor of Science Degree (Laurea) must be earned in 4 years maximum from the enrolment.

or

How to enroll? Access requirements

POLITECNICO MILANO 1863

a2) for any student
graduation at the Bachelor of Science no later than 31 October of the sixth year after the first enrolment in an Italian University (for example if the first enrolment an Italian University was in September 2013, the degree should be obtained before October 31, 2019); such requirement does not apply for candidates having a MSc;

b) average graduation mark not below the “adjusted” admission threshold (see later);
SC = S + k * (min (M,N)-4)
where k = 1, M=6 and S=22, N= number of years for achieving the Bachelor of Science, i.e. half of the number of semesters occurring from the year of the first enrolment in any University to the achievement of the BSc Graduation
Note: does not apply if a1 is satisfied.

c) certification of the English language proficiency (see Paragraph 7.5) and https://www.polimi.it/futuri-studenti ;
d) further subjects and knowledge required (see Paragraph 6.2).

How to enroll? Access requirements

POLITECNICO MILANO 1863

- if the requirements stated at either point a) or b) of the above list are not satisfied, the Commission will not admit the applicant to the Master of Science degree course unless documentation testifying a proven exceptional case can be presented.

- If the requirements stated at either point c) or d) of the above list are not satisfied, the applicant will be accepted to the Master of Science degree course and enrolled, after having satisfied these conditions, by demonstrating his/her proficiency in English and/or obtaining the necessary **prerequisites** identified and communicated by the Commission.

How to enroll? Access requirements

POLITECNICO MILANO 1863

6.2 Requested knowledge

- The student must have acquired a knowledge base that is **consistent** with the study programme offered in the degree course.

- The evaluation of the adequacy of this knowledge base uses as a reference framework the programme of the Bachelor of Science degree course in Chemical Engineering. This means that any prerequisite that is required to prospect students derives from a lack of “consistency” with the applicant’s Bachelor of Science degree course.

An applicant who has been assigned any prerequisites may attend “Individual Courses”, in the period before the enrolment to the Master of Science.

The following three opportunities exist:

How to enroll? Access requirements

POLITECNICO MILANO 1863

1- **earn credits by passing courses at the Master of Science level**, by means of the “Individual Courses” program; these credits will be accepted to be part of the 120 credits necessary for the Master of Science degree

2- **earn the ‘right to attend’** of courses at the Master of Science level. The same as before if the exam was not passed

3- **earn credits related to the additional compulsory modules**, as requested by the Evaluation Commission for the Master of Science. These credits shall be not accounted within the 120 credits required for the Master of Science degree.

How to enroll? Access requirements

POLITECNICO MILANO 1863

Furthermore, the following restrictions are in force:

1. the total amount of credits (by passing exams or only attending courses) that can be accounted under the 120 credits required for the Master of Science degree cannot exceed 32. Credits in excess of 32 could be only accepted as ‘over-limit exams’ (soprannumero);

2. in any case, the total amount of credits earned by passing “individual courses” cannot exceed 80, including credits of compulsory prerequisites.

If an applicant does not pass the exams assigned as compulsory prerequisites within 18 months, he or she forfeits his/her right to admission *totally and completely*.

Track selection and PSPA

POLITECNICO MILANO 1863

In the event that the minimum limit for PSPA is not reached, the definition of the classes will take place thanks to a ranking drawn up on the basis of the evaluation of an **index of merit I**

I = MT + 0.1 * (CFU2 / (SEM-0.5) -30)
MT = M - k * (60-CFU2)

Where:
MT = Weighted average of the marks of the exams taken
CFU2 = CFUs taken within the 2nd session of the 2nd semester from enrollment
SEM = semesters from enrollment
M = average of the marks of the exams taken
k = 0.2

…basically the same as for international mobility programs ranking

In the event that the minimum limit for PSPA is not reached, students with a lower merit index will be directed to the PSPA indicated as second/third/fourth choices until the minimum number for each PSPA is reached. Given the highly applicative and laboratory nature of the **PSPA Research and Development** for Industrial Applications, the maximum number of admissible students is set to 25, regardless of the minimum number of students.


POLITECNICO
MILANO 1863
Teaching innovation,
PhD,
internationalization,
campus life

PoliMI Ambassadors

POLITECNICO MILANO 1863

https://www.ingindinf.polimi.it/en/

Politecnico di Milano has activated high-level training courses aimed at creating **new professional figures**, the Polimi Ambassador in **Green Technologies**, **Smart Infrastructures**, and **Inclusivity Design** which:

- have skills in specific areas consistently with the training project
- acquire digital enabling technologies in line with the profile
- master interdisciplinary tools, methods, and aptitude for a systemic vision
- develop talent to operate in interdisciplinary and multisectoral contexts, acquired through exposure, even in teams, to case studies and challenges

POLIMI AMBASSADOR GREEN TECHNOLOGIES

POLIMI AMBASSADOR SMART INFRASTRUCTURES

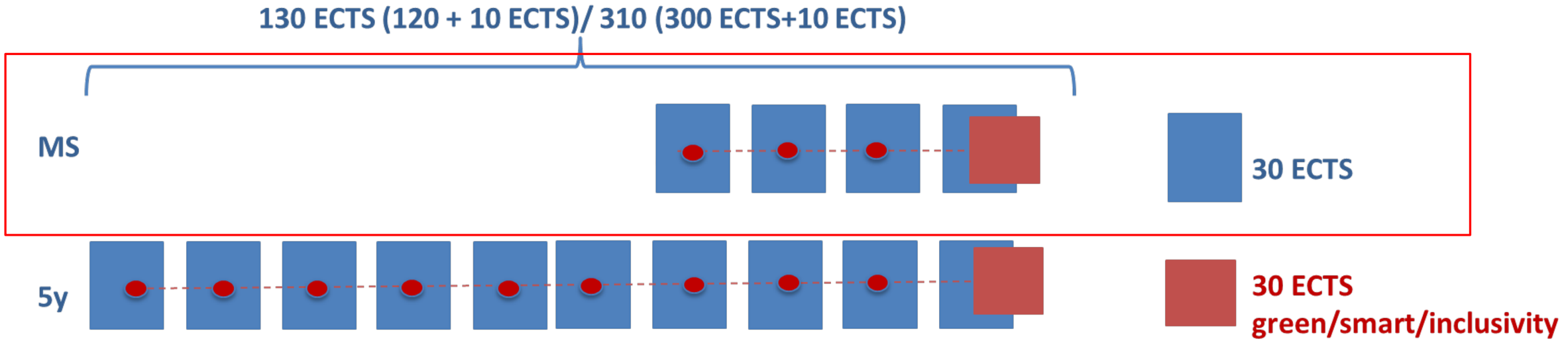
POLIMI AMBASSADOR INCLUSIVITY DESIGN

➡ To find out more, visit the Politecnico Website: https://www.polimi.it/en/programmes/high-level-training-courses/green-technologies-smart-infrastructures-e-inclusivity-design

PoliMI Ambassadors

POLITECNICO MILANO 1863

https://www.ingindinf.polimi.it/en/



30 ECTS green/smart/inclusivity =

≈10 ECTS

Vertical Courses

(topics characterizing the DP of context)

+

≈ 20 ECTS

Transversal Courses

(topics different from the ones characterizing the DP of context)

Honours Programme in Scientific Research in Industrial Engineering - CHEMICAL

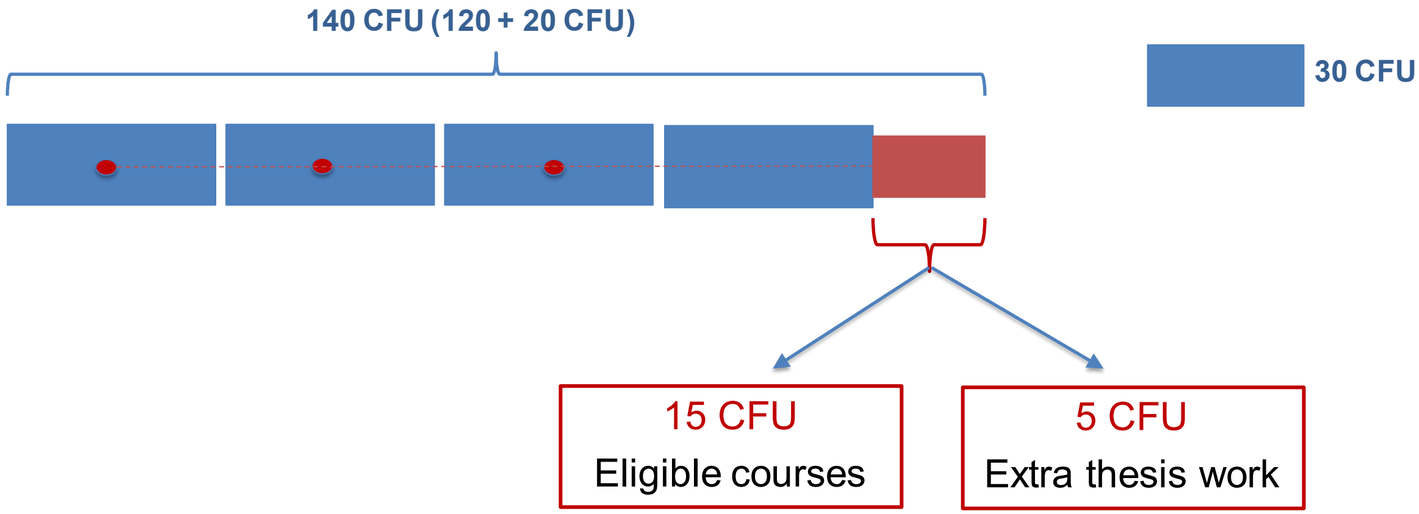
POLITECNICO MILANO 1863

https://www.ingindinf.polimi.it/en/

An educational path that is part of the **Politecnico di Milano high education training strategy** and is targeted to students with a strong predisposition for **study and research**, with the aim to improve these skills and **train industrial engineers who can enter the fields of scientific and technological research**

It includes:
- additional in-depth training activities
- carrying out an in-depth analysis on the laurea magistrale final work with significant scientific research results.

The ***Honours Programme in SCIENTIFIC RESEARCH IN INDUSTRIAL ENGINEERING*** will be reported in the Student's Diploma Supplement



https://www.polimi.it/corsi/percorsi-di-alta-formazione/honours-programme-scientific-research-in-industrial-engineering/

Beyond curricular teaching: Passion in Action

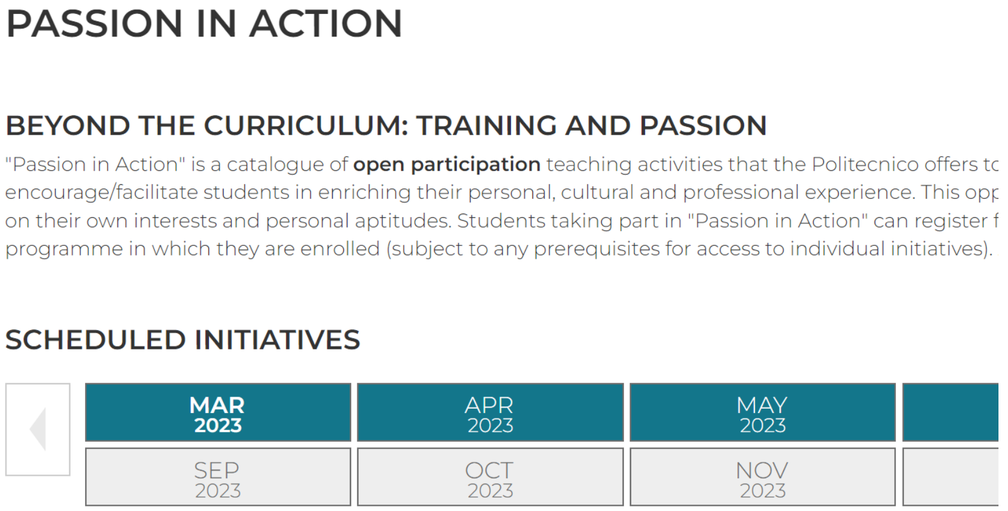
POLITECNICO MILANO 1863

Passion in Action is a catalogue of **open participation** teaching activities that Politecnico offers to students to support **the development of transversal**, **soft**, and **social skills** and to **encourage/facilitate** students in enriching their **personal**, **cultural**, and **professional** experience.

- A range of subjects can be chosen, depending on personal interests and aptitudes.
- A range of activities can be picked: short courses on transversal tools and methodologies; design activities on multidisciplinary areas; group work projects in cooperation with companies; hackathons and students' competitions.

➡ Find out more on the Politecnico Website: https://www.polimi.it/en/programmes/innovative-teaching/

Extra-curricular activities will be tracked in the students' career in the diploma supplement and by an electronic badge.

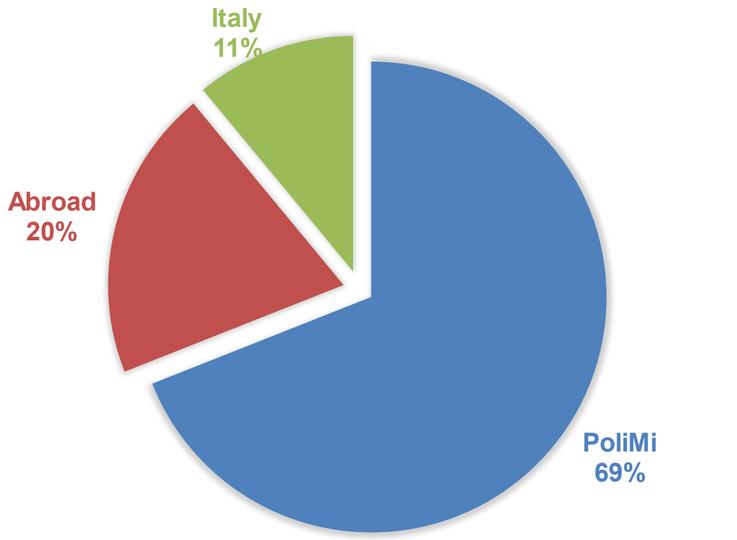


https://www.polimi.it/corsi/passion-in-action/

International Mobility (3I)

POLITECNICO MILANO 1863

Where are PoliMi Master Students from?



Some number on «Exchange programs»

	incoming	outgoing
Erasmus+	938	730
Extra EU Bilateral Agreements	487	263
Double Degrees	288	142

IDEA League
leading European education and research in science and technology
TU Delft · ETH Zürich · CHALMERS UNIVERSITY OF TECHNOLOGY · RWTH AACHEN UNIVERSITY · POLITECNICO MILANO 1863

ALLIANCE 4 TECH
CentraleSupélec · Technische Universität Berlin · UCL · POLITECNICO MILANO 1863

Strategic networks of European Technical Universities

Tsinghua University · Shanghai Jiao Tong University · Beihang University · Xi'an Jiaotong University · The Hong Kong University of Science and Technology

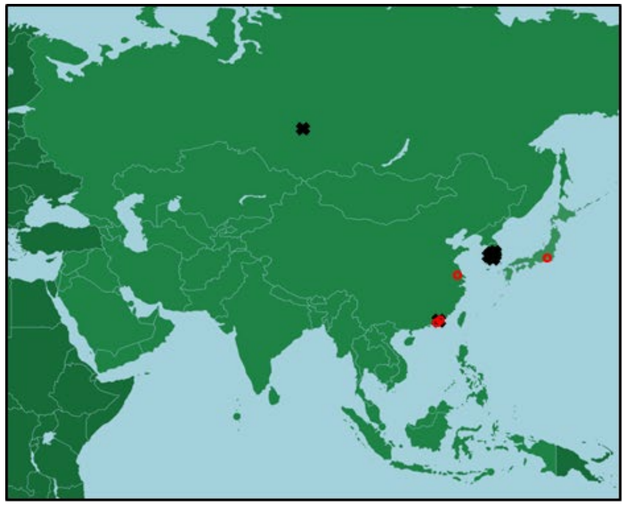
Strategic agreements with top Chinese Universities

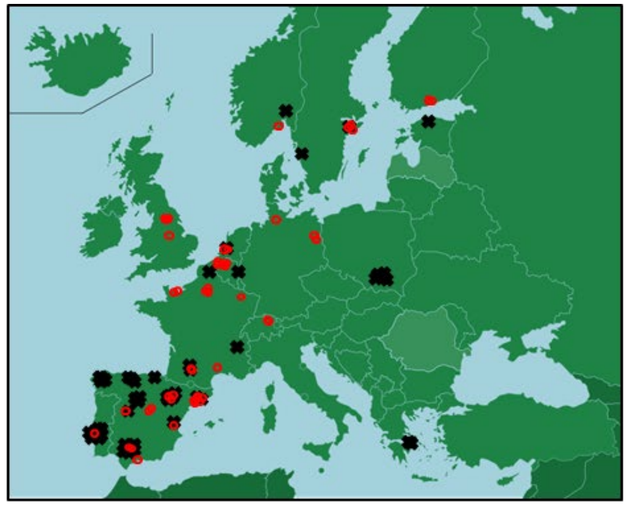
https://www.polimi.it/campus-e-servizi/mobilita-internazionale

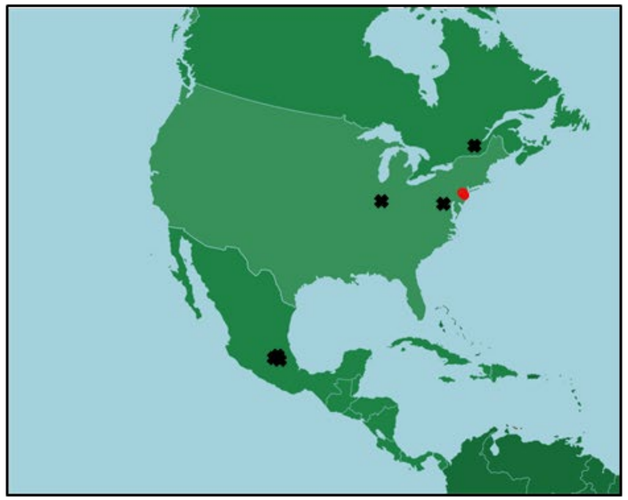
International Mobility (ChemEng)

POLITECNICO MILANO 1863

An international and multicultural environment…







✖ Incoming students Chemical Engineering

○ Outgoing students Chemical Engineering

Why an experience abroad?

- ✓To learn a new language
- ✓To benefit from cultural diversity
- ✓To become citizens of the World
- ✓To deepen your knowledge
- ✓To share your knowledge and your culture

Exchange Programs @ PoliMi

- ✓Erasmus
- ✓Bilateral Agreements (UE and Extra-UE)
- ✓Double Degree (UE and Extra-UE)

Time range: 2014-2017 Source: International Affairs Office POLIMI

PhD in Industrial Chemistry and Chemical Engineering

POLITECNICO MILANO 1863

http://phd.chem.polimi.it/

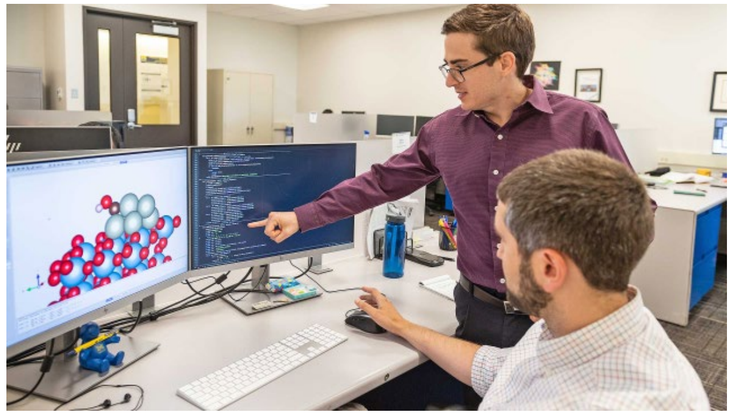
http://www.dottorato.polimi.it/

The **Ph.D. Programme in Industrial Chemistry and Chemical Engineering** offers students and executives opportunities to **develop solutions to global challenges by performing cutting-edge research** in three main areas:

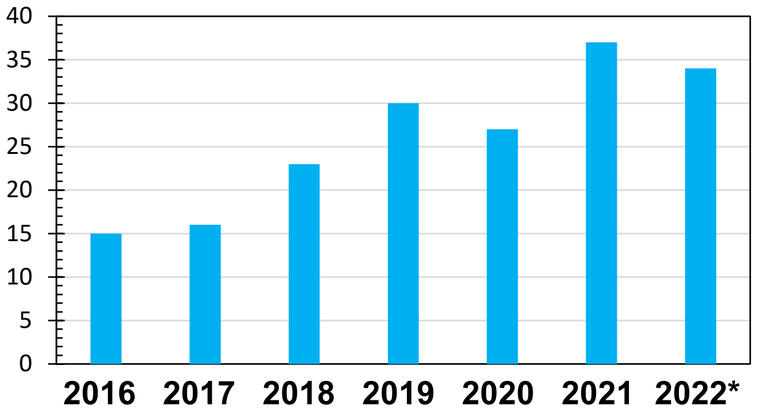
- **Energy, Safety and Environment**
- **Health and Life Sciences**
- **Smart and Sustainable Industry**

Research activities span from the **nano/micro scale up to the macro scale** and cover any fields of Industrial Chemistry and Chemical Engineering: from **chemical synthesis** to the characterization and transformation of matter, the development of **new materials**, to safe and **innovative technologies** for **sustainable process development** and design, from **experimental research to numerical modelling** of chemical processes and phenomena.

The Doctoral Programme... a strategic resource for Industry



PhD Students Enrolled by Year



* Not definitive

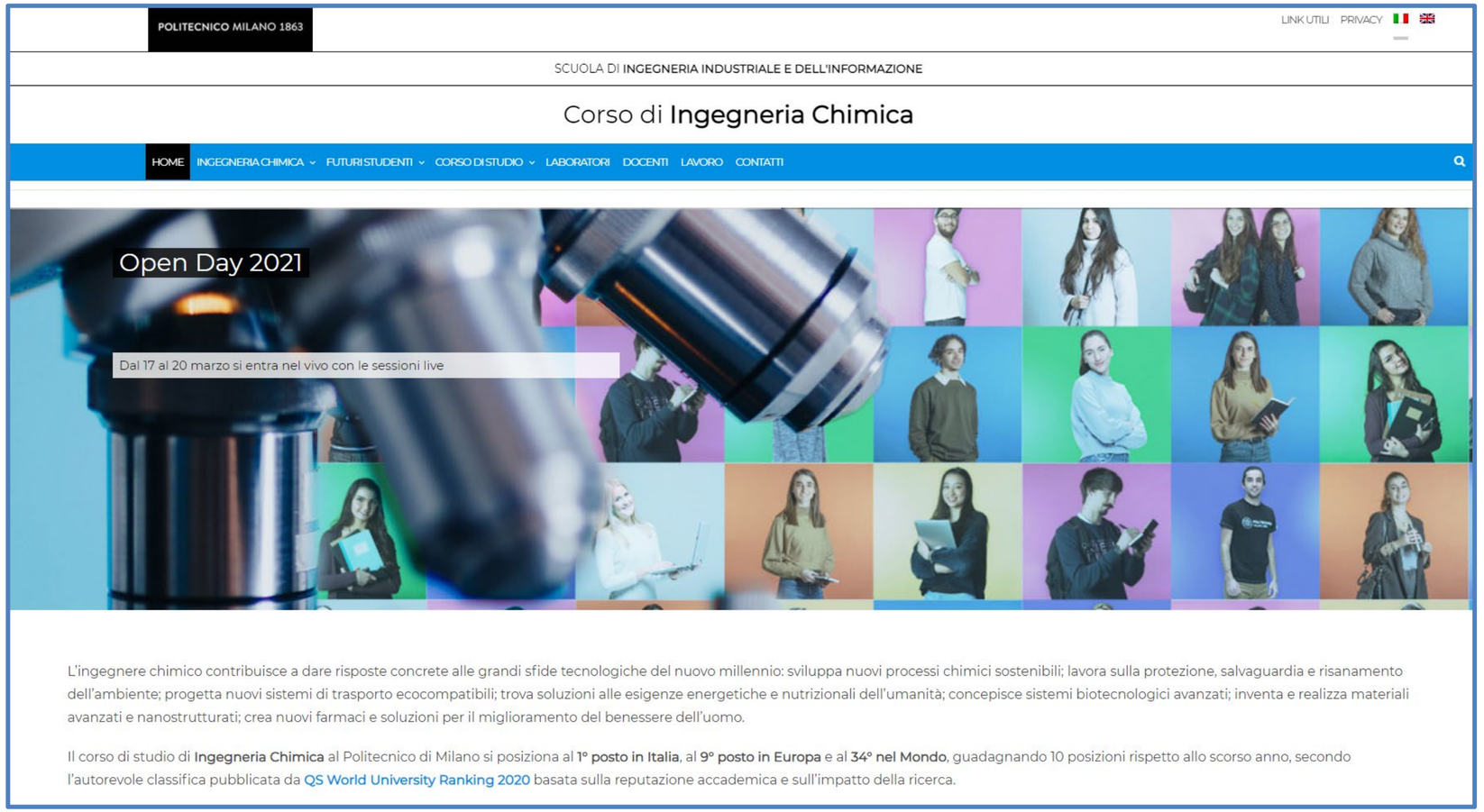
Info e Contatti

Presidente CCS

Prof. Marco Derudi
coordinatore-ccschimica@polimi.it

Rappresentanti Studenti
rappresentantistudenti-ccschimica@polimi.it

http://www.ccs-chimica.polimi.it/



Info e Contatti

http://www.ccs-chimica.polimi.it/contatti

Valutazione delle carriere per l'accesso alla Laurea Magistrale

Prof. Carlo Visconti (Studenti italiani)

Email: lauree-ccschimica@polimi.it
Tel: (+39) (022399)3297

Prof. Alberto Cuoci (Studenti stranieri)

Email: ammissioni-ccschimica@polimi.it
Tel: (+39) (022399)3283

Piani di Studio

Prof. Giulia Bozzano (Laurea Triennale)

Email: pianidistudio-ccschimica@polimi.it
Tel: (+39) (022399)3094

Prof. Lidia Castoldi (Laurea Magistrale)

Email: pianidistudio-ccschimica@polimi.it
Tel: (+39) (022399)3255

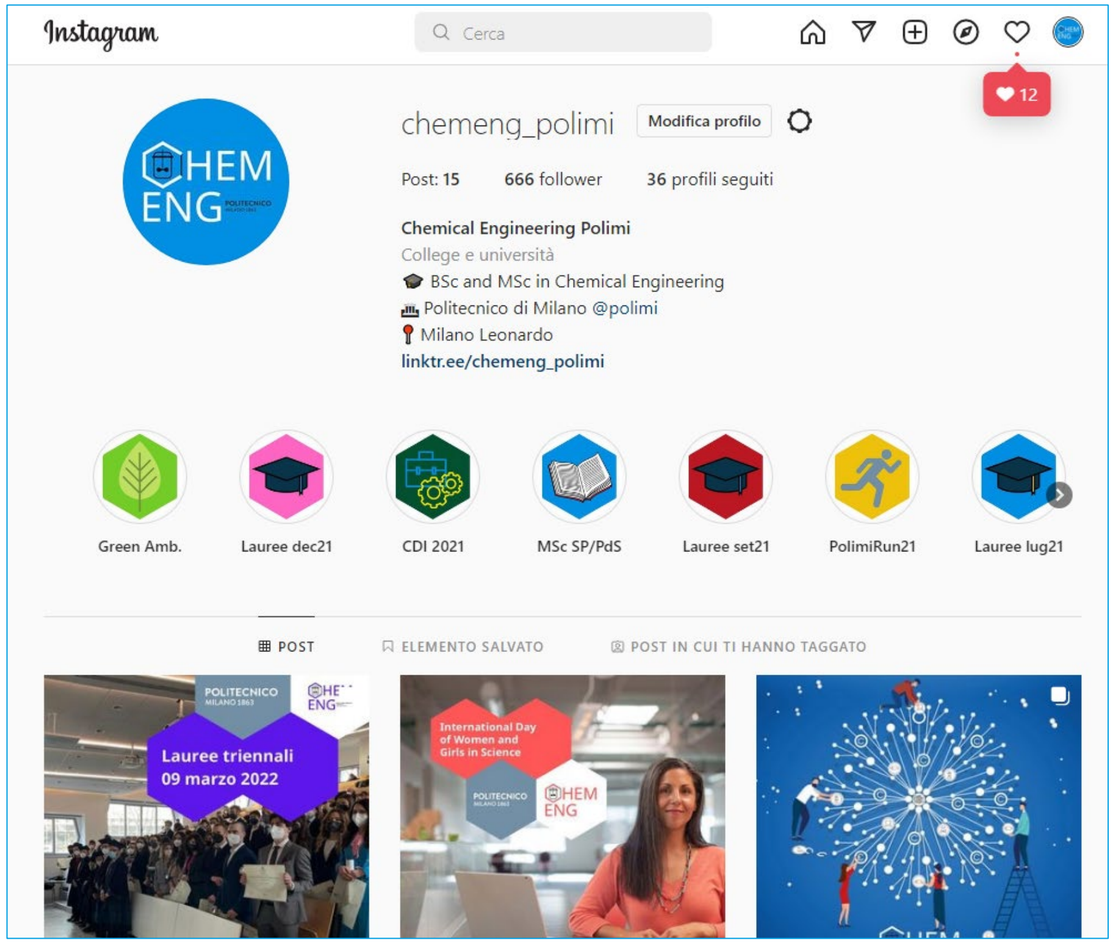
Info e Contatti

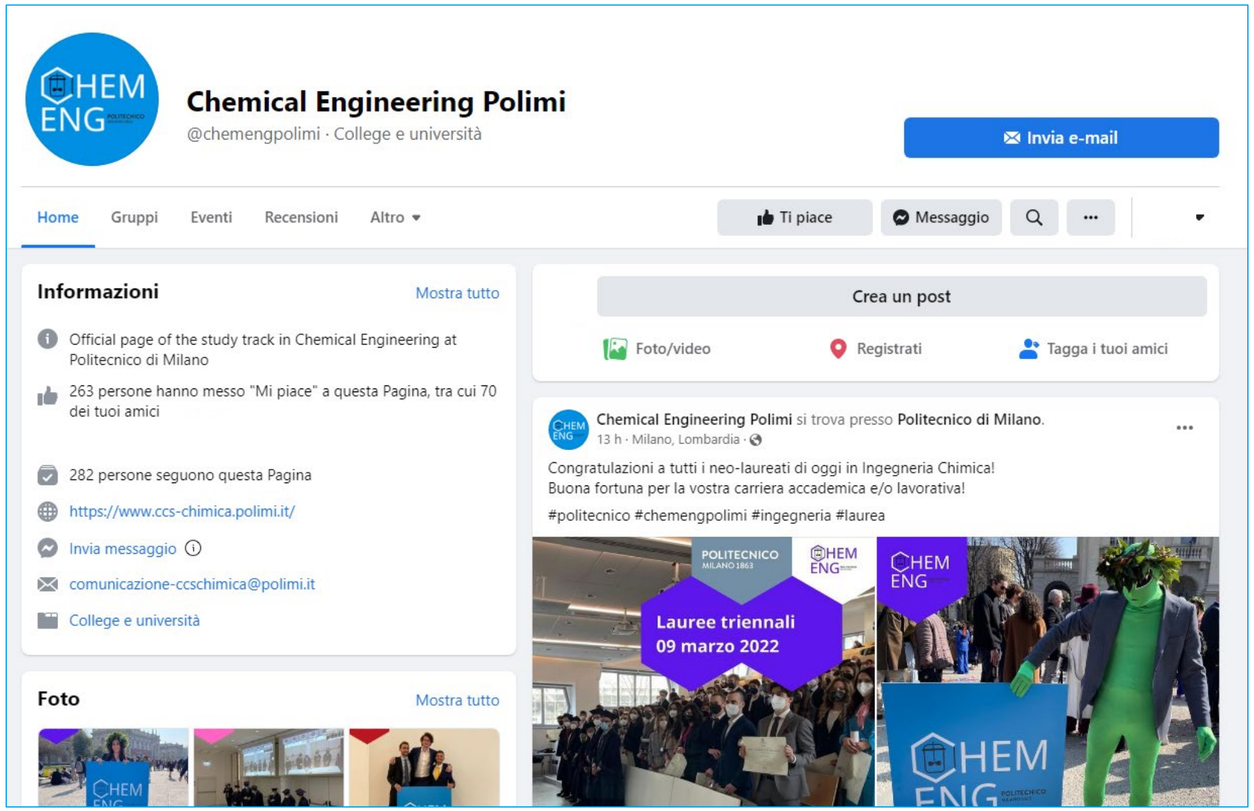
POLITECNICO MILANO 1863

CHEM ENG

chemeng_polimi

chemengpolimi





YouTube https://www.youtube.com/channel/UCuBfCIT-sWVWX_z8n-kMgXA

Info e Contatti

https://www.linkedin.com/company/ccs-chimica-polimi/

New!

«Pillole di Ing. Chimica» webinars

POLITECNICO MILANO 1863

CHEM ENG

In diretta streaming sul nostro canale YouTube e Facebook

YouTube

Edizioni precedenti (registrazioni disponibili sul nostro canale YouTube)

Spotify

Podcast series…

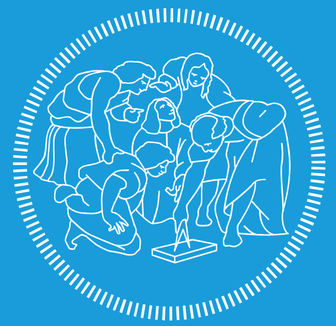
COMING SOON

Summarizing

POLITECNICO MILANO 1863

- **A deep, polyvalent, flexible and highly appreciated technical and scientific education**
- **Creative and innovative attitude** highly appreciated by the process industry
- **Great short and long term employment opportunities**
- **Excellence in Research**
- **A multicultural and stimulating environment in a vibrant and cosmopolitan city: Milan**
- Your chance to be a first line player in **Italy**, **Europe** and around the **World**

Come join us!



POLITECNICO

MILANO 1863