



POLITECNICO
MILANO 1863

MILANO
LEONARDO
CAMPUS

INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

PHD PROGRAMS

Programme

The Doctoral Programme in Industrial Chemistry and Chemical Engineering (CIIC) is designed for students aiming at getting a deep expertise in research activities related to the development and design of chemical processes. Courses are held at the Milano Leonardo Campus.

Mission and goals

The goal of the Doctoral Programme in Industrial Chemistry and Chemical Engineering is that of forming high profile professionals with significant versatility and flexibility. This target is achieved through a solid scientific preparation on some key subjects, such as transport phenomena, physical chemistry, and chemistry.

The development of an original research work on a specific topic, which is a relevant part of the Doctoral Programme, completes the education of the Doctor of Philosophy. To provide a few examples, the research activity may be focused on one of the following topics:

- methodologies and criteria for process and plant design and operation, considering the choice of raw materials, costs, safety issues, and sustainability;
- design and control of unit operations and of the whole plant through mathematical modelling and computer simulation techniques;
- study of processes from the microscopic to the macroscopic scale, by analyzing the thermodynamic and kinetic aspects of the process at the fundamental and applied levels;
- synthesis, characterization, process technologies, and use of substances;
- development of innovative chemical processes;
- catalysis and bio-catalysis;
- innovative energy technologies, with particular attention to energy consumption;
- biotechnology and chemistry of natural compounds.

The PhD Programme is typically structured in a three years activity, but it can be extended to a fourth year in case of need.

Twenty five ECTS credits must be achieved in the course of the PhD, though the PhD Board can require some extra credits in case of need. The courses are offered by the PhD school, but can be followed in other universities or in summer schools.

Reference faculty members for each research area covered in the Doctoral Programme can be found in the PhD Board.

Career Opportunities

The research themes that characterize the PhD Programme in Industrial Chemistry and Chemical Engineering are directly related to several activities that are carried out in numerous industrial sectors. Thus, the Doctor of Philosophy in Industrial Chemistry and Chemical Engineering is a suitable candidate for positions in chemical process companies and research institutes, both private and public, operating in the fields of research, design, production, control, and consulting.

A recent survey (run by Politecnico's Career Service in 2020) showed that our PhD candidates are all employed, after one year, in national and international companies and academic and non-academic research institutions, engaged in innovation, research and technical development. On average, the survey showed that doctors with our PhD title are paid 30% more than the corresponding employees with a master title.

Eligible students

Students holding "Laurea Magistrale" degrees in Chemical Engineering, Materials Engineering, Industrial Chemistry and Chemistry, Safety and Prevention Engineering are the natural applicants. The programme is though open also to graduates from other scientific faculties.

Scholarships

Around 7 scholarships of 1325 € (or more) of monthly net income are available for students each year, as well as some thematic scholarships for PhD thesis topics supported by industry or by national and EU projects. Students without a scholarship may be supported by research groups participating to the PhD Programme. A yearly budget for conference attendances or purchase of educational material is also foreseen, as well as an extra financial support for spending a research period abroad.

Contacts

For further information, please visit the following web site:

www.polimi.it/phd

or contact the School of Doctoral Programmes - Politecnico di Milano at

phdschool@polimi.it.

For further information on specific aspects of the course and curricula send an e-mail to phd-ciic@polimi.it

