

PHD PROGRAMME TABLE 38TH CYCLE

Secton "Available Positions and Scholarships" integrated on 13/05/2022

Secton "Available Positions and Scholarships" integrated on 17/06/2022

PROGRAMME'S NAME	INDUSTRIAL CHEMISTRY
DURATION	3 years
PROGRAMME START DATE	01/11/2022 (DD/MM/YYYY)
LANGUAGES	English
MANDATORY STAY ABROAD	3 months
COORDINATOR	To be defined
CURRICULA	N/A
RESEARCH TOPICS	Detailed list at the bottom of the present document
PhD POSITIONS	9
ADMISSION PROCEDURE	Qualifications evaluation Oral examination

Available Positions and Scholarships

Pos. n.	Financial Support	Description	Positions linked to research topics
1	PhD Scholarship	Funded by the University of Bologna general budget with funds made available by Progetti di Sviluppo Strategico dei Dipartimenti (PSSD) and co-funded by the Department of Industrial Chemistry "Toso Montanari"	Development of smart-hybrid methodologies for optimization and scale-up of industrial (bio-) chemical equipment
2	PhD Scholarship	Funded by the Department of Industrial Chemistry "Toso Montanari", partly with funds made available by Fondazione "Ing. Luciano Toso Montanari"	Industrial scale printing of nanomaterials for electrochemical sensors
3	PhD Scholarship	Funded by the University of Bologna general budget with funds made available by Progetti di Sviluppo Strategico dei Dipartimenti (PSSD) and co-funded by the Department of Industrial Chemistry "Toso Montanari"	Stimuli-Responsive Polymers
4	PhD Scholarship	Funded by the Department of Industrial Chemistry "Toso Montanari", partly with funds made available by Fondazione "Ing. Luciano Toso Montanari"	Biomass derivatives valorization by homogeneous or single site catalysis
5	PhD Scholarship	Funded by the Department of Industrial Chemistry "Toso Montanari" with funds made available by the project PRIN 2020 - Code 2020CZCJN7_004 – PE4 - CUP J35F21004300001 - LEVANTE: LEvulinic acid Valorization through Advanced Novel Technologies	Continuous-flow catalytic upgrading of bio-platform molecules in the gas-phase for the production of chemicals and fuels.
6	PhD Scholarship	Funded by the Department of Industrial Chemistry "Toso Montanari" with funds made available by the project 101069690 — HORIZON-CL5-2021-D2-01 STORMING - STructured unconventional reactors for CO ₂ -free Methane catalytic cracking – Tutor Prof. Patricia Benito Martin	Electrified CH ₄ cracking over structured catalysts
7	Research Grant	Provided by the Department of Industrial Chemistry "Toso Montanari" with funds made available by the project VULCAFLEX_CIRI FRAME - Bando Imprese 2019 - CUP E6120000170009. Researched	Life Cycle Assessment Applied to Innovative Chemical Processes

		commissioned by Vulcaflex S.p.A Prot. 506/2020 - Tutor Prof. Fabrizio Passarini. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €19,367	
8	Research Grant	Provided by the Department of Industrial Chemistry "Toso Montanari" with funds made available by the project Laboratorio congiunto CIRI FRAME - ENI S.p.A. Prot. 286/2022 – Implementation agreement for the establishment of a joint laboratory, for the launch of research activities in the field of decarbonization and energy transition – Tutor prof. Francesco Basile. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €20,267	Sustainable and Safe Production of H2
9	Research Grant	Provided by the Department of Industrial Chemistry "Toso Montanari" - Tutor prof.ssa Stefania Albonetti. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €19,457.28	Sustainable processes for the valorisation of biomass and CO2

Admission Exams

	DATE AND TIME	RESULTS
Qualifications evaluation	Applicants' participation is not required	Available from 21/06/2022**
Oral examination	Date: starting from 28/06/2022 - 9 a.m. CEST* Place: In presence, Aula 1, Department of Industrial Chemistry, Viale del Risorgimento 4, Bologna. Remotely, using Microsoft Teams	Available from 08/07/2022**

* In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral examination detailed schedule shall be made available on the webpage [Studenti Online](#) together with the results of the qualifications and research proposal evaluation. **During the oral examination, applicants may express their interest in one or more positions linked to specific research topics.**

** The **results of the admission exams** will be available on the webpage [Studenti Online](#) (select "summary of the requests in progress" > "see detail" and open the .pdf file at the bottom of the page). **No personal written communication will be sent to applicants concerning the examinations results.**

Required and Supporting Documents to be attached to the application

All the documents listed below **shall be drawn up in English or in Italian**. In case of documents originally issued in any other language (e.g. identity document, qualifications), an official translation is required.

Only qualifications obtained **during the last 5 calendar years** shall be taken into consideration, except for the University Degree. The Admission Board will assess the relevance of the supporting documents to the PhD Programme.

REQUIRED DOCUMENTS	
Identity document	Valid identity document with photo (i.e. identity card, passport)
Degrees	Documents attesting the awarding of the first and second cycle degrees, the exams taken and the marks obtained (see Art. 3 of the Call for Applications)
Curriculum Vitae	In the Curriculum Vitae a brief description of the topics researched in the second cycle degree final thesis is required. The Curriculum Vitae must be drawn up according to the "EuroPass" standard.
SUPPORTING DOCUMENTS	
Personal statement	This must include the reasons prompting the applicant to attend the PhD Programme and those relevant experiences and research interests , that make the applicant suitable for the specific PhD Programme (3,000 characters maximum, including spaces).

Publications	List of publications (i.e. monographs, articles on scientific journals), minor publications (conference papers, volume chapters, etc.) and abstracts and posters presented during academic conferences.
Other documents	- Postgraduate vocational training programmes and/or specialisation programmes relevant to the PhD Programme - Teaching activities carried out at academic level - Research activity - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research units - Work activity - Curricular and non-curricular professional internships - Periods of study abroad, outside the country of origin (e.g. Erasmus programme or other similar mobility programmes) - Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc)

Evaluation criteria*

Scores will be expressed in points out of 100, as follows.

1. Qualifications evaluation

Minimum score for admission to the oral examination: 30 points, Maximum score: 50 points

First and Second cycle degree final mark and Weighted Average Mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	20 points max
Publications	5 point max
Consistency of the thesis topics, as described in the CV, with the research topics of the PhD programme	15 points max
Personal statement	5 points max
Other supporting documents	5 points max

2. Oral examination

Minimum score for eligibility: 30 points, Maximum score 50 points

English language proficiency	5 points max
General knowledge of issues encompassed by the PhD Programme	45 points max

Oral examination aims to assess the suitability of the applicant for scientific research as well as the general knowledge of issues encompassed by the PhD Programme (see the list of [research topics](#) at the bottom of the present document).

During the oral examination, the applicant's English proficiency shall be assessed.

The oral examination is carried out in Italian or English.

* Possible further evaluation criteria will be available on the [University website](#), selecting the relevant PhD Programme > "More information", at the bottom of the page in the section "Notices".

Research Topics

The research topics of the PhD in Industrial Chemistry concern the sectors of **sustainable industrial chemistry, the chemistry of polymeric and ceramic materials, catalytic processes in their industrial applications and for fine chemistry.**

In all the research topics, a key factor will be the environmental sustainability of the various phases, the improvement or innovation in the industrial production of chemical substances using processes that match the "Green Chemistry" principles and those of circular economy.

Within the main research topics there are

- the development of new catalysts (e.g. organic, metallo-organic or coordination compounds) and catalytic processes (both traditional and based on electro and photo-electrocatalysis);
- production of sustainable hydrogen, fuels and energy on a laboratory and pilot plant scale (including from biomass); activation and transformation of CO₂ into chemical compounds, synthesis of complex molecules, (bio) polymers and composites, nano-additives, polymers for organic photovoltaics, photosensitizing compounds;
- modeling and optimization of nanomaterials, recovery and recycling processes using the circular economy approach;
- design of new energy storage techniques such as high-efficiency batteries and supercapacitors.