

## PHD PROGRAMME TABLE 37TH CYCLE

Section "Available Positions and Scholarship" integrated on 22/04/2021

Section "Available Positions and Scholarship" integrated on 06/05/2021

Section "Available Positions and Scholarship" integrated on 13/05/2021

Section "Available Positions and Scholarship" integrated on 20/05/2021

Section "Available Positions and Scholarship" integrated on 07/06/2021

Section "Available Positions and Scholarship" integrated on 11/06/2021

PROGRAMME'S NAME	CHEMISTRY
DURATION	3 years
PROGRAMME START DATE	01/11/2021
LANGUAGE	English
MANDATORY STAY ABROAD	6 months
COORDINATOR	Prof. Domenica Tonelli ( <a href="mailto:domenica.tonelli@unibo.it">domenica.tonelli@unibo.it</a> )
CURRICULA	1. Chemical Sciences 2. Industrial Chemistry
RESEARCH TOPICS	<a href="#">Detailed list at the bottom of the present document</a>
PHD POSITIONS	22
ADMISSION PROCEDURE	Qualifications evaluation Oral examination

### Available Positions and Scholarships

Pos. n.	Financial Support	Description	Curriculum	Positions linked to research topics
1	PhD Scholarship	Totally funded by the University of Bologna general budget	1	
2	PhD Scholarship	Totally funded by the University of Bologna general budget	1	
3	PhD Scholarship	Totally funded by the University of Bologna general budget	1	
4	PhD Scholarship	Funded by the Department of Sociology and Business Law	1	
5	PhD Scholarship	Totally funded by the University of Bologna general budget	1	
6	PhD Scholarship	Totally funded by the University of Bologna general budget	2	
7	PhD Scholarship	Totally funded by the University of Bologna general budget	2	
8	PhD Scholarship	Totally funded by the University of Bologna general budget	2	
9	PhD Scholarship	Totally funded by the University of Bologna general budget under the "Progetti di Sviluppo Strategico dei Dipartimenti (PSSD)" initiative	2	Selective electrocatalytic processes for a circular economy
10	PhD Scholarship	Totally funded by the University of Bologna general budget under the "Progetti di Sviluppo Strategico dei Dipartimenti (PSSD)" initiative	2	Preparation of hybrid nanostructured systems from metal clusters for catalytic applications
11	PhD Scholarship	Funded by MUR under the "Departments of Excellence" initiative	1	

12	PhD Scholarship	Co-funded by the University of Bologna general budget and by the Department of Chemistry "Giacomo Ciamician"	1	
13	PhD Scholarship	Co-funded by the University of Bologna general budget and by the Department of Industrial Chemistry "Toso Montanari"	2	
14	PhD Scholarship	Funded by the "Ing. Luciano Toso Montanari" Foundation	2	Termochemical valorization of polymeric materials and other wastes for the obtainment of eco-sustainable products
15	PhD Scholarship	Funded by the "Ing. Luciano Toso Montanari" Foundation	2	Assessment of environmental sustainability related to processes of industrial production and resource recovery
16	PhD Scholarship	Funded by the Department of Industrial Chemistry "Toso Montanari" with funds made available by an agreement with CNR and Pollution S.r.l.	2	Design and development of MEMS devices and their integration in gas-chromatographic instruments for industrial applications
17	PhD Scholarship	Funded by the Department of Chemistry	1	
18	Research Grant	Provided by the Department of Industrial Chemistry "Toso Montanari". The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of € 19.367,00	1	COmbined suN-Driven Oxidation and CO2 Reduction for renewable energy storage" (CONDOR)
19	Research Grant	Provided by Consiglio Nazionale delle Ricerche - Istituto per la Sintesi Organica e la Fotoreattività (CNR-ISOF). The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of € 19.367,00	2	Materials and systems for solar energy and CO2 conversion
20	PhD Scholarship	Funded by Polynt S.p.A	2	Development of new catalysts suitable for the selective gas phase oxidation of aliphatic hydrocarbons to maleic anhydride
21	PhD Scholarship	Funded by Basf Italia S.p.A.	1	Development and application of spectroscopic and chemometric methods to reaction and process studies, with particular emphasis on near infrared spectroscopy
22	PhD Scholarship	Funded by Chiesi Farmaceutici S.p.A.	1	Organic electrochemistry: mechanisms and applications

## Admission Exams

	DATE AND TIME	RESULTS
<b>Qualifications evaluation</b>	Applicants' participation is not required	Available from <b>17/06/2021**</b>
<b>Oral examination</b>	Date: starting from 22/06/2021 - 9.30 a.m. CEST* Place: Remotely, using Microsoft Teams.	Available from <b>06/07/2021**</b>

\* 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 evaluation. **During the oral examination applicants may express their interest in one or more positions linked to specific research subjects.**

\*\* 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

(only documents in Italian, English, French, German and Spanish shall be considered as valid and be assessed by the Admission Board)

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	
<b>Identity document</b>	Valid identity document with photo (i.e. identity card, passport)
<b>Curriculum Vitae</b>	The Curriculum Vitae must briefly describe the subjects dealt with by the Master's degree thesis and it must be drafted in the European "Europass" format.
<b>Degrees</b>	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)
SUPPORTING DOCUMENTS	
<b>Personal Statement</b>	Abstract of the second cycle degree thesis. Graduands may submit the draft of their thesis (abstracts cannot exceed 5.000 characters, including spaces and formulas, if present. The above figure does not include: title, outline, images such as graphs, diagrams, tables etc. if present).
<b>Publications</b>	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.
<b>Other documents</b>	<ul style="list-style-type: none"> <li>- University Master Courses (Master Universitari di I e II livello), Postgraduate vocational training programmes and/or specialisation programmes relevant to the PhD Programme</li> <li>- Teaching activity carried out at university level.</li> <li>- Specialisation thesis abstract (5000 characters max)</li> <li>- 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</li> <li>- Work activity</li> <li>- Vocational internships</li> <li>- Professional or training internships</li> <li>- Periods of study abroad, outside the country of origin (e.g. Erasmus programme or other similar mobility programmes)</li> <li>- Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc)</li> </ul>

## 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

University degree final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	20 points max
Publications	5 points max
Adequacy of the thesis topics described in the CV with the research topics of the PhD programme	15 points max
Personal statement	5 points max
Further documents indicated in the PhD Programme Table	5 points max

### 2. Oral examination

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

English 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, **English language proficiency shall be assessed**. The oral examination is carried out in **Italian or in 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".

## Final Ranking List and Enrollment

After the publication of the results of the oral examination, the **final ranking list** will be available on the [University website](#), selecting the relevant PhD Programme > "More information", section "Notices" at the bottom of the page. Following the publication of the final ranking list, successful applicants shall **enroll** on [Studenti Online](#) by the deadline indicated on the [University website](#), selecting the relevant PhD Programme > "More information".

If a successful applicant withdraws from a position, the following applicant in the ranking list, who is also eligible for the specific position, will be contacted. During the replacement procedure, the new terms of enrollment shall be communicated via e-mail to the chosen applicant.

Considering the expressions of interest above for **topic-related positions**, the Admission Board shall express its view on the suitability of the interested applicants, taking into account their specific skills, experience and aptitude.

Topic-specific positions will be awarded on the basis of the eligibility stated by the Admission Board. Should one or more of the abovementioned positions remain vacant, eligible applicants from the general ranking list may be contacted.

## Research Topics

### Curriculum 1: Chemical Sciences

The research topics of the curriculum Chemical Sciences include all areas of chemistry, from computational chemistry (e.g., modelling of molecular materials, computational photochemistry and photophysics, spectroscopy), to physical chemistry (e.g., study of solid state and liquid crystals), electrochemistry (e.g., electrochemistry of molecular materials and for energy, electrochemical analysis techniques), photochemistry (e.g., systems for energy conversion, photoreactive materials, sensors and luminescent tracers), study of polymers (e.g., production of polymeric materials for biomedical applications), analytical sciences (e.g., analytical methods based on advanced separative techniques, bioanalytical, environmental and cultural heritage chemistry, biosensors), organic chemistry (e.g., chemistry of radicals and host-guest systems, organic synthesis, synthesis by enzymatic catalysis, development of materials and methods for "Green Chemistry"), structural and solid state chemistry (e.g., "Crystal Engineering", development of materials for biomedical applications, synthesis and characterization of nanostructured materials), and molecular spectroscopy (e.g., Raman, electron and rotational spectroscopy). For many topics, the research has important multidisciplinary implications, in particular as concerned nanotechnological and biomedical applications.

## **Curriculum 2: Industrial Chemistry**

The research topics of the curriculum Industrial Chemistry relate to the areas of industrial chemistry, chemistry of materials (e.g., polymers and ceramics) and processes, analytical and environmental chemistry. The research activities include the development of new, more environment-friendly industrial processes (by operating on a laboratory scale or in pilot plants), the innovation or improvement of the industrial production of chemical substances by introducing "sustainable" processes ("Green Chemistry"), the study of methods for the reduction of pollutants and for the production of fuels, the synthesis of polymeric materials of industrial applications and for the conversion of energy, the development of new catalytic materials (e.g., organometallic compounds or metal complexes) and their evaluation in industrial applications in order to their determine characteristics, reactivity, and role, and the study of use of renewable sources (e.g., biomass) for the production of chemicals, fuels or energy, the application of advanced analytical techniques for the characterization of materials for energy storage and production and for the development of sensors, the electrochemical synthesis of catalysts of industrial interest.