

Annex 1 to the Call for Applications for the PhD course of national interest in CATALYSIS AND ENERGY (DIN) of the XLI cycle academic year 2025/2026
Course information and selection procedures

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| Duration | 3 years | |
| Places | 33 | |
| Of which grants | | |
| Administrative headquarters | No. of funded scholarships | Contact person |
| University of Perugia | 3 grants for the following topics : <ul style="list-style-type: none"> a. <i>Design of novel waste-derived catalytic systems from energy applications</i> b. <i>Valorisation of biomass-derived phenols via heterogeneous catalytic methods in flow .</i> c. <i>Photocatalytic processes for energy conversion</i> | Luigi Vaccaro Luigi Vaccaro Loredana Latterini |
| University of Perugia - | 1 grant reserved for graduates of foreign universities , for the following topic: <i>Development of new photoluminescence materials</i> In case of non-assignment of this reserve, the place will be assigned to the candidate usefully placed in the relevant merit ranking | Loredana Latterini |
| Department of Chemistry, Biology and Biotechnology | 3 grants for the following topics : <ul style="list-style-type: none"> a) <i>Sustainable catalytic and technology approaches for the production of valuable fine chemicals and their assessment.</i> b) <i>Development of novel ab-initio methodologies for extended systems coupled to quantum fields</i> c) <i>Modeling materials and processes for energy harvesting.</i> | Luigi Vaccaro Enrico Ronca Filippo De Angelis |
| In agreement with | | |
| University of Bari “Aldo Moro” | 1 grant with activation subject to the completion of the relevant agreement, for the following topic : <i>Catalysis with Earth-Abundant Metals in Nature-Inspired Deep Eutectic Solvents and Aqueous</i> | Vito Capriati |

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| | <i>Media: Toward Sustainable Molecular Transformations</i> | |
| University of Ferrara | 1 grant for the following topic : <i>Photocatalytic strategies and functional materials for the valorization of waste, biomass and CO2 use</i> | Alessandro Massi Stefano Caramori |
| University of Palermo | 1 grant for the following topic : <i>Development of catalytic and/or photocatalytic systems for the sustainable valorization of waste organic biomass</i> | Giuseppe Mercì |
| University of Pavia | 3 grants (CUP F13C24000740006) with activation subject to completion of the relevant agreement, for the following topics : a) Development of new synthetic approaches <i>inspired by the atom economy</i> b) <i>Valorization of e-waste in the bio-medical field</i> c) Upcycling of the components of magnets <i>from e - waste .</i> | Giuseppe Zanoni Giuseppe Zanoni Giuseppe Zanoni |
| University of Pavia | 1 position reserved for the winner of the selection made by the MSCA COMENZE project consortium with a specific public selection call, based on the MSCA project “COMENZE: Computational and Experimental Enzyme Engineering for New Polymers ” (https://msca-comenze.eu/) for a total amount of € 119,218.00 | Andrea Mattevi |
| University of Padova | 2 grants with activation subject to the completion of the relevant agreement, for the following topics : a) <i>Development of photocatalytic systems for ethylene production</i> b) <i>Molecular design of organic semiconductors for photocatalytic applications</i> | Francesca Arcudi Marcella Bonchio |
| University of Messina | 1 grant for the following theme : <i>Photo- and redox-active systems for the processing of light information</i> | Sebastian Countryside |
| University of Turin | 2 grants with activation subject to the completion of the relevant agreement, for the following topics : a) <i>Synthesis , characterization and modeling of molecules and hybrid materials for CO2 valorization.</i> | Silvia Bordiga |

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| | b) Organic Materials for Functional Packaging in Electronic devices (PR funds FESR 21/27 - Swich Call 2023 - Project Title: Microelectronic Systems In Package (acronym SMIP) - CUP: D19I23000970006 | Claudia Barolo |
| CIRCC - Consorzio Interuniversitario per le Reattività Chimiche e la Catalisi | <p>2 grants with activation subject to the completion of the relevant agreement, for the following topics :</p> <p>a) <i>Development of catalytic systems for the production of green hydrogen and high added value products from waste biomass</i></p> <p>b) <i>Catalysis and photocatalysis for circular carbon economy.</i></p> | <p>Alceo Macchioni</p> <p>Angela Dibenedetto, Michele Aresta</p> |
| Consorzio Interuniversitario per lo Sviluppo dei Sistemi a Grande Interfase | <p>2 grants with activation subject to the completion of the relevant agreement, for the following topics :</p> <p>a) <i>Innovative materials against the photodegradation of Cultural Heritage</i></p> <p>b) <i>Chemical-Physical Studies for the understanding of photodegradation processes of Cultural Heritage</i></p> | <p>Emiliano Fratini</p> <p>Emiliano Fratini</p> |
| Places reserved for employees of companies engaged in highly qualified activities (industrial doctorate) | <p>2 reserved seats to ELSAFRA I SpA employees</p> <p>1 place reserved for SENTIERO INTERNATIONAL CAMPUS Srl employees</p> <p>1 place reserved for Sea Marconi Technologies employees</p> <p>1 place reserved for GIG srl employees</p> <p>5 places reserved for Sterling Spa employees</p> | |
| Curriculum Vitae | <ol style="list-style-type: none"> 1. HOMOGENEOUS CATALYSIS: MECHANISMS AND APPLICATIONS 2. HETEROGENEOUS CATALYSIS: SYNTHESIS, CHARACTERIZATION AND APPLICATIONS 3. BIOCATALYSIS 4. NEW TECHNOLOGIES FOR CATALYSIS 5. RENEWABLE ENERGY 6. ENVIRONMENT AND CULTURAL HERITAGE | |

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| | 7. PERSONALIZED MEDICINE 8. INNOVATIVE PHOTORESPONSIVE MATERIALS | |
| Research project | YES mandatory | |
| Coordinator | Professor Luigi Vaccaro | |

Degrees required for admission

Specialist degree pursuant to Ministerial Decree 509/1999, Master's degree pursuant to Ministerial Decree 270/2004, Degree according to the system prior to the entry into force of Ministerial Decree 509/1999: **ALL**

How to complete the selection procedure

The selection procedure will be carried out according to the methods reported below. At the end of the tests, separate rankings will be drawn up, one for each theme, as detailed above.

Evaluation of qualifications and interview (out of sixtieths: 30 + 30).

The evaluation of the qualifications will concern the university training path as well as any further training paths and professional and research experiences and any scientific publications.

The evaluation will also include the candidates' preparation of a research project to be developed over the three-year period on one of the themes of the curricula in which the doctorate is structured and on the themes indicated by the agreements with companies for DM630 financing.

The evaluation of qualifications will be considered passed by obtaining a score of no less than 18/30.

Before the interview, the list of candidates admitted to the interview will be published on the University website at <https://www.unipg.it/didattica/percorsi-post-laurea/dottorati-di-ricerca/bandi-avvisi-e-modulistica>, with an indication of the score obtained in the evaluation of qualifications.

Candidates who do not achieve the aforementioned minimum score in the evaluation of qualifications will not be admitted to the interview.

The interview will be considered passed by obtaining a score of no less than 18/30.

Minimum overall score from which candidates are deemed suitable 36/60

The interview will be held via video conference

The interview will focus on the topics of the curricula in which the doctorate is structured and on the presentation of the research project.

The interview will also be aimed at verifying the candidate's aptitude for research, willingness to undertake experiences abroad and scientific interests. To this end, the candidate is required to develop a research project proposal to be presented together with the application to participate in the competition, which the candidate will illustrate during the interview.

The interview may, at the candidate's discretion, be held in English. For interviews held in Italian, knowledge of the following language will be assessed: ENGLISH

Valuation of securities .

The qualifications presented by the candidates will be evaluated according to the following criteria and methods of assigning scores for the evaluation of qualifications, for which a **maximum score of 30 points is reserved**:

University education path ,

up to a maximum of 10 points , recognizing:

to the Master's Degree grade : **up to a maximum of 6 points** , as assigned below:

Grade equal to 110-110/110 with honors: 6 points

Score equal to 105-109/110: 5 points

Score equal to 102-104/110: 4 points

Rating equal to 99-101/110: 3 points

Score equal to 96-98/110: 2 points

Score equal to 93-95/110: 1 point

Score lower than 93/110: 0 points

For candidates who obtain the qualification required for admission by 31.10.2024, for whom it is not possible to evaluate the degree grade, the Commission will evaluate the curricular average of the exams taken, recognizing **up to a maximum of 6 points** , according to the scheme relating to the degree grade previously reported; for this purpose the curricular average grade, multiplied by 110 and divided by thirty, is rounded to the unit:

Average curricular grade equal to 104-110/110: 6 points

Average curricular grade equal to 102-103/110: 5 points

Average curricular grade equal to 99-101/110: 4 points

Average curricular grade equal to 96-98/110: 3 points

Average curricular grade equal to 93-95/110: 2 points

Average curricular grade equal to 90-92/110: 1 point

Average curricular grade lower than 90/110: 0 points

To the Master's thesis,

up to a maximum of 2 points for relevant degree thesis, recognising:

- for a thesis of excellent quality, in terms of scientific depth, 2 points;
- for a good quality thesis, in terms of scientific depth, 1.5 points;
- for a thesis of sufficient quality, in terms of scientific depth, 1 point.

For candidates who obtain the qualification required for admission by 10/31/2025, the degree thesis will be evaluated according to the above criteria, only if produced in a final version with the signature of the Supervisor or equivalent method.

At the Bachelor's Degree grade :

up to a maximum of 2 points , as awarded below:

Grade equal to 108 - 110/110 with honors: 2 points

Rating equal to 99-107/110: 1 point

Rating lower than 99/110: 0 points

For the single-cycle degree , **up to a maximum of 8 points** , as assigned below:

Grade equal to 108-110/110 with honors: 8 points

Score equal to 106-108/110: 7 points

Score equal to 103-105/110: 6 points

Rating equal to 99-102/110: 5 points

Score equal to 95-98/110: 3 points

Score equal to 92-94/110: 1 point

Score lower than 92/110: 0 points

Further training courses and professional and research experiences ,

up to a maximum of 3 points for further training courses and relevant professional and research experiences , recognising:

- for each professional experience in the field of teaching and relevant to the doctoral path (tutoring, teaching support activity), 1 point;
- for any professional experience in the field of scientific research and relevant to the doctoral path (research grant, scholarships for research projects, research collaboration, internship), 1 point;
- for any further training course related to the doctoral course (second level master's degree and/or specialization school, related specialization, Erasmus placement or related courses abroad, relevant qualification (state exam)), 1 point.

Publications and conference activities ,

up to a maximum of 2 points for relevant publications, recognising:

- for each publication of good quality, in terms of scientific depth and editorial relevance, 1 point.
- 0.25 points for each communication at the congress.

Research project ,

up to a maximum of 15 points , recognizing:

- for a research project of excellent quality, in terms of scientific depth and aptitude for research, 15 points;

- for a research project of excellent quality, in terms of scientific depth and aptitude for research, 14 points;
- for a research project of outstanding quality, in terms of scientific depth and aptitude for research, 12 points;
- for a research project of more than good quality, in terms of scientific depth and aptitude for research, 10 points;
- for a good quality research project, in terms of scientific depth and research aptitude, 9 points;
- for a research project of reasonable quality, in terms of scientific depth and aptitude for research, 7 points;
- for a research project of sufficient quality, in terms of scientific depth and aptitude for research, 5 points;
- for a research project of insufficient quality, in terms of scientific depth and aptitude for research, 0 points;

Interview evaluation .

The interview will focus on the project proposed by the candidates and on questions related to the topics of the curricula of the doctorate.

The interview will also be aimed at verifying the candidate's aptitude for research, willingness to undertake experiences abroad and scientific interests.

At the candidate's choice, the interview can be held in English.

For interviews held in Italian, knowledge of the English language will be assessed. During the interview, in addition to the discussion of the chosen topic and the illustration of the research project, candidates who will take the interview in Italian, in order to assess their knowledge of the English language, will be asked to read and summarize a scientific passage selected by the commission.

The interview will be held via **video conference** , according to the methods specified in the notice that will be published on the University website.

The interview has a **maximum score of 30 points** .

The Commission establishes the following criteria for the evaluation of the interview: **knowledge of the subject and clarity of exposition.**

In particular, scores will be awarded on the basis of the following overall evaluation ranking, as a result of the application of the above criteria:

30/30: Excellent profit

29/30: excellent profit

28/30: almost excellent profit

27/30: more than distinct profit

26/30: distinct profit

25/30: almost distinct profit

24/30: More than good profit

23/30: profit Good

22/30: almost good profit

21/30: Satisfactory profit in relation to the above criteria

20/30: more than sufficient profit

19/30: sufficient profit

18/30: barely sufficient profit

< 18/30: insufficient profit

Interview diary :

Starting **July 28, 2025 a notice** will be published on the University website at <https://www.unipg.it/didattica/percorsi-post-laurea/dottorati-di-ricerca/bandi-avvisi-e-modulistica> and on the University's online noticeboard, which will communicate **the dates and times of the call** or any other communication concerning this selection. This diary has the value of a formal call **and no personal communications will be sent in this regard.**

Failure by the candidate to appear at the selection tests (or failure to connect on the day and at the time of the interview in the case of telematic methods) will be equivalent to an implicit waiver of participation in the selection, whatever the cause.