



**SDIA**  
**PhD in**  
**Civil Engineering**  
**and Architecture**

# HANDBOOK

## PHD PROGRAMME IN CIVIL ENGINEERING AND ARCHITECTURE

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AT THE PHD PROGRAMME WEBSITE:

<https://corsi.unipr.it/it/phd-ica/carta-del-dottorato>





## TABLE OF CONTENTS

<b>PRESENTATION.....</b>	<b>1</b>
1. <b>INFRASTRUCTURE AND ENVIRONMENTAL ENGINEERING.....</b>	<b>1</b>
LABORATORIES.....	2
2. <b>STRUCTURAL AND GEOTECHNICAL ENGINEERING .....</b>	<b>2</b>
LABORATORIES.....	2
3. <b>ARCHITECTURE AND URBAN PLANNING.....</b>	<b>2</b>
LABORATORIES.....	2
<b>1. WHO IS WHO.....</b>	<b>3</b>
COORDINATOR.....	3
VICE-COORDINATOR .....	3
INDIVIDUAL RESPONSIBLE FOR QUALITY ASSURANCE.....	3
FACULTY BOARD.....	3
REPRESENTATIVES OF THE PHD STUDENTS .....	3
ADMINISTRATIVE STAFF.....	3
STUDENTS.....	3
ALUMNI .....	3
<b>2. OVERVIEW OF THE PROGRAMME.....</b>	<b>4</b>
CREDITS .....	4
1. RESEARCH.....	4
2. TRAINING ACTIVITIES .....	4
3. INTERNSHIP, SECONDMENT AND INTERNATIONAL MOBILITY .....	5
4. TEACHING ACTIVITIES.....	5
<b>3. ATTENDANCE AND EXAMS.....</b>	<b>5</b>
<b>4. SUPERVISORS.....</b>	<b>5</b>
<b>5. ROAD MAP.....</b>	<b>5</b>
ACTIVITIES DURING THE THREE YEARS .....	6
1 <sup>st</sup> YEAR.....	6
2 <sup>nd</sup> YEAR.....	6
3 <sup>rd</sup> YEAR .....	6
<b>6. DISSERTATION .....</b>	<b>6</b>
FORMATTING REQUIREMENTS .....	7
<b>7. FINAL EXAMINATION .....</b>	<b>7</b>
DOCTOR EUROPÆUS.....	7
RULES AND PROCEDURES.....	8



THE COMMITTEE .....	8
<b>8. RIGHTS AND DUTIES OF PHD STUDENTS .....</b>	<b>9</b>
RESEARCH BUDGET.....	9
INSTITUTIONAL AFFILIATION .....	9
ITALIAN AS FOREIGN LANGUAGE .....	9
ATTENDANCE, LEAVE AND EXTERNAL COLLABORATIONS.....	9

## PRESENTATION

The *PhD Programme in Civil Engineering and Architecture* is part of the **Doctorate School in Engineering and Architecture** (SDIA).

The **school** was founded with the aim of supervising and rationalizing the activities envisaged within the three PhD programmes housed in the **Department of Engineering and Architecture** so that PhD students are offered adequate research facilities and high levels of quality and scientific productivity, thereby ensuring an optimal level of aggregation of resources and scientific skills.

By respecting the specific cultural needs, **the aim of the school** is to promote interdisciplinarity and the acquisition of transversal skills, which supports the specific skills of each research field. This is also pursued by encouraging **international openness and mobility**, in compliance with the principles of the European Researchers' Charter.

By considering the significantly applied and interdisciplinary nature of the scientific knowledge that develops within the Department of Engineering and Architecture, the school aims to increasingly intercept the needs of the labour market, which are much broader than those of the academic field. This means that the school is not only attentive to the training of researchers in a strict sense but is also **oriented towards that of innovators**, who are capable of transferring knowledge in both industry and public administration.

The **PhD Programme in Civil Engineering and Architecture** started in 2000 (15<sup>th</sup> cohort) under the name of the *PhD Programme in Civil Engineering*. Since 2014 (29<sup>th</sup> cohort), the programme's name has been the *PhD Programme in Civil Engineering and Architecture*.

The geotechnical colleagues, who are currently mainly active in the *Structural and Geotechnical Engineering* thematic, were enrolled in another programme named the *PhD Programme in Geotechnical Engineering* (18<sup>th</sup>-27<sup>th</sup> cohorts; the 26<sup>th</sup> cohort was not activated). Many of the architect colleagues, who are currently active in the *Architecture and Urban Planning* thematic, were enrolled in yet another programme named the *PhD Programme in Shapes and Structures of Architecture* (21<sup>st</sup>-28<sup>th</sup> cohorts).

150+ students have achieved the degree and are presently engaged at universities and in industries.

The programme's **mission** is to prepare PhD students for competition in the international academic job market as well as to pursue careers in public administration and industries.

The PhD programme **combines both structured coursework and individual research**. In the first year, the PhD students take a range of classes and participate in a series of seminars. Students choose their own research projects, taking into consideration the resources available in the PhD programme, including numerous **laboratories**.

The **University of Parma** has a broad range of international agreements with other universities, research institutions, and international organizations that facilitate research periods abroad.

The PhD programme is structured into **three thematic areas** and research topics.

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### 1. INFRASTRUCTURE AND ENVIRONMENTAL ENGINEERING

This research topic focuses on the following objectives:

- (1) The training of experts in the area of transport infrastructures;
- (2) The development of expert knowledge in the field of surveying, managing and analysing spatial data related to the control and monitoring of displacements and strains at all scales;
- (3) The in-depth study of topics related to fluid mechanics, maritime hydraulics, hydraulic infrastructures, hydraulic land protection and surface and groundwater;
- (4) The development of skills in water and waste management and treatment, monitoring and mitigation of pollution and climate change and the study of their impacts on water resources and infrastructure.



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## LABORATORIES

- Materials and Structures Testing Laboratory
- HyLab – Parma Hydraulic Research Lab
- Laboratory of Hydraulics and Hydraulic Constructions
- Laboratory of Rheology and Rheometry

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## 2. STRUCTURAL AND GEOTECHNICAL ENGINEERING

The research topic focuses on the following objectives:

- (1) The development of specific skills in the mechanics of solids, materials and structures to tackle complex problems in engineering, architecture and other applied sciences;
- (2) The development of advanced theories and techniques aimed both at the structural conception and design of new buildings and at the verification and structural rehabilitation of existing ones;
- (3) Training of specialised skills in the characterisation of the mechanical behaviour of soils and rocks; in-depth study of topics relating to the stability of slopes (natural and artificial) and underground excavations;
- (4) Design of foundation structures and works involving interaction with soils and rocks.

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## LABORATORIES

- Materials and Structures Testing Laboratory

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## 3. ARCHITECTURE AND URBAN PLANNING

The research topic focuses on the following objectives:

- (1) The theoretical, formal, distributive and functional aspects of architecture, and the analysis and criticism of contemporary architecture and urban habitat;
- (2) The problems and techniques for the survey and the graphic and video representation of architecture at the scale of the single building and of the urban fabric;
- (3) The issues connected to the development, regeneration and management of the urban settlements, also in relation to the territorial infrastructures and the landscape;
- (4) The historical, artistic, technical and aesthetic issues of the architecture of the past, as they relate to the development of critical knowledge and to cultural valorization in the present time;
- (5) The theoretical and operational tools necessary for the knowledge of the built heritage and for the definition of the intervention methodologies aimed at its conservation and restoration.
- (6) Theories, methods, techniques and tools of the design of artefacts, material and virtual, with reference to their morphological characters in their relation to users' needs and usage behaviour.

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## LABORATORIES

- SMART CITY 4.0 Sustainable LAB
- UAL Urban Architectural Laboratory
- MADlab Laboratory for Monitoring Analysis and Diagnostics of the Structures

## 1. WHO IS WHO

The programme bodies consist of the PhD programme faculty board, the programme coordinator, the vice-coordinator, and the individual responsible for quality assurance.

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### COORDINATOR

The programme coordinator is indicated by the faculty board each year.

**Andrea SPAGNOLI**, professor of Structural Mechanics, is the coordinator of the programme since Nov. 2022.

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### VICE-COORDINATOR

The vice-coordinator is nominated by the coordinator from among the members of the faculty board.

**Roberto BRIGHENTI**, professor of Structural Mechanics, has been nominated as the vice-coordinator.

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### INDIVIDUAL RESPONSIBLE FOR QUALITY ASSURANCE

The individual responsible for quality assurance is nominated by the faculty board from among its members.

**Barbara GHERRI**, professor of Architectural Engineering, has been nominated as the individual responsible for quality assurance.

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### FACULTY BOARD

The list of the faculty members is available at the following website:

<https://corsi.unipr.it/it/phd-ica/collegio-docenti>

About 30% of faculty members belongs belong to different foreign universities and to research institutions from both Europe and the USA.

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### REPRESENTATIVES OF THE PHD STUDENTS

The election of the PhD representatives is usually held in December. A representative for each cohort is elected for the three years of the doctorate cycle, for a total of three representatives.

The non-voting representatives of the PhD students participate in faculty board meetings only with regard to the discussion of issues related to the general progress of the PhD programme and the courses. In conjunction with the meeting, a request for input from all the PhD students is recommended.

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### ADMINISTRATIVE STAFF

**Sonia RIZZOLI** ([sonia.rizzoli@unipr.it](mailto:sonia.rizzoli@unipr.it)) – Responsible for the UO Formazione Post Lauream.

**Monia BERTOLI** ([monia.bertoli@unipr.it](mailto:monia.bertoli@unipr.it)) - Manager per la qualità della didattica del DIA

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### STUDENTS

The list of the active PhD students is available at the following website:

<https://corsi.unipr.it/it/phd-ica/dottorandi>

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### ALUMNI

The list of the alumni since the 15<sup>th</sup> cohort is available at the following website:



## 2. OVERVIEW OF THE PROGRAMME

The PhD programme is partly interdisciplinary, is mainly focused on the topics of the three **thematics** and consists of **structured coursework** and the elaboration of a **research dissertation**. A period of at least six months (not necessarily consecutive) devoted to research outside of Italy is highly recommended. Further academic activities include participation in seminars organized by the Doctorate School in Engineering and Architecture (SDIA), by the PhD Programme in Civil Engineering and Architecture, and by autonomous study.

### CREDITS

The total number of credits (ECTS) to be obtained over the three-year period is **180**.

In general, the rule is that the acquisition of 1 credit implies a commitment of the doctoral student corresponding to 25 h, divided between frontal lessons and a study or research commitment.

The number of annual credits that can be acquired is **60** and is divided into the following:

1. *Research;*
2. *Training activities;*
3. *Internship, secondment and international mobility;*
4. *Teaching activities* (integrative didactics carried out by the PhD student within the courses offered by the University of Parma, tutoring, and exercises).

### 1. RESEARCH

The research activity is aimed at writing a thesis. It is desirable for the results to be published in scientific journals or conference proceedings of recognised prestige.

### 2. TRAINING ACTIVITIES

The following training activities (training through education) are recognised by the PhD Programme:

- B1. Teachings provided by the Doctoral School in Engineering and Architecture (SDIA);
- B2. Lectures provided by the PhD programmes pertaining to the SDIA;
- B3. External university lectures offered in Master degree courses, lectures of other schools/doctoral courses;
- B4. Other training activities: summer schools, short courses, seminars, workshops, conferences, tutorials, training courses on the use of equipment and software, training courses, etc.

The courses recognised by the PhD Programme concern interdisciplinary (soft skills) and disciplinary training activities.

In the case of activities with the passing of a final examination, the correspondence is normally 1 ECTS = 6 h of lectures; if the passing of a final examination is not required, the correspondence is 1 ECTS = 25 h of activity.

Doctoral students must acquire, preferably in the first two years of the course, **a minimum number of 15 ECTS, at least 9 of which must come from activities involving a final examination. At least 9 ECTS must also be acquired from B1 or B2 activities.**

For the description of the courses offered by the PhD programme, please visit the following website:



<https://corsi.unipr.it/it/phd-ica/insegnamenti>

### 3. INTERNSHIP, SECONDMENT AND INTERNATIONAL MOBILITY

The PhD programme encourages internship, secondments and international mobility at other universities or research institutes or research laboratories or companies during the three-year period. It is strongly recommended that students stay in foreign research facilities for a period of 3 to 6 months, also not necessarily continuously. The scholarship is increased for any stay abroad for research activities at the rate of 50% for a total period not exceeding 12 months (18 months for PhD candidates under a cotutelle agreement) or in the form of a grant with access modalities and amounts made known by the PhD office. For a mobility period longer than 6 months an authorization of the Faculty Board is required.

It is possible to attend the PhD course cotutelle with a foreign university by prior agreement with the tutor and the coordinator and after signing an agreement between the two universities. The cotutelle format can be activated, subject to the approval of the faculty board, for students enrolled in the first or second year of the course to allow the research programme to be carried out at both contracting institutions.

Any scientific activity carried out during internship, secondment and international mobility is calculated up to a maximum of 5 credits per month.

### 4. TEACHING ACTIVITIES

The student can carry out teaching activities up to a maximum of 20 h per year. This activity (lectures, supplementary teaching activities) does not include participation with the examination committees and must take place on topics relevant to the research project. The teaching activity may be assigned to the student with the student's consensus.

Subject to prior notification to the Faculty Board, doctoral students may carry out seminars, assistance to undergraduates, orientation support, scientific dissemination activities, or department or course tutoring activities. For these activities, the Faculty Board awards 1 CFU for every 20 hours of activity. For an activity in excess of 100 hours per year, the Faculty Board's authorisation is required.

## 3. ATTENDANCE AND EXAMS

PhD activity is equivalent to full-time employment, and students have to attend courses and other academic activities organized by the PhD programme, continuously engage in research and study activities, and present regular updates on their work to their supervisor.

## 4. SUPERVISORS

The task of the supervisor (tutor) and the co-tutor is to follow the PhD student's research progress; to supervise the writing of the dissertation; to approve the research budget expenses, research periods abroad and participation in conferences and summer/winter schools; and to assist the candidate's pursuit of an academic or professional career. Continuation in the programme depends on regular progress reports provided by the supervisor. Students must stay in regular contact with their supervisor and keep them informed of their progress.

PhD students choose a supervisor for their research dissertation subject with the approval of the faculty board.

## 5. ROAD MAP

At the **beginning of the year**, the student discusses with their tutor the annual plan for their training activities and therefore the balance of the scientific, didactic and research activities appropriate for carrying out the thesis in the current year.



At the **end of the year**, the student submits for the tutor's approval an annual summary of their activities carried out, including an analytical list of these activities, certification of the qualifications achieved, and a summary of the research activities carried out (methodology, objectives, the results obtained, etc.).

The tutor verifies the consistency of the annual activities carried out within the overall three-year plan of the student's training and research activities. The student then sends the final report signed by the tutor to the PhD programme coordinator.

Once the final annual report has been obtained, the faculty board organizes a meeting, usually in October, during which the student presents a report on the activities carried out. The board's positive evaluation is compulsory for admission to the next year.

After a positive evaluation of the annual report, the faculty board recognizes the credits received for the annual activities carried out by the student and sends the relevant documentation to the PhD office.

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## ACTIVITIES DURING THE THREE YEARS

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### 1<sup>st</sup> YEAR

The first-year student typically participates in interdisciplinary and disciplinary training, participates in other relevant scientific activities, and defines the theme of their research with the support of their tutor.

In **late September**: an annual summary including a list of the activities, the certification of the qualifications, and a summary of the research activities and their results is due. The results will be briefly (5 minutes) presented to the board in October as if it were a short conference. Upon approval, the student is admitted to the 2<sup>nd</sup> year.

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### 2<sup>nd</sup> YEAR

The second-year student typically integrates interdisciplinary and disciplinary training and scientific activities; spends periods of study abroad; participates in national and international conferences and calls for papers, along with the presentation of papers and communications; and starts to define their thesis writing plan. It is highly suggested to acquire the required credits from training activities by the end of the second year.

In **late September**: an annual summary and a list of the activities, the certification of the qualifications, and a summary of the research activities and their results is due. The results will be presented to the board in October as if it were a conference (10 minutes). Upon approval, the student is admitted to the 3<sup>rd</sup> year.

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### 3<sup>rd</sup> YEAR

The third-year students typically complete their scientific activities and write their thesis. Only exceptionally does the board authorize the acquisition of the remaining credits from training to reach the minimum required.

In **late September**: a presentation of the relevant elements of the thesis is given as if it were a conference (>20 minutes). Upon approval, the student is admitted to the final examination.

During these three years, the students are strongly encouraged to prepare **at least 2 scientific papers**, as either the author or a co-author, that are to be published or are under review in a recognized scientific journal, in a volume of similar relevance or in conference proceedings. The confidentiality constraints of industrial doctorates, with issues related to patents and copyrights preventing publication, will be evaluated by the faculty board.

## 6. DISSERTATION

A dissertation is a work of original research resulting from the PhD student's attendance in the programme that demonstrates the ability of the PhD candidate to offer new insights and cutting-edge perspectives in their research topic by entering the academic debate with a critical command of the field and by communicating their research findings in an effective way. It is an autonomous and individual piece of research.

The dissertation plan should start at the very beginning of the programme. The courses and conferences offered during the first academic year, along with the discussions and inputs received in multidisciplinary and methodological classes, constitute a stimulating environment to help PhD students elaborate their initial research question.

The student formulates the research question(s) in a research proposal, which constitutes the blueprint for the development of the research during the following semesters and will be presented at the end of the first year.

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## FORMATTING REQUIREMENTS

There is no set length for the dissertation, although many dissertations are in the range of 80 000 to 100 000 words, exclusive of footnotes, bibliography, and appendices. The dissertation must be double-spaced with a reasonable margin on all sides.

The title page should show the university logo, the dissertation title, the candidate's full name, the name of the university, the name of the supervisor and the co-supervisors(s) (if any), the name of the PhD programme and the submission date.

The abstract should follow the title page and must be no longer than 300 words.

No specific citation style is required. Nonetheless, students must ensure accuracy and consistency in the citation of their research sources by adopting one of the citation styles most commonly used within their research field. The appearance of name of the authors in the citation, instead of the number of the cited reference as shown in the references, is preferred.

No specific software is suggested, although LaTeX is widely used for both books and theses due to its stability.

## 7. FINAL EXAMINATION

By late September of the third year, the PhD student presents a request for admission to the final examination. The request is evaluated by the programme committee, together with a report on the student's activities. In their request for admission, the student shall also indicate whether she/he wants to obtain the label of Doctor Europaeus, if the necessary criteria have been fulfilled.

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## DOCTOR EUROPAEUS

The criteria for the conferral of the "European Doctor" label, as established by the Confederation of European Union's Rector's Conferences in its declaration of the 1991 Salamanca Congress, are as follows:

1. "The PhD thesis defence will be accorded if at least two professors from two higher education institutions of two European countries, other than the one where the PhD thesis will be defended, have given their judgement concerning the manuscript."
2. "At least one member of the jury should come from a higher education institution in European countries, other than the one where the PhD thesis will be defended."
3. "Part of the defence must take place in one of the official languages, other than the one(s) of the country where the PhD thesis will be defended."
4. "The PhD thesis must have been partly prepared as a result of a period of research of at least one trimester spent in another European country."

To satisfy the fourth criterion, the PhD candidate must present a certificate issued by the institute where their



research was conducted, testifying to the duration and nature of their stay.

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## RULES AND PROCEDURES

The title of Doctor of Research, abbreviated with the words: "Dott. Ric." or "PhD", is obtained upon passing the final examination.

The candidates for the examination for the PhD degree, subject to a favourable judgement of the board, must apply to the Magnifico Rettore.

Candidates, within the last month of the last year of the course, must also submit their thesis in electronic format to the institutional repository of the University of Parma, known as "Dspace-Unipr."

At the time of the final filing, following admission to the final examination, the candidate should submit a declaration to the Magnifico Rettore, certifying the absolute conformity of the deposited electronic copy with hard copies.

The copies of the thesis, countersigned by the tutor and by the coordinator, should be subsequently transmitted to each of the members of the final examination committee.

The University of Parma fully controls plagiarism and self-plagiarism with the adoption of advanced software. **Ethics in research and publication** is a key element in the training of PhD students. See the guidelines available at the following website: <https://www.unipr.it/node/21810>

The thesis, accompanied by a summary in Italian or English, is written in the Italian or English language or in another language with the prior authorization of the board.

The thesis, to which is attached a report of the PhD student on their activities carried out during the PhD programme and on any publications, is assessed by at least two high-level scientists and/or qualification experts, including those belonging to foreign institutions, who are external to the parties who contribute to the issuance of the doctoral degree, are hereinafter referred to as **evaluators**, and are designated by the board by the latest month of the last year of the course.

By the end of the doctoral cohort, all PhD students, except those who have obtained the suspension of doctoral activities, shall send their thesis and the related annexes to the coordinator, who shall ensure timely transmission to the evaluators.

The evaluators, within 30 days of receipt of the documentation, must express a written analytical judgement on the thesis and transmit it to the coordinator by proposing admission to the public discussion or a postponement for a period of time that *cannot be more than six months* if they consider that significant additions or corrections are necessary. The judgement is transmitted by the coordinator to the candidate and to the competent offices. The coordinator shall also forward the judgement to the members of the commission.

After the possible period of postponement, the thesis *shall in any case be admitted to public discussion*, accompanied by a new written assessment by the same evaluators made in light of any corrections or additions made to the dissertation.

For the period between the end of the cohort and the final examination, including the possible period of suspension of doctoral activities, the PhD candidate shall not receive grants and must maintain the possibility of access to the necessary university facilities for the refinement of his or her research.

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## THE COMMITTEE

The Magnifico Rettore appoints the members of the **committee**, as well as the substitute members, based on the proposal of the faculty board, which also establishes the timetable of the final examination, within the deadlines set by the competent offices.

The committee shall be composed of three members chosen from among university professors and researchers, who are specifically qualified in the disciplines related to the areas scientifically relevant to the PhD thematic. The committee may be supplemented by no more than two experts belonging to structures carrying out public or private research activities, including those of foreign countries.

Different rules can be applied in the presence of cotutelle and international agreements.

The thesis, with a reasoned collegial written judgement, is either approved or rejected. The committee, by unanimous vote, has the ability to attribute **laude** in the presence of results of relevant scientific importance.

In case of a negative judgement, the PhD candidate loses the right to discuss the thesis again.

The title of PhD is awarded upon passing the final exam and is conferred by the Magnifico Rettore with the issue of the relative parchment.

At the request of an interested party, the university will certify the achievement of the PhD degree.

## 8. RIGHTS AND DUTIES OF PHD STUDENTS

The rights and duties of PhD studies are governed by the relevant articles of two documents:

1. The University Regulations for Doctoral Courses;
2. The Regulations of the School of Doctorates in Engineering and Architecture.

Both documents are available at the PhD programme website.

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### RESEARCH BUDGET

Starting from the second year of the programme, the student has a budget for research activities (participation in conferences/seminars in Italy and abroad, mobility for archival research, etc.) of not less than 10% of the amount of the grant.

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### INSTITUTIONAL AFFILIATION

It is a rule that at every event in which the PhD students are involved in their role—publishing an article, participating in institutional meetings, attending conferences and seminars—they indicate their affiliation as **PhD Student/Candidate in the PhD Programme in Civil Engineering and Architecture, University of Parma, Italy**. The students are requested to create their Open Researcher and Contributor ID (ORCID), specifying their affiliation. At the beginning of the first year, they should send a photo to be included on the student website.

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### ITALIAN AS FOREIGN LANGUAGE

Foreign students are strongly encouraged to acquire at least a working knowledge of Italian. Attending and passing courses given in the Italian language will be credited by the board according to the acquired level.

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### ATTENDANCE, LEAVE AND EXTERNAL COLLABORATIONS

PhD students cannot take up employment, even if part-time or independent, without the express permission of the PhD programme board.

During the regular duration of three years, PhD students have the right to obtain a leave of absence, up to a maximum of one year, in case of maternity, military service, serious and documented illness and special family situations, with interruption of the grant and subsequent recovery.



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External collaborations will only be authorized if compatible with the doctoral programme in terms of subject matter (in line with the student's research) and time commitment (part-time). The students must consider all classes and other PhD program activities as their absolute priority.

Any external collaboration request will be considered in line with the above, with particular emphasis on the subject, contract type and tasks proposed.