



**POLITECNICO**  
MILANO 1863

*PhD School - Politecnico di Milano*

*Regulations of the PhD Programme in:*

Structural, Seismic and Geotechnical Engineering

*Cycle XXXV*

# 1. General Information

PhD School - Politecnico di Milano

PhD Programme: Structural, Seismic and Geotechnical Engineering

Course start: November 2019

Location of the PhD Programme: Milano Leonardo

Promoter Department: Department of Civil and Environmental Engineering

Scientific Disciplinary Sectors:

- ICAR/07 – Geotechnics
- ICAR/08 – Structural Mechanics
- ICAR/09 – Structural Engineering

PhD School Website: <http://www.polimi.it/phd>

PhD Programme Website: <http://www.dica.polimi.it/en/dottorato>

## 2. General presentation

Structural, Seismic and Geotechnical Engineering (SSGE) encompasses those disciplines and techniques, deeply rooted in the field of Civil Engineering but with important industrial applications as well, which allow to understand, model and control the behaviour of structural materials, soils, buildings and the interaction between outdoor environment and construction. This is a highly inter-disciplinary field: the theoretical and applied study of materials and structures goes along with the analysis of the interaction of the structure with the environment, ensuing from either natural or anthropic activities. Because of their generality in materials and structural modelling, the methods developed within the domain of SSGE are also very useful in other technical-scientific areas, whenever understanding and controlling mechanical aspects is necessary to guarantee both design reliability and structural safety, serviceability as well as durability.

The PhD course is run by a Coordinator and a Faculty Board.

The Coordinator chairs the Faculty Board, coordinates the preparation of the annual Educational Programme and organises the general educational activities of the PhD course (see Attachment A1).

The Faculty Board is responsible for the Educational programme and for teaching and administrative activities related to the PhD course (see Attachment A2).

## 3. Objectives

Within the context outlined above, the primary objective of this PhD programme is to improve the advancement of knowledge with reference to: (a) innovation in materials and structures and in the methods for the mathematical modelling of their response; (b) safety of structures and infrastructures

under exceptional static or dynamic actions or against the deterioration due to the structure lifecycle;  
(c) geomaterials, soil-structure interaction and underground structures stability.

This objective is pursued within the framework of the research activities carried out at the Department of Civil and Environmental Engineering of Politecnico di Milano. For this purpose, PhD candidates are given advanced, research-oriented training, based on the pivotal role of Structural Engineering and on the multi-disciplinary nature of Seismic and Geotechnical Engineering. More specifically, the 3-year curriculum of the PhD programme in Structural, Seismic and Geotechnical Engineering aims at providing the following professional skills that will be developed to a greater or lesser extent according to the interests of the candidate:

- (a) Basic and operative knowledge of the main, up-to-date methods used in computational mechanics, in order to model and analyse the elastic, inelastic and cyclic behaviour of materials and structures.
- (b) Critical understanding and conscious use of numerical codes, depending on the level of the analysis (micro-, meso- and macro-structural levels).
- (c) Basic and operative knowledge of experimental mechanics, including the most advanced experimental techniques and their instrumentation, in order to test materials, structures and soil, either in a laboratory or on site.
- (d) Knowledge of the most common procedures for test-based identification of parameters characterizing the mechanical properties of materials and for the identification of structural damage (for assessment of structural safety).
- (e) Basic and operative knowledge of the design criteria and socio-economic implications governing any major structural project.

## 4. Professional opportunities and job market

The high-level education offered by the PhD programme in Structural, Seismic and Geotechnical Engineering allows PhDs to continue their activity along three paths: (a) in the academic field; (b) within other public or private research institutions or companies with a focus on research and development; (c) professional activities (typically as an independent self-employed professional or high-level consultant, mainly as a structural analyst or in the field of advanced structural design and monitoring - Civil and Environmental Engineering and Industrial Engineering).

The inter-disciplinary approach of the PhD programme allows to exploit the experience gained during the study period in different areas: from the design of large infrastructures to the preservation and restoration of monumental and architectural heritage, from seismic design to slope stability, not to mention the many issues in common with several branches of the Industrial Engineering (mechanical, aerospace, nuclear and bioengineering).

## 5. Enrolment

### **5.1 Admission requirements**

Italian and International citizens can apply. They are requested to have graduated in accordance with the pre-existing laws D.M. 3.11.1999 n. 509, or to have a Master of Science degree in accordance with D.M. 3.11.1999 n. 509, or a Master of Science in accordance with D.M. 22.10.2004 n. 270, or similar academic title obtained abroad, equivalent for duration and content to the Italian title, with an overall

duration of university studies of at least five years.

The certified knowledge of the English language is a requirement for admission. Please refer to the PhD School website for details.

Admission to the programme follows the evaluation of the candidates' curricula, their motivation letter and their report on the development of a hypothetical PhD research in one of the topics addressed in the call for admission, to be submitted contextually with their application.

## **5.2 Admission deadlines and number of vacancies**

The number of positions is indicated in the Call for admission to the 35<sup>th</sup> PhD cycle Programmes:

<http://www.polimi.it/phd>

Scholarships both on general and on specific themes are available, as stated in the call for admission.

# 6. Contents

## **6.1 Requirements for the PhD title achievement**

The achievement of the PhD title in Structural, Seismic and Geotechnical Engineering requires a study and research activity of at least the equivalent of three years of full time study, research and development of PhD thesis.

PhD candidates in Structural, Seismic and Geotechnical Engineering must earn a minimum of 25 course credits (see paragraph 6.3 below), and to continuously conduct studies and research.

In addition, candidates should attend seminar activities organized by the Department, according to the rules defined by the Faculty Board.

At the beginning of the course, the Faculty Board assigns a tutor to each PhD candidate to supervise and assist him/her along the overall training programme. The tutor shall be a professor belonging to the Faculty Board. The tutors assist the candidates in the choice of courses to be included in the study plan, which is eventually submitted for approval to the Coordinator of the PhD Programme (see also section 6.4 below).

The Faculty Board may assign extra course credits to one or more candidates, in case they need to complete their preparation in specific topics, relevant for their research projects.

## **6.2 Research development**

The main aim of all Politecnico di Milano PhD programmes is the development in the candidates of a research-oriented mind-set, with expertise and skills in a specific research topic. To this end, candidates develop a problem-solving capability in complex contexts, including the capacity of performing deep problem analysis, identifying original solutions, and evaluating their applicability in practical contexts.

These skills provide the PhD candidates with major opportunities of development in their research both in the academic field, and in public and private organisations.

PhD candidates are requested to develop an original research contribution. The PhD thesis must thus contribute to increase the knowledge in the candidate's research field. Besides, it has to be coherent with the research topics developed in the Department where the PhD Programme is carried out.

The original research results are collected in the PhD thesis, where the candidate's contribution is put in perspective with respect to the research state of the art in the specific research field.

The PhD research is developed under the guidance of a supervisor, who supports the candidate in the

setting-out and in the everyday activities related to the thesis development. The supervisor is not necessarily a member of the Faculty Board and could belong to an institution different from Politecnico di Milano. The supervisor can be supported by one or more co-supervisors.

Further activities intended to develop the candidate's personal skills and research expertise are encouraged during the PhD path.

Candidates must acquire the capability to present and discuss their work in their research community. Consequently, both the participation to international conferences and the publication of the research results in peer-reviewed journals are encouraged.

The PhD programme favours the candidates' research interactions with other groups in their research field, preferably abroad. Research visits of at least three months are strongly encouraged, to help the candidates to acquire further skills for the development of their research work and thesis.

The duration of the programme is normally three years.

### **6.3 Objectives and general framework of the teaching activities**

The PhD Programmes and the PhD School activate teaching forms of different kind and credit value, including courses, seminars, project workshops, laboratories. Teaching activities cover both basic research issues (problems, theories, methods) related to the PhD Programme, and specific research topics more directly connected with the students' theses.

Lectures are usually held in English, except when indicated otherwise. The PhD programme includes at least one complete path delivered in English language.

Structured teaching activities allow earning ECTS credits. Other scientific activities, more specialised and difficult to evaluate, are taken into account by the Faculty Board for the overall evaluation, but do not allow earning ECTS.

The table below summarizes the candidate's **activity plan** (coursework). At the same time, candidates should also focus on research under the direction of their supervisor as well as of the Faculty Board.

#### **First/Second Year**

<i>Courses</i>	<i>Reference</i>	<i>Number of credits</i>	<i>Notes</i>
<i>PhD School Courses</i>	<a href="http://www.dottorato.polimi.it/en/during-your-phd/phd-school-courses">http://www.dottorato.polimi.it/en/during-your-phd/phd-school-courses</a>	<b>At least 10</b>	<ul style="list-style-type: none"> <li>- At the beginning of the year, PhD students submit their study plan, which is subjected to the prior authorization of both the tutor and the Faculty Board.</li> <li>- Changes of the study plan are allowed upon authorization of the Faculty Board.</li> <li>- Credits are earned only by passing the exam.</li> <li>- At least <b>15 credits</b> are required to proceed into the second year.</li> </ul>
<i>Courses characterising the PhD programme</i>	TABLE A	<b>At least 15</b>	
<i>Other PhD courses</i>	Courses from other PhD programmes held at Politecnico or other scientific institutions		

### **Third year**

In the third year, the candidate's activity should be devoted entirely to research and to the development of the PhD thesis.

### **PHD SCHOOL COURSES**

The PhD School of Politecnico di Milano offers a set of courses aiming to train the PhD candidates in soft and transferable skills. The skills and abilities provided by these courses are expected to help candidates across different areas of their careers in order to respond to the rapidly evolving needs of the global economy and society at large. The PhD School courses activated for the 2019-2020 Academic Year are summarized in the following table.

<b>Course name</b>	<b>Professor</b>
Ethics in Research	Aliverti
Advanced Interaction Skills for Academic Professionals	Arnaboldi
Approaches to Resilience: Social, Economic, Environmental and Technological Challenges of Contemporary Human Settlements	Balducci
Scientific Communication in English	Biscari
Academic Communication in English	Biscari
Industrial Skills	Biscari
Complementary Skills	Biscari
Epistemology of scientific and technological research "Guido Nardi". Technology of the future: opportunities and risks	Chiodo
European Culture	Chiodo
Resource Planning and Management within Sustainable Development	Colombo
Technology and Society	Crabu
Risk, Resilience, and Sustainability in Science and Engineering	De Michele
Professional Communication	Di Blas
Strategic Decision Making	Ferretti
Project Management Basics	Fuggetta
Sustainability Metrics, Life Cycle Assessment and Environmental Footprint	Lavagna
Innovative Teaching Skills	Magli
Project Management (in Action)	Mancini
Ethical Aspects of Research on Dual-Use Technologies	Masarati
Communication strategies that score in a worldwide academia	Raimondi

Science, Technology, Society and Wikipedia	Raos – Castiglioni
Ethics and Technology	Schiaffonati
Research Skills	Sciuto
Scientific Reasoning, Philosophy, Logic and Applications	Valente
The process of research	Volontè

At least 10 of the 25 course credits that each candidate is required to earn shall be obtained through soft and transferable skills courses organized by the PhD School.

#### EVALUATIONS

After attending a course, PhD students should pass an exam, whose form (oral, written test or written essay) will be defined by the end of the course by the professor in charge of it.

#### COURSE PROGRAMMES

For information about the course programmes (content and calendar), please see:

[https://www11.ceda.polimi.it/manifestidott/manifestidott/controller/MainPublic.do?check\\_params=1&k\\_corso\\_la=1384&lang=EN&polij\\_device\\_category=DESKTOP&\\_pi0=0&\\_pj1=abcc846e9d0abdf0f7c88a6d6b009757](https://www11.ceda.polimi.it/manifestidott/manifestidott/controller/MainPublic.do?check_params=1&k_corso_la=1384&lang=EN&polij_device_category=DESKTOP&_pi0=0&_pj1=abcc846e9d0abdf0f7c88a6d6b009757)

PhD programme Website:

<http://www.dottorato.polimi.it/en/phd-programmes/active-phd-programmes/structural-seismic-and-geotechnical-engineering/>

#### **COURSES CHARACTERISING THE PHD PROGRAMME**

The PhD Programme in Structural, Seismic and Geotechnical Engineering organises the Characterising Courses listed in table A. This list may change during the year. Additional courses may be attended by the students of the 35th cycle during their second year.

**Table A: COURSES CHARACTERISING THE PHD PROGRAMME**

<b>SSD</b>	<b>Course name</b>	<b>Professor(s)</b>	<b>A.Y./Semester</b>	<b>Language</b>	<b>Credits</b>
ICAR/08	Advanced Topics in the Finite Element Method for Structural Analysis	Perego Umberto	2019-2020	English	5
ICAR/09	Computational Non-Linear Analysis of Concrete Structures	Biondini Fabio	2019-2020	English	5
ICAR/08	Elastic Wave Propagation with Applications to Earthquake Engineering	Paolucci Roberto	2019-2020	English	5

ICAR/09	Fibre Reinforced Concrete (FRC): Material Characterization and Structure Design	Marco Di Prisco	2019-2020 (Summer School - July 2020)	English	5
ICAR/09 ICAR/19	Multidisciplinary Approach for the Structural Analysis of Historic Masonry Buildings	Coronelli Dario and Cardani Giuliana	2019-2020	English	5
ICAR/08	Non-Linear Solid Mechanics	Pandolfi Anna Marina	2019-2020	English	5

### **OTHER PHD COURSES**

In addition and/or in alternative to those listed in Table A, students may attend PhD courses offered by other PhD programmes of Politecnico and/or by external institutions, such as CISM ([www.cism.it](http://www.cism.it)) or Rose School ([www.roseschool.it](http://www.roseschool.it)). In this case, the prior approval of both the tutor and the Coordinator is mandatory.

### **Minimum requirements**

- 1) The minimum number of credits to be acquired from the list in Table A of Courses Characterising the PhD Programme or from Other PhD Courses is 15.
- 2) The minimum number of credits to be acquired from the list of PhD School Courses is 10.
- 3) The minimum number of credits to be acquired in the first year is 15.

### **PREPARATORY COURSES** (only if foreseen)

If the supervisor and the tutor find it useful or necessary that the candidate attends preparatory courses (chosen among the activated courses at the Politecnico di Milano), the Faculty Board of the PhD programme may assign some extra-credits to be acquired to complete the training path. Credits acquired in this way will be considered as additional to the mandatory credits specified above.

### **SPECIALISTIC COURSES, LONG-TRAINING SEMINARS**

Attending special courses, workshops, schools and seminars is strongly encouraged. In case they are certified and evaluated, attendance may allow students to obtain credits, as established by the Faculty Board and with prior approval of the study plan. Courses and workshops can be added to the study plan as optional “extra teaching activities”, even if they are not evaluated and therefore cannot be qualified as credits.

To guarantee a sufficiently broad overview of the scientific activities and results in the research areas of interest for the PhD programme, every year candidates are required to attend the seminars organized by the Department. 70% of the seminars suggested to the PhD candidates or alternatively a minimum of 12 seminars per year must be attended.

Other courses may be activated during the year. In this case, the candidates will be promptly informed and will be allowed to insert these new courses in their study plan.



## **6.4 Presentation of the study plan**

PhD candidates must submit a study plan, which may be revised periodically (approximately every three months) to add new courses or to reflect developments in their PhD career. The study plans must be approved by the PhD programme Coordinator, following the procedure established by the Faculty Board.

## **6.5 Yearly evaluations**

Candidates present their work to the Faculty Board at least once a year. The candidates must pass an annual evaluation in order to be admitted to the following PhD year. The third year evaluation establishes the candidate's admission to the final PhD defence.

As a result of each annual evaluation, the candidates passing the exam receive an evaluation (A/B/C/D) and may proceed with the enrolment at the following year. Candidates who do not pass the exam are qualified either as "Repeating candidate"(Er) or "not able to carry on with the PhD (Ei)". In the former case (Er), the candidates are allowed to repeat the PhD year at most once. The PhD scholarships – if any – are suspended during the repetition year. In the latter case (Ei) the candidates are excluded from the PhD programme and lose their scholarships – if any.

In case the Faculty Board holds appropriate to assign directly an exclusion evaluation (Ei) without a previous repetition year, the request must be properly motivated and validated by the PhD School.

After the final year, candidates who have achieved sufficient results but need more time to conclude their research work and write their theses may obtain the admission to a further year.

Candidates will be given guidelines to prepare their presentations for the yearly evaluations and the admission to the final exam.

## **6.6 PhD thesis preparation**

The main objective of the PhD career is the development of an original research contribution, consistent with the research objectives of the Department where the PhD programme is developed. The PhD thesis is expected to contribute to the advancement of the knowledge in the candidate's research field.

Originality of their work and its role for the improvement of the state-of-the-art should be highlighted in the candidates' theses.

The PhD study and research work is carried out, full time, during the three years of the PhD course, under the guidance of a supervisor, who helps the candidate mastering the state-of-art, focusing on the original contributions, making connections with other research groups and organizing everyday research activities. Stages or study periods in (Italian or International) companies or external Institutions may complete the candidate's preparation.

At the conclusion of the PhD studies, the Faculty Board evaluates the candidates. Candidates who receive a positive evaluation submit their theses to two external reviewers for refereeing. If the evaluation provided by the reviewers is positive (or after the revisions required by the external reviewers), the candidates defend their thesis in a final exam, in front of a Committee composed of at least three members (at least two of them must be external experts).

## 7. Laboratories, PhD Secretary Services

### **7.1 Experimental facilities**

Advanced experimental research activities related to structures, materials and geotechnics are mostly supported by the Testing Lab for Materials, Buildings and Civil Structures (see website: <http://www.lpm.polimi.it/>), which is an officially accredited Lab to test structures and structural elements with forces ranging from 0.01 to 5000 kN, as well as to carry out physical/mechanical tests on structural and geomaterials, both in standard and high-temperature conditions. Experimental facilities are also available on the Lecco Campus, and they are mainly devoted to the investigation of impact loads and advanced cementitious composites.

PhD students are strongly encouraged to perform experimental activities: the visits to the lab and the scheduled courses on Experimental Structural Mechanics serve this purpose.

### **7.2 Computational resources**

PhD students have a personal computer for their own use.

For high-performance computing applications, two clusters for parallel computing are currently available at the Department. It is also worth mentioning that Politecnico di Milano is partner of the consortium CINECA ([www.cineca.it](http://www.cineca.it)), which hosts one of the most powerful supercomputers in the world.

### **7.3 PhD Secretary Services**

Elena Raguzzoni

Department of Civil and Environmental Engineering

Tel: +39 02 2399.6504

e-mail: [elena.raguzzoni@polimi.it](mailto:elena.raguzzoni@polimi.it)

## 8. Internationalisation and inter-sectoriality

Carrying out study and research activities at external laboratories is strongly recommended.

Politecnico di Milano supports joint PhD paths with International Institutions, as well as Joint and Double PhD programmes. Further information is available on the PhD School website and on the PhD programme website.

More specifically, the PhD programme in Structural, Seismic and Geotechnical Engineering has established agreements of Double/Joint PhD Degree with the following institutions:

### ***Université Paris-Saclay, Paris – France***

Double PhD degree.

### ***University Amrita Vishwa Vidyapeetham (AMRITA) – India***

Double and Joint PhD Degree.

### ***Ferdowsi University of Mashhad – Iran***

Double Degree and Cooperation Agreement.

Scientific collaborations are also active with:

***Joint Research Centre, Ispra – Italy***

The PhD programme in Structural, Seismic and Geotechnical Engineering works together with the Ispra Joint Research Centre and, in particular, with the ELSA Lab (European Laboratory for Structural Assessment). Several PhD students have taken part to experimental activities within international research projects for thesis-related purposes.

***Universitat Politecnica de Catalunya, Barcelona – Spain***

Numerous joint research activities together with the UPC have been successfully carried out in the past years, especially in the geotechnical sector.

Exchanges of PhD students and researchers have contributed to foster both PhD and research activities.

***Université Joseph Fourier (UJF), Grenoble – France***

The collaboration between this university and the PhD programme in Structural, Seismic and Geotechnical Engineering started several years ago and has led to a rising number of visits, exchanges and collaborations on joint research projects. Remarkable is the relation with the Institut des Sciences de la Terre and the Laboratoire 3SR Sols, Solides et Structures, Risques.

***Delft University of Technology – The Netherlands***

The collaboration with the Delft University of Technology focuses on computational mechanics and the physic, numerical and theoretical modelling on the behaviour of porous materials.

A member of PhD Faculty Board has almost completed her sabbatical in Delft, where she has worked on the generation of fractures in porous materials, their hydro-mechanical characterization and flooding risks.

Interaction with and exposure to the non-academic sector is beneficial for doctoral candidates as well as for research and innovation-intensive employment sectors. Involvement in the challenges and opportunities of the non-academic sector of the economy and society is fostered by networking, connectivity, inter-sectorial mobility and wide access to knowledge.

In particular, the PhD programme in Structural, Seismic and Geotechnical Engineering collaborates with the following research agencies and industrial partners: STMicroelectronics; Tetra Pak Packaging Solutions; Italcementi; Lombardi Italia; Arup.

\* ***STMicroelectronics***, which is currently financing two scholarships within the PhD programme, is a joint Italian-French multinational company with more than 50.000 employees. Since 2000 STMicroelectronics Italia has been researching and implementing the industrial production of Micro Electro Mechanical Systems (MEMS), thanks to its strong focus on R&D.

The collaboration with STMicroelectronics Italia mainly focuses on the following themes: MEMS mechanical reliability; mechanical characterization on the micro-scale; study and modelling of accidental impact; study of dissipative phenomena; study of stiction-related problems; study and planning of resonant machines and magnetometers; study of energy harvester systems; study of

innovative micro-systems for the measurement of angular velocity (micro-gyroscopes); piezoelectric MEMS.

\***Tetra Pak Packaging Solutions** is part of the Tetra Laval Group, founded in 1951 in Sweden, which provides innovative processing and packaging solutions for food.

\***Italcementi**, founded in 1864 and now owned by the German Heidelberg Cement, is the number 1 in aggregates production, the number 2 in cement and number 3 in ready-mixed concrete worldwide.

\***Lombardi Italia**, founded in 1955 as consulting company for engineering services, cares for the life cycle of transport infrastructures and hydraulic works from the initial design phases to their operation.

\***Arup** is an independent firm of designers, planners, engineers, technical specialists and consultants, which has been offering multidisciplinary professional services since 1946 and is now spread all over the world.

\***Innovhub**, is a company conducting research activities, technical and scientific consulting and industrial testing in the field of paperboard, combustibles, oil and grease and silk. Joint research activities are in progress, with special reference to paperboard. A PhD scholarship has been partially sponsored by Innovhub to carry out research on the nonlinear behavior of paperboard during creasing and folding.

# Attachment A1 – PhD Programme Coordinator

Prof. UMBERTO PEREGO

## EDUCATION AND ACADEMIC DEGREES

1981: "Laurea" (Master degree) with honours ("cum laude") in Civil Engineering at the Politecnico di Milano.

1987: Doctorate in Structural Engineering at the Politecnico di Milano.

## EMPLOYMENT HISTORY

1990: assistant professor in Structural Mechanics at the Politecnico di Milano.

1992: associate professor in Structural Mechanics at the Politecnico di Milano.

2001: full professor in Structural Mechanics at the Politecnico di Milano.

## HONOURS

2002: "Bruno Finzi" Prize for rational mechanics by the "Istituto Lombardo Accademia di Scienze e Lettere".

2008: elected Fellow of the International Association of Computational Mechanics (IACM).

2017: "MAP Ambasciatore della città di Milano" Award, by the Town of Milano, for his contribution to the promotion of Milano as an eligible venue for international congresses.

## MEMBERSHIP IN EDITORIAL BOARDS OF INTERNATIONAL JOURNALS

1989-1996: member of the Editorial Board of the Journal "Advances in Engineering Software".

2001-2007: Associate Editor of the "European Journal of Mechanics A/Solids".

2007-to date: member of the Editorial Board of the "European Journal of Mechanics A/Solids".

2009-2012: member of the Editorial Board of the "Open Numerical Methods Journal".

2012-to date: member of the Editorial Board of the journal "Advanced Modelling and Simulation in Engineering Sciences" (Springer).

## CHAIRMANSHIP OF INTERNATIONAL CONFERENCES AND MINISYMPOSIA

2001: together with O. Allix is the Chairman of the "First Cisma-Gimc Joint Workshop on Modern Issues in Modelling and Computation of Damage and Failure", Cefalù, Italy, 7 – 9 June 2001.

2002: together with A. Ferrante is the Chairman of the "Third Joint Conference of the Italian Group of Computational Mechanics and the Ibero-Latin American Association of Computational Methods in Engineering", Giulianova, 24 – 26 June 2002.

2006: together with O. Allix and N. Moës is the Chairman of the International Conference on "Challenges in Computational Mechanics Modeling", Cachan, France 10-12 May 2006.

2008: together with Bernhard Schrefler is Chairman of the joint "8th World Congress of Computational Mechanics-5th ECCOMAS Congress", in Venice, 30 June-4 July, 2008.

2015: together with Jean-Philippe Ponthot is the Chairman and organizer of the Minisymposium "Modeling of cutting, puncturing, blanking and similar processes", at CFRAC 2015 - 4th International Conference on Computational Modeling of Fracture and Failure of Materials and Structures, (June 3 - 5, 2015, Paris (Cachan), France).

2015 together with Erasmo Carrera, is the Chairman and organizer of the Minisymposium

“Computational Models for Shells including Laminates and Multifield Loadings”, at the ESMC2015 - 9th European Solid Mechanics Conference (July 6 - 10, 2015, Madrid, Spain).

2017 June: together with S. Ostlund and R. Peerlings is co-Chairman of the Euromech Colloquium 592 on “Deformation and Damage Mechanisms of Wood-Fibre Network-Materials and Structures”, 7 June – 9 June 2017 (KTH Royal Institute of Technology, Stockholm, Sweden).

#### AREAS OF SCIENTIFIC ACTIVITY

The research activity has been carried out in the field of computational structural mechanics, with particular attention to: computational plasticity, computational damage mechanics, computational fracture mechanics, computational material modelling, fluid-structure interaction.

#### PUBLICATIONS

More than 150 papers in international peer reviewed journals and conferences.

## Attachment A2 – PhD Faculty Board

Description of the composition of the Faculty Board

<b>Name</b>	<b>Affiliation</b>	<b>SSD / Title of SSD</b>
Perego Umberto (Coordinator)	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 - Structural Mechanics
Ardito Raffaele	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Bamonte Patrick	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 - Structural Engineering
Biondini Fabio	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 - Structural Engineering
Bolzon Gabriella	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Bruggi Matteo	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Comi Claudia	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Corigliano Alberto	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Coronelli Dario	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 - Structural Engineering
Della Vecchia Gabriele (Vice-Coordinator)	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/07 – Geotechnics
Di Prisco Claudio	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/07 – Geotechnics
Di Prisco Marco	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 - Structural Engineering

Fedele Roberto	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Felicetti Roberto	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 - Structural Engineering
Ferrara Liberato	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 - Structural Engineering
Frangi Attilio Alberto	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Ghisi Aldo	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Jommi Cristina	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/07 – Geotechnics
Lualdi Maurizio	Politecnico di Milano - Department of Civil and Environmental Engineering	GEO/11 –Applied Geophysics
Mariani Stefano	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Martinelli Luca	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Roberto Paolucci	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 – Structural Engineering
Petrini Lorenza Maria	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/08 – Structural Mechanics
Rosati Gianpaolo	Politecnico di Milano - Department of Civil and Environmental Engineering	ICAR/09 - Structural Engineering

## Attachment A3 – PhD Advisory Board

Description of the composition of the Advisory Board

<b><i>Name</i></b>	<b><i>Affiliation</i></b>
Albert Luigi	Soil Geotecnica, Milano
Beltrami Carlo	Lombardi Ingegneria, Milano
Borsari Roberto	Tetra Pak. Packaging Solutions S.p.A.
Canetta Giovanni	CeAS, Milano
Cangiano Stefano	C.T.G. Italcementi, Bergamo
Gabetta Giovanna	ENI, Milano
Mazzà Guido	Enel-RSE

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