PhD Program in Mechanics and Advanced Engineering Sciences (DIMSAI)

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Welcome day for 40th cycle students

Prof. Lorenzo Donati

DIMSAI PhD Program Coordinator
Department of Industrial Engineering (DIN)

Welcome!

- Welcome aboard **the PhD Program in Mechanics and Advanced Engineering Sciences**, that we usually call by its short, **DIMSAI**.

- I am Prof. Lorenzo Donati, the **Coordinator** of the PhD Program,
- Prof. Andrea De Pascale is the **deputy-coordinator**, with the delegation to implement **the DIMSAI website**,
- Prof. Matteo Gherardi and Prof. ssa Beatrice Pulvirenti are the **delegates for PhD-student education and training activities,**
- Prof. Marco Troncossi is **the delegate for admission procedures and for consultation of advisory board,**
- Prof. Marco Pellegrini is the **delegate for Quality Assurance.**

We are the PHD PROGRAMME COMMITTEE also known in Italian as GIUNTA.






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DIMSAI Board

1. Prof. Lorenzo Donati *(Coordinator)*
2. Prof. Andrea De Pascale *(Deputy-Coordinator)*
3. Prof. Matteo Gherardi *(Delegate for PhD-student education and training activities)*
4. Prof. Beatrice Pulvirenti *(Co-Delegate for PhD-student education and training activities)*
5. Prof. Marco Troncossi *(Delegate for admission procedures and for consultation of advisory board)*
6. Prof. Marco Pellegrini *(Delegate for Quality Assurance)*
7. Prof. Michele Bianchi
8. Prof. Cesare Biserni
9. Prof. Lisa Branchini
10. Prof. Marco Carricato
11. Prof. Michele Celli
12. Prof. Lorella Ceschini
13. Prof. Leonardo Frizziero
14. Prof. Mauro Gamberi
15. Prof. Sandro Manservisi
16. Prof. Riccardo Manzini
17. Prof. Gian Luca Morini
18. Prof. Marco Sumini
19. Prof. Rocco Vertechy
20. Prof. Andrea Zucchelli

Eng. Andrea Formosi *(Student' representative)*

Eng. Simone Rosa *(Student' representative)*

https://phd.unibo.it/dimsai/en/people/faculty

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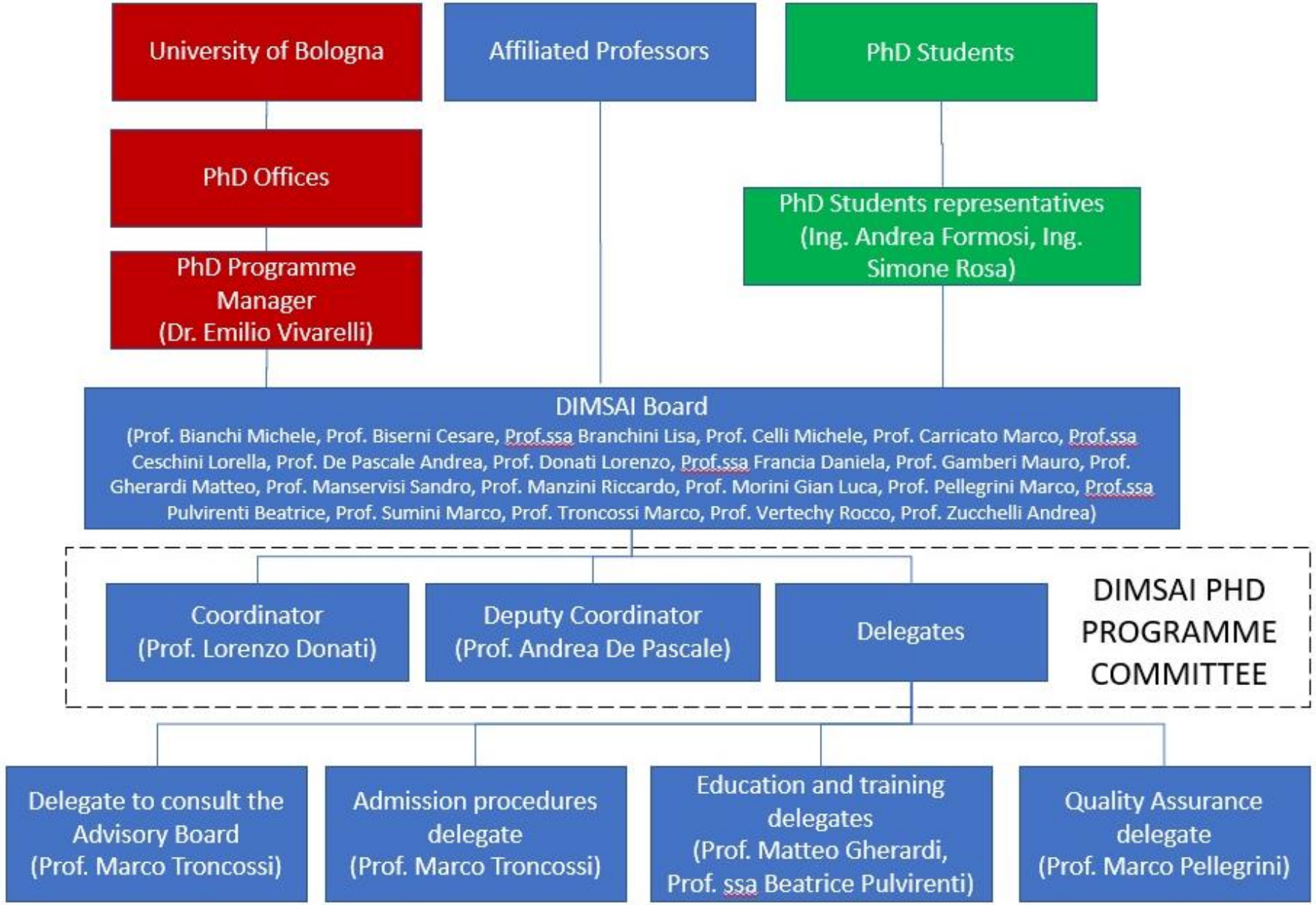
DIMSAI organization



PhD Programs and DIMSAI

- PhD is short for **Doctor of Philosophy**. The PhD is the highest level of degree a student can achieve. This is an academic or professional degree that qualifies the degree holder to teach their chosen subject at **university level** or to **work in a specialized position** in their chosen field.
- In Italy it's also known as 3rd level of formation since it involves a **theoretical** and **practical** formation of the PhD candidates thus meaning a further learning phase in conjunction with a tutored application of the theory.

DIMSAI covers three main research areas (the curricula):

1. Engineering and Industrial Design, Machine Construction, Metallurgy, and Manufacturing Technologies;
2. Fluid Machinery, Energy Systems, Mechanics of Machines and Industrial Mechanical Plants;
3. Thermal Physics, HVAC Systems, Acoustics, Nuclear Technologies and Industrial Applications of Plasmas;

The DIMSAI PhD Programme is developed by the **Department of Industrial Engineering (DIN)** of the University of Bologna, Italy.

PhD Programs and DIMSAI

Today we will explain you some important information about the DIMSAI programme, in particular:

- the aim and scope of the DIMSAI program;
- the new system of doctoral credits to be acquired during the course;
- the program of the course organized by DIMSAI for the year 2024/2025;
- the program of the courses offered by Unibo on Transferable Skills (Competenze Trasversali);
- other type of courses that you can select for your educational and training path;
- the planning of the research activities;
- the yearly evaluation of the performed activities (educational, training and research);
- the rules and procedures for getting several type of authorizations.

We will also allocate each one of you to one **curriculum**, and in particular, within your curriculum, we will assign you a **supervisor** and a **co-supervisor**, and possibly more **co-supervisors**, and a **research topic and project**. You will discuss the details of this topic directly with your supervisor and co-supervisors.

Your supervisor is not only the person who will monitor your research progress, but also the person that must **coordinate and approve your education and training**, and also assist you with the **PhD procedures**.

This presentation could seem boring, but it includes information useful for your next 3 years programme, please listen carefully in order to avoid to ask –as frequently happened in the past- these info again in future….

DIMSAI program aims and scope

The DIMSAI PhD Course aims to provide enrolled PhD students with the skills to carry out **highly qualified research activities** in the scientific areas described by the curricula, related to mechanics and the associated engineering sciences. The PhD offers a training course **with both academic and professional purposes**. It develops the candidate's ability to carry out **original studies and research independently, systematically and in depth**, with an appropriate process of advanced third-level studies, consisting of specialized courses and seminars. It aims to increase the level of knowledge of the candidate in the specific subjects of the research program and in the specific subjects of the PhD. It aims to provide PhD students with **multidisciplinary skills** by encouraging participation in events organized by the other Doctorates of the **Department or of other Departments**, stimulates participation in events useful for acquiring the **transversal skills** essential for future professional activities. Finally, it encourages participation in events organized by **other universities or research institutions, in Italy and abroad**. It aims to stimulate the ability to conduct research activities in collaboration with international research groups, developing alternative skills and methodologies in comparison with researchers belonging to foreign research centers. Thanks to the supervision of **one or more tutors**, the programme aims to provide the **theoretical and practical knowledge to develop a doctoral thesis that demonstrates the level of originality and relevance** of the studies carried out within the topics of the course.

DIMSAI Doctoral credits (from 40th cycle)

Doctoral Credits (CD) measure the workload required to the PhD student in research and training activities for the achievement of the degree. Each **CD is worth 25 hours** of commitment and the PhD student must obtain **60 CDs per year** (1.500 hours/year).

Table A – Distribution of CDs between research, training and teaching		
Type of activity	Total number of CDs	%
Research activities	144	80
Training and teaching activities	36	20
Total	**180**	100

The Course has also defined the recommended number of CDs to be acquired for training, dissemination and teaching in each year of the course, in order to ensure the balanced performance of these activities with respect to those of research.

Table C – CD for training and teaching to be acquired in the various years of the course		
Training and teaching CDs to be acquired	Recommended	Minimum
at the end of the 1st year	18	0
at the end of the 2nd year	30	12
at the end of the 3rd year	36	36

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DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

PhD students, in agreement with their **supervisors** and co-supervisors, flexibly define their specific **training and research paths**, choosing the activities to be carried out, by type and quantity, in compliance with the constraints established by the Board for each activity and year of the course. DIMSAI has defined the minimum value of CDs to be achieved for each of the following activities:

Table B – Requirements for the distribution of CDs between training and teaching activities		
Type of activity	Minimum number of CDs	Maximum number of CDs
i. Disciplinary and multidisciplinary training	6	-
ii. Soft skills	1	-
iii. Extracurricular training	1	-
iv. Dissemination	2	-
v. Teaching and Tutoring	1	9

For the recognition of training, dissemination and teaching activities, the DIMSAI Board will use the following criteria:

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DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
i. Courses (disciplinary and multidisciplinary training)				
Courses (with learning verification) **It includes, for example:** • **3rd level courses PhD@DIN** • **3rd level courses other PhD (also non-UniBo)** • **Seminars as part of a course (seminar cycle, with verification)** • **UNIBO training courses with final exam** • **Doctoral schools / Summer School / Winter school (with verification)** • **1st and 2nd level courses not taken in the career (even non-UniBo) with passing the final exam** **To be recognized, the following is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.**	5	20	25	1

Example: a DIMSAI course of 14 hours with final examination, will provide **2,8 CDs**

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DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
i. Courses (disciplinary and multidisciplinary training)				
Theoretical-practical laboratory courses (with verification of learning) **example: courses that include the practical use of instrumentation, machinery, software but which also provide theoretical training (e.g. MATLAB course, PYTHON course, etc.)** **To be recognized, the following is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.**	5	20	25	1
Practical laboratory courses (with verification of learning) **Example: courses for the use of instrumentation, machinery, software without the theoretical training part** **To be recognized, the following is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.**	10	15	25	1

Example: a theoretical-practical laboratory courses of 14 hours with final examination, will provide **2,8 CDs**;
A Practical laboratory courses of 14 hours with final examination, will provide **1,4 CDs**;

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DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
i. Courses (disciplinary and multidisciplinary training)				
Courses (without learning verification) **It includes, for example:** • **Individual seminars (not in the context of a course with verification)** • **UNIBO training courses without final exam** • **Extra-curricular courses** • **1st and 2nd level courses not taken in the career (even non-UniBo) without final exam** **To be recognized, the following is required: copy of the certificate of attendance with certification of attendance of at least 75% of the hours.**	25	-	25	1

Example: a course of 14 hours **without** final examination, will provide **0,6 CDs**

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DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Notes:

1. For activities in which the **organizer explicitly defines ECTS/CFU/CD** according to a scheme that complies with the general criteria (i.e. bachelor and master courses not taken in the career), the recognition of the proposed CDs will normally be considered, even in derogation from the criteria in the table.
2. The attribution of fractions of credits, based on the number of actual hours of the activity to be recognized, is carried out with a criterion of proportion with rounding to **one decimal place** (e.g. 31 hours of course without verification = 1.2 CD).
3. The activities * Supplementary teaching and tutoring (Tutoring, Thesis Tutoring and Teaching) **cannot exceed a total of 9 CDs** (25% of the training CDs)
4. The duration of the **dissemination and extracurricular activities will be considered including the transfer** (e.g. passive conference in the USA of 3 days + 2 days for the transfer = 5 days)

DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
ii. Soft skills				
Courses for the development of transversal skills (with learning verification) **It includes, for example, non-PhD@DIN courses on topics such as:** • **Career guidance and career planning** • **Knowledge of European and international research systems** • **Teaching training** • **Dissemination and publication training** • **Courses on transversal skills for doctoral** **To be recognized, the following is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.**	5	20	25	1
Courses for the development of soft skills (without learning verification) **It includes, for example, non-PhD@DIN courses on topics such as:** • **Career guidance and career planning** • **Knowledge of European and international research systems** • **Teaching training** • **Dissemination and publication training** • **Courses on transversal skills for doctoral** **To be recognized, the following is required: copy of the certificate of attendance with certification of attendance of at least 75% of the hours.**	25	0	25	1

DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
iii. Extracurricular training				
Participation in conferences and summer/winter schools **It includes, for example:** • **Participation in a conference without presentation of a paper, or chairing or passive participation in discussion panels** • **Doctoral schools / Summer School / Winter school (without verification)** • **PhD symposia** **To be recognized, the following are required: copy of the request for reimbursement of the mission and copy of the certificate of participation**	1 day (8h "frontal" of the event)	-	8	0,3

The duration of the **dissemination and extracurricular activities will be considered including the transfer** (e.g. participation to a conference in the USA of 3 days + 2 days for the transfer = 5 days, no presentations, 5x8/25=**1,6CD**)

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DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
iv. Dissemination				
Active dissemination of the results of one's own research **It includes, for example:** • **Participation in a conference with presentation of at least one paper** • **Participation in a conference with active participation in a discussion panel / session chairing** **It does NOT include:** • **Preparation and publication of journal articles** • **Co-authorship of contribution to conference presented by others** **To be recognized, the following are required: copy of the mission reimbursement request, copy of the certificate of participation and presentation of the work (or conference program with the presenters explicit).**	1 day (8h "frontal" of the event)	4 h	12	0,5

The duration of the **dissemination and extracurricular activities will be considered including the transfer** (e.g. participation to a conference in the USA of 3 days + 2 days for the transfer = 5 days, a presentations, 5x12/25=**2,4CD**)

DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
v. Supplementary teaching and tutoring*				
Tutoring* **Includes:** • **Tutoring contracts or grants at UniBo authorized by the Board** • **Tutoring or teaching contracts/grants at other universities/institutions authorized by the Board** **To be recognized, the following is required: tutoring contract with indication of the hours of assignment.**	10h contract	15h	25	1
Thesis tutoring* **The candidate must be the single doctoral student co-supervisor of the thesis (more than one co-supervisor is possible but must be a single doctoral student)** **To be recognized, the following is required: screen of thesis deposit on lauree.unibo.it**	N/A	N/A	For each thesis	1
Teaching* **Contracts for paid teaching previously authorized by the tutor and the board** **To be recognized, the following is required: teaching assignment contract with indication of teaching hours**	5 h contract / teaching	20 h	25	1

* These activities cannot exceed a **total of 9 CDs** (25% of the training CDs)

Examples: Tutoring contract, 30 hours, 30/10=**3CDs**;

Co-supervisor in 2 master thesis=**2CDs**; 15 hours of remunerated classroom teaching=**3CDs.**

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DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
Other authorized activities				
Activities authorized by the College **It includes, for example:** • **Remunerated working activities** • **Research activities (they are in research credits!)** • **Activities not attributable to training activities** • **Periods abroad (they are in research credits too!)** • **Periods in Companies/Institutions/Universities**	N/A	N/A	0	0

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DIN-DIMSAI Doctoral courses 2024/2025 (PhD@DIN)

Titolo attività	Tipologia (1)	Crediti dottorali (CD) (2)	Ore di didattica frontale (3)	Modalità di verifica (voto /idoneità)	Periodo di erogazione (4)	Anno di corso (5)	Docente
MATLAB Course on Artificial Intelligence Algorith	Laboratori	2,8	14	Idoneità	IN PRESENZA -GIUGNO 2025	I e II e III	Laghi-Rinaldini-Panarese (est)
The Craft of Scientific Research	Formazione disciplinare e multidisciplinare	7,2	36	Idoneità	ONLINE - 17-19 Febbraio 25	I e II	Viceconti
Python programming for scientific research	Formazione disciplinare e multidisciplinare	2,4	12	Idoneità	ONLINE - APRILE-MAGGIO 2025	I e II e III	Pulvirenti
Open source codes for the solution of differentia	Formazione disciplinare e multidisciplinare	2,4	12	Idoneità	IN PRESENZA e ONLINE - apr-mag-25	I e II e III	Pulvirenti
Design of Experiments: theory and applications	Formazione disciplinare e multidisciplinare	2,4	12	Voto	IN PRESENZA e ONLINE -GIUGNO 2025	I e II	Olmi
Data-driven methods in engineering	Formazione disciplinare e multidisciplinare	2,4	12	Idoneità	ONLINE - LUGLIO 2025	I e II e III	Tarchi
Mathematica™ Course for DIN PhD Students	Formazione disciplinare e multidisciplinare	2,4	12	Idoneità	IN PRESENZA e ONLINE - GENNAIO 2025	I e II e III	Brandao
Uncertainty Analysis for Engineers	Formazione disciplinare e multidisciplinare	2,4	12	Idoneità	IN PRESENZA e ONLINE - OTTOBRE/NOVEMBRE	I e III	Talamelli-Orlu-Schlatter
An elementary introduction to quantum mechani	Formazione disciplinare e multidisciplinare	2,4	12	Idoneità	IN PRESENZA e ONLINE - APRILE 2025	I e II e III	Barletta
Instability in Fluid Dynamics	Formazione disciplinare e multidisciplinare	2,4	12	Idoneità	IN PRESENZA e ONLINE - sett-25	I e II e III	Celli
Seminari "Ciclo primo semestre"	Seminari			Idoneità	IN PRESENZA e ONLINE - nov-24/apr-25	I e II e III	De Pascale
Seminari "Ciclo secondo semestre"	Seminari			Idoneità	IN PRESENZA e ONLINE - mag-sett-25	I e II e III	De Pascale
Totale		29,2	146				

UniBo Doctoral courses on Transferable 'Soft Skills' (Competenze Trasversali)

https://eventi.unibo.it/competenze-trasversali-dottorato

Enhance and communicate research:

- Knowledge valorisation and technology transfer to create impact on society
- University research compared to global challenges

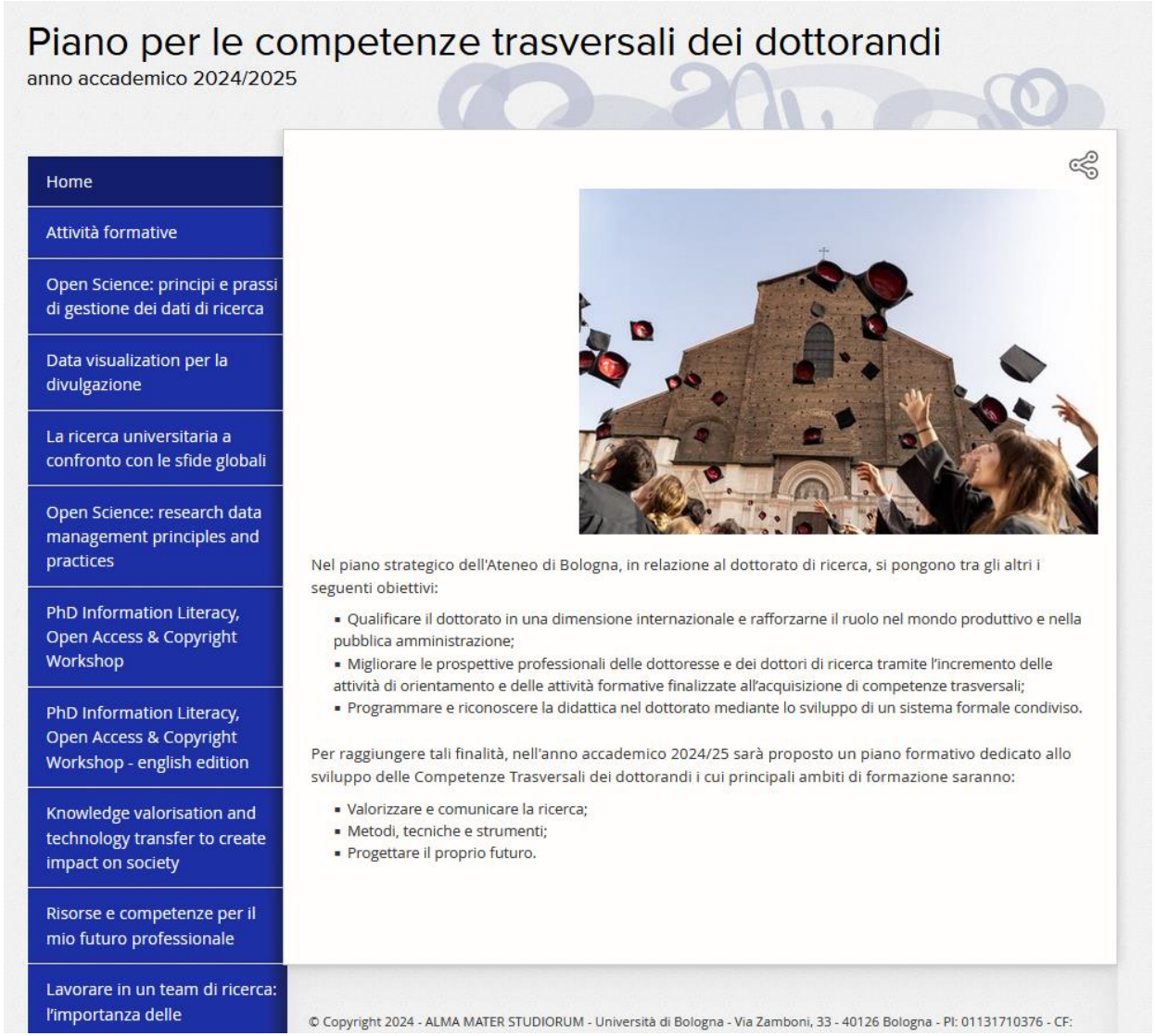
Methods, techniques and tools:

- PhD Information Literacy Workshop
- Open Science Research data management principles and practices
- Data visualization for dissemination

Planning your future:

- Resources and skills for my professional future
- Working in a research team: the importance of communication, organizational and personal skills

Language Courses for Academics



DIMSAI other courses

Seminars, courses and scientific events - offered by external institutions:

- Courses by AIM (Aim Italian Association for Metallurgy in Milan training courses, metallurgy laboratories - AIM)
- Courses by PHD-NET IN INDUSTRIAL SYSTEMS ENGINEERING - SCUOLA VIRTUALE DI DOTTORATO (https://www.docenti-impianti-industriali.it/section.php?id=66)
- Corso Nazionale Automazione Industriale e Robotica (https://www.robosiri.it/corsi-organizzati-da-siri/)
- Courses by A.I.TE.M. Academy (https://www.aitem.org/cosa-e-lacademy/)
- Courses by AIMSEA (Associazione Italiana delle Macchine a fluido e dei Sistemi per l'Energia e l'Ambiente - Cos'è la SVD)

Summer/winter schools, technical courses by companies or software houses, courses on instruments/testing methodologies, etc

Agree your personalized educational and training plan with your supervisors, he/she can provide you information on more specific courses for you!

DIMSAI Doctoral credits (from 40th cycle) - Training and teaching CD

NAME	TYPE & LOCATION	TYPE OF ACTIVITY	DURATION	CD
i. Courses (disciplinary and multidisciplinary training)				
Example: 'Machine mechanics'	Master course with final examination, at UniBo	Courses	60h, 6 official ECTS	(6 ECTS recognized)= 6.0
Example: 'Machine dynamics	Master course without final examination, at UniBo	Courses	60h, 6 official ECTS if taken with examination	(60h/25)= 2.4
Example: 'Design of Experiments: theory and applications'	PhD course with final examination, at UniBo	Courses	12h, no official ECTS	(12h/5)= 2.4
Example: 'Artificial Intelligence: theory and applications'	PhD course with final examination, at TU Dortmund	Courses	30h, no official ECTS	(30h/5)= 6.0
Total Credits (>6CD in the three years)				16.8
i. Transferable Skills (Competenze Trasversali)				
Example: 'English course AcES	English course for PhD students in transferable skills UniBo plan	Transferable Skills	50h, 5 ECTS	5 ECTS recognized, 5.0
Total Credits (>1CD in the three years)				5.0
i. Extracurricular training				
Example: 'International symposium on plasma chemistry' attendance only	International conference, Kyoto, Japan	Extracurricular training	5 days -including travelling-	(5x8/25)= 1.6
Example: Summer school 'AI data management'	Summer School without final examination, Rome, Italy	Extracurricular training	5 days -including travelling-, 32h, no official ECTS	(5x8/25)= 1.6

NAME	TYPE & LOCATION	TYPE OF ACTIVITY	DURATION	CD
Example: Summer school 'AI data managment'	Summer School with final examination, Rome, Italy	Extra curricular training or Courses	5 days -including travelling-, 32h, 3 official ECTS	Max among (5x8/25)= 1.6 and 3 ECTS, 3.0
Total Credits (>1CD in the three years)				6.2
i. Dissemination				
Example: Paper presentation at 'International symposium on plasma chemistry'	International conference Kyoto, Japan	Dissemination	5 days -including travelling-	(5x12/25)= 2.4
Total Credits (>2CD in the three years)				2.4
i. Teaching and Tutoring				
Example: Co-supervisor in master thesis	Student: Francesco Bruni, master thesis, Meccanica Bo	Thesis Tutoring		1.0
Example: Tutoring contract	Course "Propulsione navale"	Tutoring contract	30h	(30/10)= 3.0
Example: Course Teaching	Corso ITS "Dal progetto al processo", Imola, Italy	Teaching contract	Teaching contract for 30 hours in class	(30/5)= 6.0
Total Credits (>1CD in the three years, maximum of 9CD)				10.0 (9CD)
Total Credits acquired in the I year (recommended >18)				39,4

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DIMSAI Doctoral credits (from 40th cycle) – Research CD

Doctoral Research credits will be recognized annually as a **complement to 60** of the Training and Teaching credits in the event of a **positive evaluation of the Annual Report** and related duties.

Table A – Distribution of CDs between research, training and teaching		
Type of activity	Total number of CDs	%
Research activities	144	80
Training and teaching activities	36	20
Total	**180**	100

- Doctoral students are required to carry out, during the duration of the doctoral programme, a **period of research at least 3 MONTHS in a foreign country** including universities, research centers, organizations or companies. This period may be non-continuous (but each period must be longer than a month to be able to access the 50% salary increase) and the obligation can only be waived for reasons of force majeure, such as illness, maternity/paternity or other similar reasons. Approval of the exemption request is decided by the DIMSAI Board.

DIMSAI Doctoral credits (from 40th cycle) – Research CD

- As a criterion for the evaluation of the congruity and quality of the research activities carried out, each candidate is required **to publish**, during the duration of the doctoral course, **at least 2 articles, preferably in Scientific Journals,** or in indexed Conference proceedings. PhD students are also required to keep the iris (https://cris.unibo.it/) database updated with the results of the research activity.
- Finally, PhD students are suggested to carry out **a total period of at least 6 months outside Unibo** (6 months including the period abroad, then a further 3 months in the case of a period abroad of 3 months) at National and International Companies or Universities or Research Centers and to keep track of these periods to be reported annually in the Annual Report. This additional period can also be carried out - with or without continuity - in the same location where the period abroad is carried out.

Further obligations of candidates are:

- Set-up of the **personal UniBo web page** (i.e. https://www.unibo.it/sitoweb/l.donati/) with photo, CV and ORCID code at the beginning of the doctoral course and its updating;
- Yearly fill in of **the OPID questionnaires** (opinion of doctoral students) and of **the Almalaurea questionnaire** when uploading the final doctoral thesis.

DIMSAI Doctoral credits (from 40th cycle) – Yearly evaluation

The progress and adequacy of the **training and research program** is evaluated annually, together with the acquisition of the CDs and compliance with the additional duties, by the DIMSAI Board in the **year evaluation meeting** in which the following elements are analyzed:

- End of **first year** of the Doctorate, the PhD student must submit to the DIMSAI Academic Board **a report** of the research activities performed and a program for his three-year educational path, agreed and countersigned by his tutor;
- End of **second year** of the Doctorate, the PhD student must submit to the DIMSAI Academic Board **a report** of the research activities performed and a program for the last year educational path, agreed and countersigned by his tutor; They have also to prepare and present **a 5-minutes presentation** on the performed activity to be presented to the DIMSAI Board.
- At the end of the **third year** of the doctorate, the PhD student must submit to the DIMSAI Academic Board **a report** of the research activities performed and of his three-years educational path, countersigned by his tutor. The report on the scientific activities must summarize the activities performed during the first two years and highlight the activities of the third year; They have also to prepare and present **a 8-minutes presentation** on the performed activity to be presented to the DIMSAI Board.

Yearly evaluation meeting is typically held **in September**.

The templates of the annual reports are available in a fillable version on the PhD website.

DIMSAI Doctoral credits (from 40th cycle) – Yearly evaluation

Candidates who **have not obtained** the required CDs or **have not complied with the additional duties** in terms of period abroad, publications, OPID questionnaires or updating of UniBo databases and webpages, will **be denied the admission to the to the following year or to the final exam.**

DIMSAI Research Budget (a.k.a. Budget 10%)

All PhD students have a research budget to cover some of the expenses relevant to the PhD activities.

The budget is equal to 10% of the scholarship (around 5.300€);

it is available for the student research expenses and it is allocated to the Supervisor, who must approve the expenses.

DIN-DIMSAI Infrastructures

Equipment and/or laboratories: DIMSAI doctoral students have direct access to the equipment of the laboratories of the Department of Industrial Engineering (TECHNICAL PHYSICS, MECHANICS, METALLURGY, NUCLEAR ENGINEERING in Bologna, MECHANICS and AERONAUTICS in Forlì, www.energiaindustriale .unibo.it/it/ricerca/laboratori-di-ricerca) and, upon request to the contact person, to the equipment of the research groups belonging to the DIN, the CIRI or the other UniBo structures located both in Bologna and on the various Campuses;

Book heritage - consistency in volumes and coverage of the course topics: The Engineering and Architecture Library in Bologna branch and the Roberto Ruffilli Central Library at the Forlì Campus are accessible to doctoral students as well as all the libraries of the University library system which host paper and digital resources. Doctoral students can propose the purchase of titles useful for their research activities free of charge if there is capacity in the dedicated budget of the Libraries or through their own 10% budget or through Supervisor funds.

Databases, intended as access to the content of sets of journals and/or editorial series: PhD students can consult, on site or via VPN, the electronic collections of e-journals, e-books and manuals of the main international publishers, as well as technical standards and other external databases, such as IEEE, MathSciNet, Scopus, Web Of Science, SAE, ASME, ASM, etc. The individual research groups make specific databases available to doctoral students which contain the main previous scientific results obtained by them.

Software and **computational hardware** available inside each research group.

DIMSAI rules and procedures for getting several type of authorizations

Some PhD student's activities require **DIMSAI board prior approval**, in particular:

- Acceptance of tutorship contracts;
- Acceptance of remunerated teaching activities;
- Execution of any kind of remunerated activities;
- Authorization for period abroad;

Authorization forms are available on DIMSAI website (https://phd.unibo.it/dimsai/en/career/procedures--rules-and-services) and have to be submitted to the DIMSAI coordinator for Board approval.

In a near future, such authorizations will be managed by means of dottorandi.unibo.it platform.

Useful resources

- **First contact point** for all questions is your **supervisor** (or co-supervisors);
- **Second contact point** is your **supervisor** and your co-supervisors (yes, again!), she/he has knowledge and experience emerging from supervising other PhD students, and is supposed to well know the PhD regulations and procedures.
- Do you have issues with your supervisor or on topics you can't talk directly to him/her? Talk with doctoral students representative or with the Programme Coordinator;
- **DIMSAI PhD course website (ENG only)**
  https://phd.unibo.it/dimsai/en

  RESEARCH (Objectives/Curricula), ORGANIZATION/PEOPLE (PHD Board, PHD PROGRAMME COMMITTEE, FACULTY MEMBERS, ADVISORY BOARD, Current and Previous PhD Students), CARRER (EDUCATION AND TRAINING RULES - 40th PHD Cycle, EDUCATION AND TRAINING RULES - 37th, 38th and 39th PHD Cycles, Research stay abroad, USEFUL RESOURCES), COURSES PLAN, EVENTS/ COURSES AGENDA, ADMISSION, PARTNERS, INVEST IN DIMSAI, CONTACTS)

ALMA MATER STUDIORUM
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Useful resources

- **DIN Department website (Italian/English)**

  https://ingegneriaindustriale.unibo.it/it

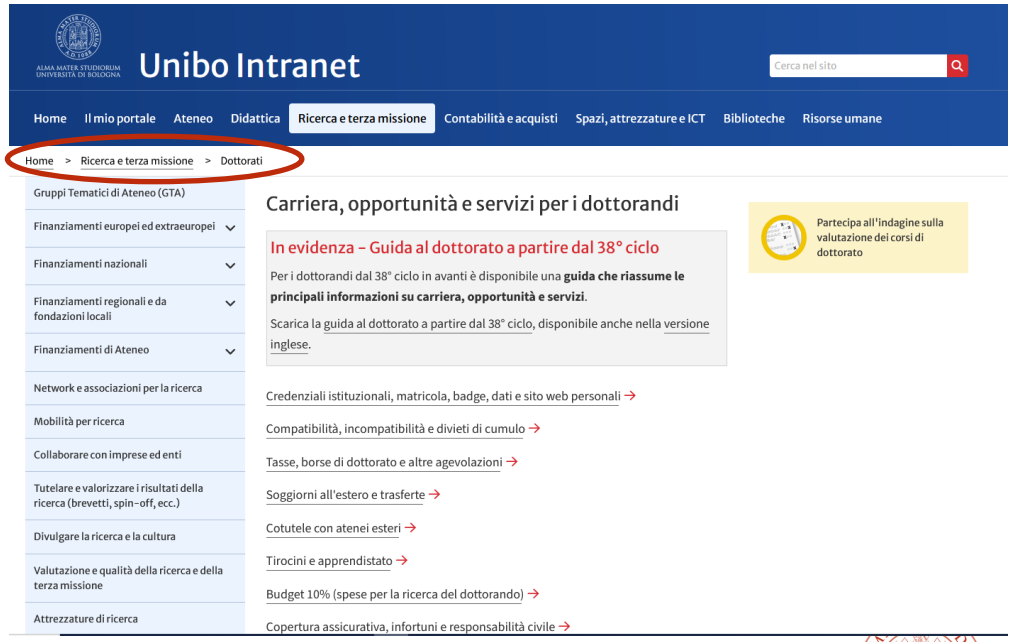
  DIN Department presentation: People; Department structure and buildings; Administrative organization, contacts and forms; Research Topics; Calls for funding; etc.

- **UniBo Intranet on PhD programs (Italian)**

  https://intranet.unibo.it/Ricerca/Pagine/default.aspx

  Career, opportunities and services for PhD students (Institutional credentials, matriculation number, badges, personal data and website; Compatibility, incompatibility and cumulation prohibitions; Fees, PhD scholarships and other benefits; Stays abroad and business trips; Collaboration with foreign universities, Internships and apprenticeships; Insurance coverage, accidents and civil liability; Suspension (maternity, TFA, etc.) and renunciation of the doctorate; Final exam and doctoral thesis; Self-certifications, certificates and diploma);

- **UniBo PhD program regulation**
  - (Italian official) https://normateneo.unibo.it/regolamento-in-materia-di-corsi-di-dottorato
  - (English unofficial) https://www.unibo.it/en/teaching/phd/regulation-governing-the-phd-programme-degrees-third-cycle-programme/phd-programme-regulation/@@download/file/PhD%20Programmes%20Regulation_English%20version_2.pdf



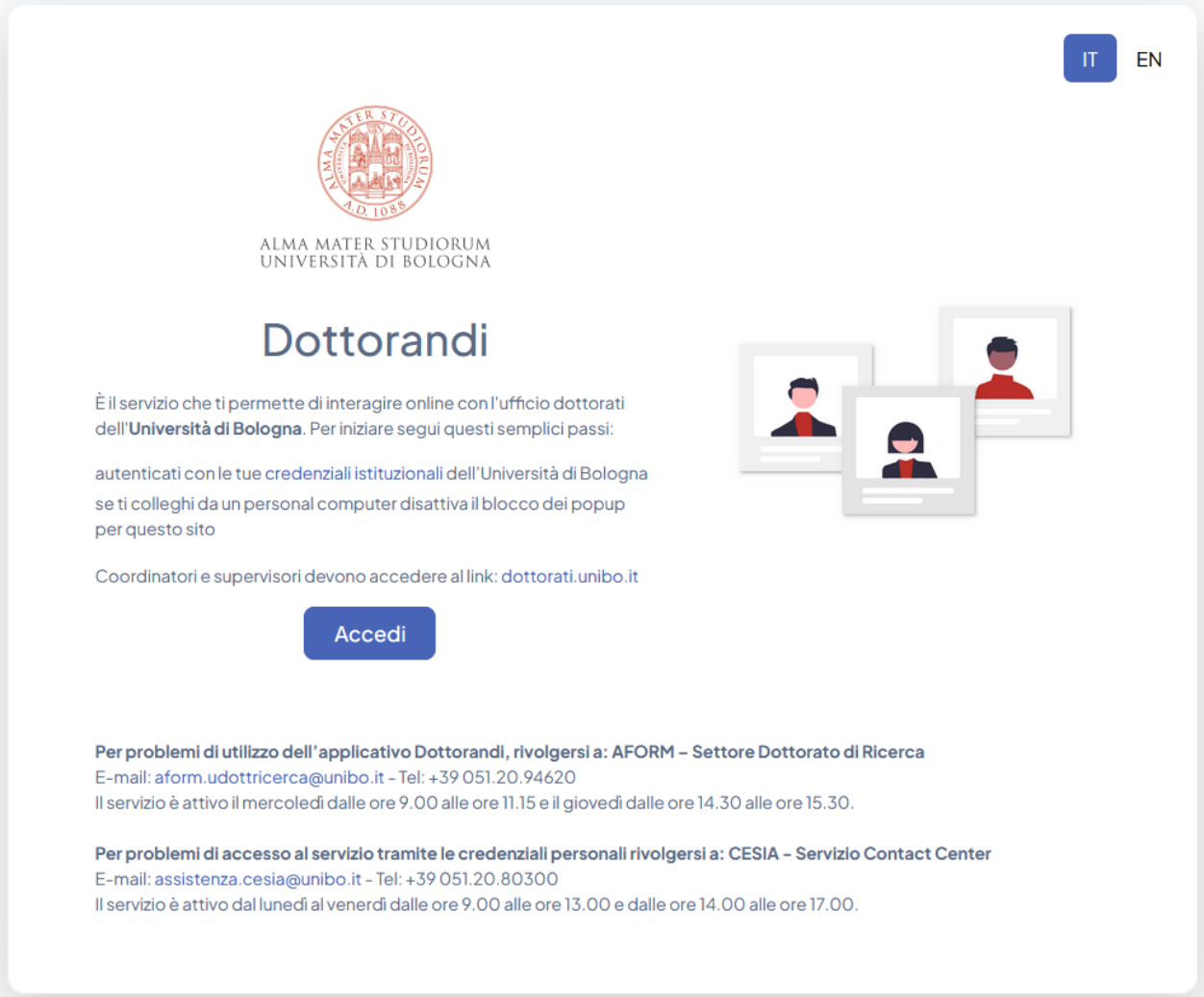
Useful resources

- **UniBo Dottorandi platform(Italian/English)**

  https://dottorandi.unibo.it/

  Platform for phd students procedures management –under implementation-: at the moment it's used as database for checking enrollment status; in future it will be used to manage:

  - Authorization requests (tutorship authorization, remunerated activities authorization, etc);
  - Upload of yearly report;
  - Management of all bureaucratic pashes of your phd programme.



Useful contacts

- **DIMSAI PROGRAM COORDINATOR:** Prof. Lorenzo Donati, l.donati@unibo.it
- **DEPUTY COORDINATOR:** Prof. Andrea De Pascale, andrea.depascale@unibo.it

- **DIMSAI STUDENT'S REPRESENTATIVE:** Eng. Andrea Formosi, andrea.formosi@unibo.it
- **DIMSAI STUDENT'S REPRESENTATIVE:** Eng. Simone Rosa, s.rosa@unibo.it

- **DIMSAI Programme Manager:** Dr. Emilio Vivarelli, emilio.vivarelli2@unibo.it
- **UNIBO Corsi e Carriere Dottorato di Ricerca:** aform.udottricerca@unibo.it

- **DIMSAI DELEGATES FOR EDUCATION AND TRAINING**:
- Prof. Beatrice Pulvirenti, beatrice.pulvirenti@unibo.it
- Prof. Matteo Gherardi, matteo.gherardi4@unibo.it
- **DIMSAI DELEGATE FOR ADMISSION PROCEDURES AND FOR CONSULTATION OF ADVISORY BOARD:** Prof. Marco Troncossi, marco.troncossi@unibo.it
- **DIMSAI DELEGATE FOR QUALITY ASSURANCE:** Prof. Marco Pellegrini, marco.pellegrini3@unibo.it

Summary of PhD students' Duties

- Acquire at least **36 Doctoral Educational and training Credits** in the three-year course;
- Yearly reporting of your **Research, educational and training activities** (in September) for 144 CDs:
  - a report (Annual Report at the end of each year),
  - a presentation (at the end of the second year)
  - a discussion of the work done (at the end of the third year for admission to the final exam).
- Perform a period abroad in an University or Research Center of at **least 3 months** and it's **suggested** to perform another period **out of UniBo** (in Italy or abroad) **for 3 more months**;
- Publications: at least **2 significant articles** in international journals or in indexed conference proceedings.
- Participation to DIMSAI dissemination events like DIMSAI/DIN Day, 'Notte dei Ricercatori' event, or thematic fairs;
- Filling of OPID and Almalaurea questionnaires and updating of UniBo databases and webpages.

Additional duties for PNRR positions:

- Period in Companies between 6 and 18 months;
- Period abroad between 6 and 18 months;
- Periodic Reporting (monthly, semestral, annual reporting)

Positions and Supervisors for 40th cycle

NOME	COGNOME	Curriculu	SSD	ORE_CONCO	settore co	ENTO_D	Tematica di Ricerca / Research topic (sia ITA che ENG)	NOME_TU	COGNOME_T	NOME_COTUTOR	COGNOME_COTU	TIPO_FINANZIAMENTO	Indirizzo* Sede DIN	Indirizzo sede non DIN presso c
ATEEQUE	AHMED	2	ING-IND/09	09/C1	IIND-06/B	DIN	Advanced Waste Heat Recovery solutions	Lisa	Branchini	Andrea	De Pascale	Min+PRIN 2022PNRR POWHER	Bologna, Viale risorgimento 2	
AHSAN	ALI	2	ING-IND13	09/A2	IIND-02/A	DIN	Algoritmi di intelligenza artificiale per la modellazione, il monitoraggio ed il controllo di strutture e sistemi	Rocco	Vertechy	Irene	Fassi	Borsa di Dottorato DIN	Bologna, Via dei Colli 16	
SAMUELE	BALDINI	3	ING-IND/19	09/C2	IIND-07/D	DIN	Piattaforma computazionale OpenFoam-Femus-Salome per accoppiamento FEM/FV e controllo ottimale	Sandro	Manservisi	Antonio	Cervone	Ministeriale	Bologna, Via dei Colli 16	
FILIPPO	BRASINA	2	ING-IND/13	09/A2	IIND-02/A	DIN	Pos. 1 “Strategie di comanipolazione robotica ottima in scenari industriali complessi / Optimal robotic	Marco	Carricato	Davide	Baraccani	PNRR DM630	Bologna, Via Terracini 24	IMA, Via I Maggio 14/16, Ozzano de
BEATRICE	BULZACCA	2	ING-IND/17	09/B2	IIND-05/A	DIN	Dimensionamento, progettazione ed analisi di sicurezza, di impianti di test per la produzione di idrogeno da	Cesare	Saccani	Marco	Pellegrini	PNRR Finanziata da ENEA	Bologna, Viale risorgimento 2	ENEA, Bologna
LORENZO	CAPETTA	2	ING-IND13	09/A2	IIND-02/A	DIN	Development of a clinically effective fully personalized musculoskeletal model of the lower limb	Nicola	Sancisi	Michele	Conconi	Ministeriale	Bologna, Viale risorgimento 2	
CRISTIAN	CASCIOLI	1	ING-IND/21	09/A3	IIND-03/C	DIN	Materiali metallici innovativi per la progettazione di componenti ad alto rapporto resistenza/peso /	Lorella	Ceschini	Alessandro	Morri	PNRR CN MOBILITY	Bologna, Viale Risorgimento 4	
MARCO	CESCON	1	ING-IND/15	09 A3	IIND-03/B	DIN	Pos. 3 “Progettazione e sviluppo di metodi per l’analisi della user experience (UX) per la validazione di	Margherita	Peruzzini	Davide	Gaglione	PNRR DM630	Forlì, Via Fontanelle 40	Automobili Lamborghini
ERIK	CILIA	3	ING-IND/19	09/C2	IIND-07/D	DIN	Analisi dell’affidabilità dei sistemi di sicurezza passivi in reattori SMR/Reliability analysis of passive safety	Sandro	Manservisi	Fulvio	Mascari	Finanziata da ENEA	Bologna, Via dei Colli 16	Enea Research Center, via dei Mill
ALESSIO RUBEN	COGO	1	ING-IND/15	09 A3	IIND-03/B	DIN	Pos. 8 “Ricerca e sviluppo in ambito Computer Aided Design (CAD) per applicazioni “Image to 3D” e metodi	Leonardo	Frizziero	Emanuel	Salvatore	PNRR DM630	Bologna, Viale risorgimento 2	Ferrari - Via Abetone Inferiore n. 4
MATTEO	DALL'OLIO	2	ING-IND13	09/A2	IIND-02/A	DIN	Strategie di comanipolazione robotica ottima di oggetti complessi / Strategies of optimal robotic	Edoardo	Ida'	Marco	Carricato	AdR PRFESR	Bologna, Via Terracini 24	
ROCCO	DE CIANTIS	1	ING-IND/15	09 A3	IIND-03/B	DIN	Integrazione di tecnologie di eXtended Reality e Artificial Intelligence per lo sviluppo di intefacce utente	Margherita	Peruzzini	Alfredo	Liverani	Ministeriale	Forlì, Via Fontanelle 40	
GABRIELLA ADELE	D'ERRICO	3	ING-IND/10	09/C2	IIND-07/A	DIN	Sviluppo e caratterizzazione sperimentale di sistemi di accumulo termico latente basati su Phase Change	Matteo	Dongellini	Gian Luca	Morini	Ministeriale	Bologna, Via Terracini 34	
DARIO	D'ORSI	2	ING-IND/08	09/C1	IIND-06/A	DIN	Pos. 6 “Sviluppo di tecniche di controllo innovative per powertrain ibridi ad elevata potenza specifica /	Vittorio	Ravaglioli	Carlo	Bussi	PNRR DM630	Bologna, Viale risorgimento 2	Ferrari
HAMIDREZA	GOLESORKHI	3	ING-IND/10	09/C2	IIND-07/A	DIN	Pos. 7 “Studio dello scambio termico mono e bifase in scambiatori innovativi e cicli a vapore / Study of heat	Beatrice	Pulvirenti	Danilo	Mascolo	PNRR DM630	Bologna, Viale risorgimento 2	Bi-rex
HAMED	HEIDARI	2	ING-IND/08	09/C1	IIND-06/A	DIN	Integration of SOEC and ORC waste heat systems for renewable energy applications	Andrea	De Pascale	Lisa	Branchini	Ministeriale+PRIN 2022PNRR POWH	Bologna, Viale risorgimento 2	
NICOLA	LAI	1	ING-IND/16	09/B1	IIND-04/A	DIN	3D Structured interfaces for improved strength of HYbrid Metal-COmposites joints	Sara	Di Donato	Lorenzo	Donati	Ministeriale+Prin 2022 3DSHYMCO	Bologna, Via Terracini 24	
YONGKANG	LI	3	ING-IND/10	09/C2	IIND-07/A	DIN	Optimized design of air sources heat pumps in low-temperature environments	Paolo	Valdiserri	Eugenia	Rossi di Schio	CSC	Bologna, Viale risorgimento 2	
ASSIA	MAURO	3	ING-IND/18	09/C2	IIND-07/C	DIN	Sviluppo di processi per la realizzazione di superfici funzionali mediante la combinazione delle tecnologie di	Matteo	Gherardi	Alessio	Bucciarelli	AdR CIRI MAM	Bologna, Via Terracini 24	IOR, BIREX
GIORGIO	NAIM	3	ING-IND/10	09/C2	IIND-07/A	DIN	Sviluppo di modelli numerici per la valutazione delle prestazioni energetiche di sistemi edificio-impianto /	Claudia	Naldi	Gian Luca	Morini	Ministeriale	Bologna, Via Terracini 34	
NHU TOAN	NGUYEN	2	ING-IND13	09/A2	IIND-02/A	DIN	Sviluppo e validazione sperimentale di soluzioni per aumentare la sicurezza di sistemi robotici mobili che	Rocco	Vertechy	Alessandra	Ferraro	Finanziata da INAIL	Bologna, Via dei Colli 16	
GIACOMO	PETROSELLI	2	ING-IND/17	09/B2	IIND-05/A	DIN	Integrazione della crowd economy nella suppy chain: sviluppo sostenibile e responsabilità sociale /	Marco	Bortolini	Francesco Gabriele	Galizia	Ministeriale	Bologna, Via Terracini 24	
SAVERIO	QUARANTA	3	ING-IND/18	09/C2	IIND-07/C	DIN	Pos. 2 “Progettazione neutronica del nocciolo di un reattore veloce refrigerato a piombo ottimizzato per la	Matteo	Gherardi	Giacomo	Grasso	PNRR DM630	Bologna, Via Terracini 24	
MARCO	RICCI	2	ING-IND/17	09/B2	IIND-05/A	DIN	Pos. 5 “Modelli, metodi e tecnologie per la progettazione, gestione e controllo di sistemi robotici ed	Riccardo	Manzini	Riccardo	Accorsi	PNRR DM630	Bologna, Viale risorgimento 2	E80 group
FRANCESCO	SEMPRUCCI	1	ING-IND/16	09/B1	IIND-04/A	DIN	Studio di materiali avanzati per la realizzazione di componenti strutturali per impieghi aerospaziali e	Maria Pia	Falaschetti	Lorenzo	Donati	AdR PRFESR	Forlì, Via Fontanelle 40	
VALENTINO	SOLFRINI	2	ING-IND/17	09/B2	IIND-05/A	DIN	Pos. 10 “Sviluppo di un approccio "activity based" per determinare l’impatto reale sulla sostenibilità del	Augusto	Bianchini	Mauro	Gamberi	Borsa di Dottorato DIN	Forlì, Via Fontanelle 40	Turtle, Via Balitrona 22, Cesenatico
TOMMASO	TERNELLI	1	ING-IND/14	09 A3	IIND-03/A	DIN	Pos. 4 “Studio, sviluppo e caratterizzazione di materiali compositi nanostrutturati intelligenti /Design, development and characterization of nanostructured smart composite materials.”	Andrea	Zucchelli	Tommaso Maria	Brugo	PNRR DM630	Bologna, Via Terracini 24	Bi-rex
LUCA	TRICARICO	3	ING-IND/19	09/C2	IIND-07/D	DIN	Sviluppo di Beam Intercepting Devices (BID) in metallo liquido / Development of Beam Intercepting Devices	Sandro	Manservisi	Carlo	Carrelli	Finanziata da ENEA	Bologna, Via dei Colli 16	Enea-Brasimone
YALDASADAT	YARANDI	2	ING-IND/13	09/A2	IIND-02/A	DIN	Pos. 9 “Algoritmi di intelligenza artificiale per il monitoraggio e il controllo di convertitori di energia dalle	Rocco	Vertechy	Marco	Fontana	PNRR DM630	Bologna, Via dei Colli 16	Cheros

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Welcome to DIMSAI and enjoy your journey!

Lorenzo Donati

Department of Industrial Engineering (DIN)

PhD Program in

"Mechanics and Advanced Engineering Sciences (DIMSAI)"

l.donati@unibo.it

www.unibo.it