

## **Regolamento di riconoscimento dei crediti dottorali (CD) per attività di formazione e ricerca (a partire dal 40° ciclo) -**

### **Regulation for the recognition of doctoral credits (CD) for training and research activities (starting from 40° cycle)**

*-English version below-*

Questa versione del regolamento, approvata in data 29.10.2025, aggiorna e sostituisce i regolamenti precedenti, fatto salve le attività formative già caricate dagli studenti ed approvate dal Collegio precedentemente.

L'obiettivo del programma di istruzione e formazione del dottorato in Meccanica e Scienze Avanzate dell'Ingegneria (DIMSAI) è quello di fornire un percorso didattico strutturato e monitorabile, caratterizzato da un'adeguata flessibilità per essere adattato alle diverse esigenze culturali degli specifici ambiti di ricerca dei dottorandi del DIMSAI. Il Corso pubblica sul proprio sito internet questo documento "Regolamento di riconoscimento dei crediti dottorali (CD) per attività di formazione e ricerca" che si applicherà agli studenti immatricolati a partire dal 40° ciclo.

**1. Obiettivi:** Il Corso di Dottorato DIMSAI si prefigge l'obiettivo di fornire ai dottorandi iscritti le competenze per esercitare attività di ricerca di alta qualificazione negli ambiti delle discipline relative ai settori scientifici disciplinari che lo caratterizzano, inerenti la meccanica e le scienze ingegneristiche ad essa associate. Il Dottorato offre un percorso formativo con finalità sia accademiche che professionali. Sviluppa le capacità del candidato di svolgere studi e ricerche originali in modo indipendente, sistematico ed approfondito, con un opportuno iter di studi avanzati di terzo livello, consistenti in corsi e seminari specialistici. Ha l'obiettivo di incrementare il livello di conoscenza del candidato nelle materie specifiche del programma di ricerca e in quelle specifiche del Dottorato. Intende fornire ai dottorandi competenze multidisciplinari incoraggiando la partecipazione a corsi ed eventi organizzati dagli altri Dottorati del Dipartimento DIN, di altri Dipartimenti di UniBo o di altri atenei Italiani ed Esteri, stimola inoltre la partecipazione a corsi ed eventi utili per acquisire le competenze trasversali indispensabili per le future attività professionali. Incoraggia infine la partecipazione a corsi ed eventi organizzati da Altri Atenei o Istituzioni di Ricerca, in Italia e all'estero. Intende stimolare la capacità di condurre attività di ricerca in collaborazione con gruppi di ricerca internazionali, sviluppando capacità e metodologie alternative nel confronto con ricercatori afferenti a centri di ricerca esteri. Grazie alla supervisione di uno o più tutori, il percorso formativo intende fornire le conoscenze teoriche e pratiche per elaborare una tesi di Dottorato che dimostri il livello di originalità e la rilevanza degli studi effettuati nell'ambito delle tematiche del corso. Il candidato dovrà inoltre dimostrare di essere in grado di documentare, esporre e discutere il proprio lavoro in modo chiaro ed efficace, in Italiano e in Inglese. Un ulteriore obiettivo del corso di Dottorato consiste nel formare i dottorandi affinché siano adeguatamente preparati ad intraprendere percorsi professionali caratterizzati da elevata innovatività nell'ambito dell'industria meccanica, energetica, nucleare, manifatturiera o di altri comparti industriali, al fine di progettare, gestire e realizzare progetti di ricerca ed innovazione e per concorrere all'ideazione e messa in opera di prodotti e processi nuovi e complessi. Lo scopo del percorso di studio offerto con questo corso di dottorato è infine anche quello di formare le competenze per operare in contesti internazionali e multidisciplinari. In termini generali, e per diversi aspetti formativi, il corso di Dottorato contribuisce anche al perseguimento dei seguenti Obiettivi di Sviluppo Sostenibile dell'Agenda 2030 dell'ONU: 7 Energia pulita e accessibile; 9 Impresa, innovazione e infrastrutture; 11 città e comunità sostenibili; 12 Garantire modelli sostenibili di produzione e di consumo; 13 Lotta contro il cambiamento climatico.

**2. Struttura:** il programma di formazione e ricerca prevede:

a) Lo svolgimento, sotto la guida di uno o più supervisori, di un programma di ricerca individuale inizialmente proposto dal candidato, eventualmente ridefinito ed aggiornato, infine verificato ed approvato dal Collegio dei Docenti, riferito a un ambito disciplinare fra quelli previsti dal Corso di Dottorato;

b) La partecipazione ad attività didattiche, formative e di disseminazione complementari all'attività di ricerca, selezionate dal Candidato congiuntamente con il Supervisore, **per l'ottenimento di almeno 36 crediti dottorali di formazione sui 180 totali previsti nei 3 anni di corso.** Le attività formative che portano al riconoscimento dei crediti riguardano:

- corsi disciplinari, multidisciplinari e transdisciplinari espressamente erogati per il terzo ciclo formativo dal Dipartimento DIN;
- attività trasversali espressamente erogate da Unibo per il terzo ciclo formativo con gli altri dottorati;
- Corsi disciplinari, multidisciplinari, transdisciplinari o attività trasversali e laboratoriali, inclusi corsi universitari, **di interesse per il percorso dottorale del Candidato e non precedentemente acquisiti,** erogati da altri Atenei italiani o esteri o da Consorzi/Enti/Centri di Ricerca o Aziende;
- Conferenze, summer/winter schools, workshops, seminari nelle tematiche specifiche o complementari relative al proprio programma di ricerca;
- **Tutorati attivati tramite contratti da parte di UniBo o da parte di altri Atenei o Enti; tutorato di studenti durante la preparazione della Tesi di Laurea;**

c) Lo svolgimento di un periodo all'estero di almeno 3 mesi, finalizzato a migliorare il livello di internazionalizzazione della propria attività di ricerca.

d) Lo svolgimento di periodi in Azienda o in Università o Centri di Ricerca (sia italiani che esteri) in aggiunta ai 3 mesi del punto precedente.

**e) La valutazione annuale (indicativamente a settembre di ogni anno) delle attività di ricerca e di formazione svolte tramite la stesura di una relazione seguendo il template preposto e la presentazione dell'attività ai membri del Collegio;**

f) La pubblicazione, nei tre anni di Corso, di almeno 2 articoli, preferibilmente su Riviste Scientifiche, oppure su atti di Conferenza indicizzati. L'aggiornamento costante del database iris (<https://cris.unibo.it/>) con i risultati della ricerca prodotti dal candidato.

g) La compilazione e l'aggiornamento della propria pagina web sul sito di UniBo e la compilazione annuale dei questionari OPID delle opinioni dei dottorandi. La compilazione del questionario Almalaurea in fase di caricamento della tesi finale.

h) Il progetto formativo si conclude con la stesura della tesi finale redatta in lingua italiana o inglese, valutata da revisori esterni e la successiva discussione di fronte ad una commissione di membri esperti.

Nella giornata di avvio del ciclo Dottorale vengono illustrati ai nuovi Dottorandi il regolamento e le procedure per il riconoscimento dei crediti congiuntamente alle altre informazioni e obblighi rilevanti per lo svolgimento del proprio percorso Dottorale. Tale presentazione è inoltre resa disponibile nella pagina web del Dottorato. Lo stato di avanzamento e la congruità del programma di formazione e ricerca viene valutato annualmente, assieme all'acquisizione dei CD e il rispetto degli ulteriori vincoli, dal Collegio dei Docenti nella riunione di passaggio d'anno in cui vengono valutate:

- **una relazione (Report Annuale al termine di ogni anno),**
- **una presentazione sull'attività svolta nei 12 mesi (al termine del primo e secondo anno)**
- **una presentazione con discussione del lavoro svolto durante il corso (al termine del terzo anno per l'ammissione all'esame finale).**

I template relativi ai report annuali sono riportati in allegato e sono disponibili in versione compilabile sul sito del dottorato.

Il percorso dei dottorandi è regolato dal REGOLAMENTO DI ATENEIO IN MATERIA DI CORSI DI DOTTORATO (<https://www.unibo.it/it/studiare/dottorati-master-specializzazioni-e-altra-formazione/dottorati/regolamento-dateneio-in-materia-di-dottorato>).

**3. Crediti Dottorali e loro riconoscimento:** I Crediti Dottorali (CD) misurano il carico di lavoro richiesto al Dottorando nelle attività di ricerca e formazione per il conseguimento del titolo. Ogni CD vale 25 ore di impegno e il Dottorando deve conseguire 60 CD all'anno. Il DIMSAI ripartisce il monte complessivo di CD tra attività di ricerca, attività di formazione e didattica, richiedendo che l'attività di ricerca sia prevalente ma non superiore all'80% del totale (144 CD) e prevedendo quindi un'attività di formazione e didattica pari almeno al 20% ( $\geq 36$  CD) come riportato in tabella A. I Dottorandi che, alla fine del percorso dottorale, abbiano acquisito un numero di CD per formazione e didattica superiore a quanto indicato nella Tabella A, si vedranno riconosciuti tali CD in eccesso rispetto ai 180 teorici. Tuttavia, il Collegio monitorerà che non si verifichino squilibri che ostacolano l'attività di ricerca dei Dottorandi.

<b>Tabella A – Distribuzione dei CD tra ricerca, formazione e didattica</b>		
<b>Tipologia di attività</b>	<b>Numero totale di CD</b>	<b>%</b>
<b>Attività di ricerca</b>	144	80
<b>Attività di formazione e didattica</b>	36	20
<b>Totale</b>	180	100

### **3.1-Crediti Dottorali di Formazione e Didattica**

Il DIMSAI ha definito il valore minimo di CD da conseguire per ciascuna delle seguenti attività (tabella B):

- i. formazione disciplinare e multidisciplinare,
- ii. formazione relativa all'acquisizione di competenze trasversali,
- iii. formazione extra-curricolare per la crescita dei dottorandi come membri di una comunità scientifica (summer school, partecipazione a conferenze come uditori, PhD simposia, ecc.),
- iv. disseminazione dei risultati della ricerca,
- v. didattica integrativa e tutorati.

<b>Tabella B – Requisiti per la distribuzione dei CD tra le attività di formazione e didattica</b>		
<b>Tipologia di attività</b>	<b>Numero minimo di CD</b>	<b>Numero massimo di CD</b>
<b>Formazione disciplinare e multidisciplinare</b>	6	-
<b>Competenze trasversali</b>	1	-
<b>Formazione extra curricolare</b>	1	-
<b>Disseminazione</b>	2	-
<b>Didattica integrativa e Tutorati</b>	1	9

Il Corso ha definito inoltre il numero raccomandato di CD da acquisire per formazione, disseminazione e didattica in ciascun anno di corso, in modo da garantire lo svolgimento bilanciato di queste attività rispetto a quelle di ricerca (tabella C). In tale tabella sono anche riportati i crediti dottorali minimi che un Dottorando deve conseguire per poter essere ammesso, in sede di valutazione annuale, all'anno successivo.

**Tabella C – CD per formazione e didattica da acquisire nei vari anni di corso**

CD per formazione e didattica da acquisire	Raccomandati	Minimi
alla fine del 1 anno	18	0
alla fine del 2 anno	30	12
alla fine del 3 anno	36	36

I Dottorandi, in accordo con i propri supervisor e co-supervisor, definiscono in modo flessibile i propri specifici percorsi formativi e di ricerca, scegliendo le attività da svolgere, per tipologia e per quantità, nel rispetto dei vincoli stabiliti dal Collegio per ciascuna attività ed anno di corso. **Si rimarca ulteriormente che la formazione può essere indifferentemente acquisita presso UniBo, presso altri Atenei o Enti Italiani o presso Atenei o Enti esteri, purchè risulti formativa a livello dottorale.**

Per il riconoscimento delle attività di formazione, disseminazione e didattica il Collegio del DIMSAI utilizzerà i seguenti criteri (Tabella D):

Tabella D – Corrispondenza tra ore di impegno e CD acquisiti				
Tipologia di attività	Ore in aula	Ore di studio autonomo	Ore totali	CD
<b>i. Corsi (formazione disciplinare e multidisciplinare)</b>				
<b>Corsi (con verifica dell'apprendimento)</b> Include, <b>come esempio ma non limitati a:</b> <ul style="list-style-type: none"> <li>Corsi 3° livello PhD@DIN o di UniBo</li> <li>Corsi 3° livello di altri PhD (anche non UniBo, Italiani o Esteri)</li> <li>Seminari come parte di un corso (ciclo di seminari), con verifica</li> <li>Corsi di formazione disciplinari e multidisciplinari UNIBO con verifica finale</li> <li>Corsi di formazione disciplinari e multidisciplinari compatibili con il dottorato di enti italiani o esteri (ad es. Cineca, CERN, etc) con verifica finale</li> <li>Corsi di 1° e 2° livello non sostenuti in carriera (anche non UniBo) con superamento della verifica finale</li> </ul>	5	20	25	1
<b>Corsi laboratoriali teorico-pratici (con verifica dell'apprendimento)</b> Include, <b>come esempio ma non limitati a:</b> <ul style="list-style-type: none"> <li>corsi che includono l'utilizzo pratico di una strumentazione, di un macchinario, di un software ma che realizzano anche una formazione di tipo teorica (ad. es. corsi MATLAB, PYTHON, Prove di caratterizzazione, etc); corsi sia UniBo che di altri Enti/Università/Aziende Italiane o Estere</li> </ul> Per essere riconosciuto, viene richiesto: copia dell'attestato di frequenza di almeno il 75% delle ore e del voto/idoneità conseguita.	10	15	25	1
<b>Corsi (senza verifica dell'apprendimento)</b> Include, <b>come esempio ma non limitati a:</b> <ul style="list-style-type: none"> <li>Seminari singoli (non nel contesto di un corso con verifica)</li> <li>Corsi sia di UniBo che di altri Enti/Università/Aziende Italiane o Estere, senza verifica finale dell'apprendimento</li> <li>Corsi extra-curricolari</li> <li>Corsi con verifica dell'apprendimento di cui il candidato non sostiene la verifica dell'apprendimento;</li> </ul>	25	-	25	1

<ul style="list-style-type: none"> <li>Corsi di 1° e 2° livello non sostenuti in carriera (anche non UniBo) senza verifica finale</li> </ul> <p>Per essere riconosciuto viene richiesto: copia dell'attestato di partecipazione con certificazione di presenza di almeno 75% delle ore.</p>				
<b>ii. Competenze trasversali</b>				
<p><b>Corsi per lo sviluppo di competenze trasversali (con verifica dell'apprendimento)</b></p> <p>Include, ad esempio, corsi non PhD@DIN erogati da UniBo o da altri Enti/Università/Aziende Italiane o Estere su tematiche di competenze trasversali quali:</p> <ul style="list-style-type: none"> <li>Orientamento al lavoro e progettazione della carriera</li> <li>Conoscenza dei sistemi di ricerca europei e internazionali</li> <li>Formazione alla didattica</li> <li>Formazione alla disseminazione ed alla pubblicazione</li> <li>Tutela della proprietà intellettuale</li> <li>Gestione dei dati in modalità open access/open science</li> <li>Corsi sulle competenze trasversali appositamente organizzati da UniBo per il dottorato (e.g. ACEs, Transversal Skills)</li> </ul> <p>Per essere riconosciuto, viene richiesto: copia dell'attestato di frequenza di almeno il 75% delle ore e del voto/idoneità conseguita.</p>	5	20	25	1
<p><b>Corsi per lo sviluppo di competenze trasversali (senza verifica dell'apprendimento)</b></p> <p>Include, ad esempio, corsi non PhD@DIN erogati da UniBo o da altri Enti/Università/Aziende Italiane o estere su tematiche quali:</p> <ul style="list-style-type: none"> <li>Orientamento al lavoro e progettazione della carriera</li> <li>Conoscenza dei sistemi di ricerca europei e internazionali</li> <li>Formazione alla didattica</li> <li>Formazione alla disseminazione ed alla pubblicazione</li> <li>Corsi su competenze trasversali per dottorato (Transversal Skills @ UniBo)</li> </ul> <p>Per essere riconosciuto viene richiesto: copia dell'attestato di partecipazione con certificazione di presenza di almeno 75% delle ore.</p>	25	0	25	1
<b>iii. Formazione extra curricolare</b>				
<p><b>Partecipazione summer/winter school (con verifica dell'apprendimento)</b></p> <ul style="list-style-type: none"> <li>Scuole di dottorato / Summer School / Winter school (con verifica finale)</li> </ul> <p>Per essere riconosciuto, viene richiesto: copia dell'attestato di frequenza di almeno il 75% delle ore e del voto/idoneità conseguita.</p>	5	20	25	1
<p><b>Partecipazione a convegni e summer/winter school (senza verifica dell'apprendimento)</b></p> <p>Include, ad esempio:</p> <ul style="list-style-type: none"> <li>Partecipazione a convegno senza presentazione di un lavoro, o chairing o partecipazione passiva a panel di discussione</li> <li>Scuole di dottorato / Summer School / Winter school (senza verifica finale)</li> <li>PhD simposia</li> </ul> <p>Per essere riconosciuto viene richiesto: copia richiesta rimborso missione e copia attestato di partecipazione</p>	1 giorno (8 ore "frontali" dell'evento) NOTA 4	-	8	0,3
<b>iv. Disseminazione</b>				
<p><b>Disseminazione attiva dei risultati della propria ricerca</b></p> <p>Include, ad esempio:</p> <ul style="list-style-type: none"> <li>Partecipazione a convegno con presentazione di almeno un lavoro</li> </ul>	1 giorno (8 ore "frontali" dell'evento) NOTA 4	4	12	0,5

<ul style="list-style-type: none"> <li>Partecipazione a convegno con partecipazione attiva a un panel di discussione / chairing di sessione</li> </ul> <p><i>NON include:</i></p> <ul style="list-style-type: none"> <li>Preparazione e pubblicazione di articoli su rivista</li> <li>Co-autorship di contributo a convegno presentato da altri</li> </ul> <p>Per essere riconosciuto viene richiesto: copia della richiesta di rimborso della missione, copia dell'attestato di partecipazione e presentazione del lavoro (o del programma della conferenza con esplicitati i presentatori).</p>				
<b>v. Didattica integrativa e tutorato*</b>				
<p><b>Tutorato*</b></p> <p><i>Include:</i></p> <ul style="list-style-type: none"> <li>Contratti o assegni di tutorato presso UniBo autorizzati dal Collegio</li> <li>Contratti o assegni di tutorato o insegnamento presso altri Atenei/Enti autorizzati dal Collegio</li> </ul> <p>Per essere riconosciuto, viene richiesto: contratto di tutorato con indicazione delle ore di incarico.</p>	10 ore di contratto	15	25	1
<p><b>Tutorato tesisti*</b></p> <p><i>Il candidato deve essere l'unico dottorando correlatore della tesi (sono possibili più correlatori ma il richiedente deve essere l'unico dottorando)</i></p> <p>Per essere riconosciuto viene richiesto: schermata di deposito della tesi su <a href="http://lauree.unibo.it">lauree.unibo.it</a></p>	N/A	N/A	Per ogni tesi	1
<p><b>Docenza*</b></p> <p><i>Contratti per docenze retribuite preventivamente autorizzati dal tutor e dal collegio</i></p> <p>Per essere riconosciuto viene richiesto: contratto di incarico docenza con indicazione delle ore di docenza</p>	5 ore di contratto / docenza	20 di preparazione docenza	25	1
<b>Altre attività autorizzate</b>				
<p><b>Attività autorizzate dal Collegio</b></p> <p><i>Include, ad esempio:</i></p> <ul style="list-style-type: none"> <li>Attività lavorative</li> <li>Attività non riconducibili ad attività formativa</li> <li>Periodi all'estero</li> <li>Periodi in Aziende/Enti/Università</li> </ul>	N/A	N/A	0	0

**NOTA 1:** Per attività in cui l'organizzatore definisce esplicitamente ECTS/CFU/CD secondo uno schema conforme ai criteri generali, **verrà di norma considerato il riconoscimento dei CD proposti dall'organizzatore**, anche in deroga ai criteri in tabella. **Es. summer school promossa per 9 Crediti Dottorali, verranno riconosciuti 9 CD indipendentemente dalla durata; corso di 1 e 2 livello con esame finale (60 ore, 6 cfu) verrà riconosciuta per 6 CD.**

**NOTA 2:** L'attribuzione di **frazioni di credito**, in ragione al numero di ore effettive dell'attività da riconoscere, è effettuata con un criterio di proporzione con arrotondamento ad una cifra decimale (e.g. 31h di corso senza verifica = 1.2 CD).

**NOTA 3:** Le attività \* **Didattica integrativa e tutorato** (Tutorato, Tutorato Tesi e Docenza) non possono complessivamente superare i 9 CD (25% dei CD di formazione)

**NOTA 4:** Le durate delle attività di disseminazione ed extracurricolari verranno considerate includendo il trasferimento **(e.g. conferenza passiva in paese EU di 3 gg + 2 mezze giornate per il trasferimento=4gg)**

### 3.2-Crediti Dottorali di Ricerca

I crediti dottorali di ricerca saranno riconosciuti annualmente come complemento a 60 dei crediti di Formazione e Didattica **in caso di positiva valutazione del Report annuale e degli adempimenti connessi.**

Ai dottorandi è richiesto di effettuare obbligatoriamente, durante la durata del percorso dottorale, un periodo di attività di ricerca pari almeno a **3 MESI** in una sede estera includendo Università, centri di Ricerca, Enti o Imprese. Tale periodo può essere non continuativo (ma ogni periodo deve essere superiore al mese per poter accedere alla maggiorazione dello stipendio del 50%) e l'obbligo può essere derogato solo per cause

di forza maggiore, quali malattia, maternità/paternità o altre analoghe motivazioni. L'approvazione della richiesta di deroga viene deliberata dal Collegio.

Come criterio per la valutazione della congruità e qualità delle attività di ricerca svolte viene richiesto ad ogni candidato la pubblicazione, durante la durata del percorso dottorale, di almeno **2 articoli**, preferibilmente su Riviste Scientifiche, oppure su atti di Conferenza indicizzati. Ai dottorandi è richiesto inoltre di mantenere aggiornato il database iris (<https://cris.unibo.it/>) con i risultati della ricerca prodotti.

Infine ai dottorandi viene suggerito di effettuare complessivamente un periodo di almeno 6 mesi al di fuori di Unibo (6 mesi includenti il periodo all'estero, quindi ulteriori 3 mesi nel caso di periodo all'estero di 3 mesi) presso Aziende o Università o Centri di Ricerca Nazionali ed Internazionali e di tenere traccia di tali periodi da rendicontarsi annualmente in sede di Report annuale. Questo ulteriore periodo può essere svolto -con o senza continuità- anche nella medesima sede in cui si effettua il periodo all'estero.

Ulteriori obblighi dei candidati sono:

- Compilare all'inizio del percorso dottorale e mantenere successivamente aggiornata la propria pagina web di UniBo (i.e. <https://www.unibo.it/sitoweb/l.donati/>);
- Compilare annualmente i questionari OPID (opinione dei dottorandi) e il questionario Almalaurea all'atto del caricamento della tesi finale di dottorato.

**Ai candidati che non avranno conseguito i CD richiesti o non avranno rispettato gli ulteriori vincoli in termini di periodo all'estero, pubblicazioni, questionari OPID o aggiornamento degli applicativi informatici, sarà negato il passaggio d'anno o l'ammissione all'esame finale.**

**4. Allegati:** sono disponibili in fondo al documento, dopo la versione inglese del regolamento.

## Regulation for the recognition of doctoral credits (CD) for training and research activities (starting from 40° cycle)

This version of the regulations, approved on 29.10.2025, updates and replaces the previous regulations; the training activities already uploaded by students and approved by the Board will be kept valid when in agreement with the previous regulations.

The objective of the education and training program for the PhD in Mechanics and Advanced Engineering Sciences (DIMSAI) is to provide a structured and monitorable educational path, characterized by adequate flexibility to adapt to the different cultural needs of the specific research areas of DIMSAI doctoral students. The Course publishes on its website this document "Regulations for the recognition of doctoral credits (CD) for training and research activities" which will apply to students enrolled from the 40th cycle.

**1. Objectives:** The DIMSAI PhD Course aims to provide enrolled PhD students with the skills to carry out highly qualified research activities in the areas of the disciplines related to the scientific disciplinary sectors that characterize it, 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 courses and events organized by the other Doctorates of the DIN Department, other UniBo Departments or other Italian and foreign universities, and also stimulates participation in courses and events useful for acquiring the transversal skills essential for future professional activities. Finally, it encourages participation in courses and events organized by other universities or research institutions, in Italy and abroad. It intends 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 training course 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. The candidate must also demonstrate that he/she is able to document, exhibit and discuss his/her work clearly and effectively, in Italian and English. A further objective of the PhD course is to train PhD students so that they are adequately prepared to undertake highly innovative professional paths in the mechanical, energy, nuclear, manufacturing or other industrial sectors, in order to design, manage and implement research and innovation projects and to contribute to the design and implementation of new products and processes and to contribute to the design and implementation of new products and processes. Complex. Finally, the purpose of the course of study offered with this doctoral course is also to train the skills to operate in international and multidisciplinary contexts. In general terms, and for various educational aspects, the PhD course also contributes to the pursuit of the following Sustainable Development Goals of the UN 2030 Agenda: 7 Clean and accessible energy; 9 Enterprise, innovation and infrastructure; 11 sustainable cities and communities; 12 Ensure sustainable models of production and consumption; 13 Fight against climate change.

**2. Structure:** the training and research program includes:

a) The performance, under the guidance of one or more supervisors, of an individual research program initially proposed by the candidate, possibly redefined and updated, finally verified and approved by the Academic Board, referring to a disciplinary area among those provided for by the PhD Course;

b) Participation in teaching, training and dissemination activities complementary to the research activity, selected by the Candidate jointly with the Supervisor, for the achievement of at least 36 doctoral training credits out of the total 180 expected in the 3 years of the course. The training activities that lead to the recognition of credits concern:

- disciplinary, multidisciplinary and transdisciplinary courses expressly provided for the third cycle of training by the DIN Department;
- transversal activities expressly provided by Unibo for the third cycle of training with the other doctorates;
- Disciplinary, multidisciplinary, transdisciplinary courses or transversal and laboratory activities, including university courses, of interest for the Candidate's doctoral path and not previously acquired, provided by other Italian or foreign universities or by Consortia/Bodies/Research Centres or Companies;
- Conferences, summer/winter schools, workshops, seminars in specific or complementary topics related to your research program;
- Tutoring activated through contracts by UniBo or by other universities or institutions; tutoring of students during the preparation of the Degree Thesis;

c) The carrying out of a period abroad of at least 3 months, aimed at improving the level of internationalization of his/her research activity.

d) The carrying out of periods in the Company or in Universities or Research Centers (both Italian and foreign) in addition to the 3 months of the previous point.

e) The annual evaluation (approximately in September of each year) of the research and training activities carried out through the drafting of a report following the template in charge and the presentation of the activity to the members of the Board;

f) The publication, in the three years of the Course, of at least 2 articles, preferably in Scientific Journals, or in indexed Conference proceedings. The constant updating of the iris database (<https://cris.unibo.it/>) with the results of the research produced by the candidate.

g) The compilation and updating of their web page on the UniBo website and the annual compilation of the OPID questionnaires of the opinions of the doctoral students. Filling in the Almalaurea questionnaire when uploading the final thesis.

h) The training project ends with the drafting of the final thesis written in Italian or English, evaluated by external reviewers and the subsequent discussion in front of a commission of expert members.

On the day of the start of the Doctoral cycle, the regulations and procedures for the recognition of credits are illustrated to the new PhD students together with other information and obligations relevant to the development of their Doctoral course. This presentation is also made available on the PhD website.

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 constraints, by the Academic Board in the year-change meeting in which the following are evaluated:

- a report (Annual Report at the end of each year),
- a presentation on the activity carried out in the 12 months (at the end of the first and second year)
- a presentation with discussion of the work done during the course (at the end of the third year for admission to the final exam).

The templates relating to the annual reports are attached and are available in a fillable version on the PhD website.

The path of doctoral students is regulated by the UNIVERSITY REGULATIONS ON DOCTORAL COURSES (<https://www.unibo.it/it/studiare/dottorati-master-specializzazioni-e-altra-formazione/dottorati/regolamento-dateneo-in-materia-di-dottorato>).

**3. Doctoral Credits and their recognition:** Doctoral Credits (CD) measure the workload required of 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. The DIMSAI divides the total amount of CDs between research, training and teaching activities, requiring that the research activity be prevalent but not exceeding 80% of the total (144 CDs) and therefore providing for training and teaching activities equal to at least 20% ( $\geq 36$  CDs) as shown in Table A. PhD students who, at the end of the doctoral course, have acquired a number of CDs for training and teaching greater than that indicated in Table A, will be recognized in excess of the 180 theoretical CDs. However, the Board will monitor that there are no imbalances that hinder the research activity of PhD students.

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

### **3.1-Doctoral Training and Teaching Credits**

DIMSAI has defined the minimum value of CD to be achieved for each of the following activities (Table B):

- vi. disciplinary and multidisciplinary training,
- vii. training related to the acquisition of transversal skills,
- viii. extra-curricular training for the growth of PhD students as members of a scientific community (summer school, participation in conferences as an auditor, PhD symposia, etc.),
- ix. dissemination of research results,
- x. supplementary teaching and tutoring.

<b>Table B – Requirements for the distribution of CDs between training and teaching activities</b>		
<b>Type of activity</b>	<b>Minimum number of CDs</b>	<b>Maximum number of CDs</b>
<b>Disciplinary and multidisciplinary training</b>	6	-
<b>Soft skills</b>	1	-
<b>Extracurricular training</b>	1	-
<b>Dissemination</b>	2	-
<b>Supplementary teaching and tutoring</b>	1	9

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). This table also shows the minimum doctoral credits that a PhD student must obtain in order to be admitted, during the annual assessment, to the following year.

<b>Table C – CD for training and teaching to be acquired in the various years of the course</b>		
<b>Training and teaching CDs to be acquired</b>	<b>Recommended</b>	<b>Minima</b>
<b>at the end of the 1st year</b>	18	0
<b>at the end of the 2nd year</b>	30	12

at the end of the 3rd year	36	36
----------------------------	----	----

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. **It should also be noted that training can be acquired indifferently at UniBo, at other Italian universities or institutions or at foreign universities or institutions, as long as it is formative at doctoral level.**

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

Table D – Correspondence between hours of effort and CDs acquired				
Type of activity	Hours in the classroom	Hours of self-study	Total hours	CD
<b>vi. Courses (disciplinary and multidisciplinary training)</b>				
<p><b>Courses (with learning verification)</b>  <i>It includes, but is not limited to:</i></p> <ul style="list-style-type: none"> <li>3rd level courses PhD@DIN or UniBo</li> <li>3rd level courses of other PhDs (including non-UniBo, Italian or foreign)</li> <li>Seminars as part of a course (cycle of seminars), with verification</li> <li>UNIBO disciplinary and multidisciplinary training courses with final exam</li> <li>Disciplinary and multidisciplinary training courses compatible with the doctorate of Italian or foreign institutions (e.g. Cineca, CERN, etc.) with final exam</li> <li>1st and 2nd level courses not taken in the career (even non-UniBo) with passing the final exam</li> </ul> <p><b>Theoretical-practical laboratory courses (with verification of learning)</b>  <i>It includes, but is not limited to:</i></p> <ul style="list-style-type: none"> <li>courses that include the practical use of instrumentation, machinery, software but which also provide theoretical training (e.g. MATLAB, PYTHON, Characterization tests, etc.); courses both UniBo and other Italian or foreign Institutions/Universities/Companies</li> </ul> <p>To be recognized, it is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.</p>	5	20	25	1
<p><b>Practical laboratory courses (with verification of learning)</b>  <i>It includes, but is not limited to:</i></p> <ul style="list-style-type: none"> <li>courses for the use of instrumentation, machinery, software without a part of theoretical in-depth study; courses both UniBo and other Italian or foreign institutions/universities/companies</li> </ul> <p>To be recognized, it is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.</p>	10	15	25	1
<p><b>Courses (without learning verification)</b>  <i>It includes, but is not limited to:</i></p> <ul style="list-style-type: none"> <li>Individual seminars (not in the context of a course with verification)</li> <li>Courses both of UniBo and of other Italian or foreign Institutions/Universities/Companies, without final assessment of learning</li> <li>Extra-curricular courses</li> <li>Courses with learning verification for which the candidate does not take the learning verification;</li> </ul>	25	-	25	1

<ul style="list-style-type: none"> <li>1st and 2nd level courses not taken in the career (even non-UniBo) without final exam</li> </ul> <p>To be recognized, the following is required: copy of the certificate of attendance with certification of attendance of at least 75% of the hours.</p>				
<b>vii. Soft skills</b>				
<p><b>Courses for the development of transversal skills (with learning verification)</b></p> <p>It includes, for example, courses not PhD@DIN provided by UniBo or other Italian or foreign Bodies/Universities/Companies on transversal skills topics such as:</p> <ul style="list-style-type: none"> <li>Career guidance and career planning</li> <li>Knowledge of European and international research systems</li> <li>Didactic training</li> <li>Dissemination and publication training</li> <li>Intellectual property protection</li> <li>Open access/open science data management</li> <li>Courses on transversal skills specially organized by UniBo for the PhD (e.g. ACEs, Transversal Skills)</li> </ul> <p>To be recognized, it is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.</p>	5	20	25	1
<p><b>Courses for the development of soft skills (without learning verification)</b></p> <p>It includes, for example, courses not PhD@DIN provided by UniBo or other Italian or foreign bodies/universities/companies on topics such as:</p> <ul style="list-style-type: none"> <li>Career guidance and career planning</li> <li>Knowledge of European and international research systems</li> <li>Didactic training</li> <li>Dissemination and publication training</li> <li>Courses on transversal skills for PhD (Transversal Skills @ UniBo)</li> </ul> <p>To be recognized, the following is required: copy of the certificate of attendance with certification of attendance of at least 75% of the hours.</p>	25	0	25	1
<b>viii. Extracurricular training</b>				
<p><b>Participation in summer/winter school (with verification of learning)</b></p> <ul style="list-style-type: none"> <li>Doctoral schools / Summer School / Winter school (with final exam)</li> </ul> <p>To be recognized, it is required: copy of the certificate of attendance of at least 75% of the hours and of the grade/eligibility obtained.</p>	5	20	25	1
<p><b>Participation in conferences and summer/winter schools (without verification of learning)</b></p> <p>It includes, for example:</p> <ul style="list-style-type: none"> <li>Participation in a conference without presentation of a paper, or chairing or passive participation in discussion panels</li> <li>Doctoral schools / Summer schools / Winter schools (without final exam)</li> <li>PhD symposia</li> </ul> <p>To be recognized, the following are required: copy of the request for reimbursement of the mission and copy of the certificate of participation</p>	1 day (8 hours "frontal" of the event) NOTE 4	-	8	0,3
<b>ix. Dissemination</b>				
<p><b>Active dissemination of the results of one's own research</b></p> <p>It includes, for example:</p> <ul style="list-style-type: none"> <li>Participation in a conference with presentation of at least one work</li> </ul>	1 day (8 hours "frontal" of the event) NOTE 4	4	12	0,5

<ul style="list-style-type: none"> <li>Participation in a conference with active participation in a discussion panel / session chairing</li> </ul> <p><i>It does NOT include:</i></p> <ul style="list-style-type: none"> <li>Preparation and publication of journal articles</li> <li>Co-authorship of contribution to conference presented by others</li> </ul> <p><b>To be recognized, the following are required: a copy of the request for reimbursement of the mission, a copy of the certificate of participation and presentation of the work (or of the conference program with the presenters explained).</b></p>				
<b>x. Supplementary teaching and tutoring*</b>				
<p><b>Tutoring*</b></p> <p><i>Includes:</i></p> <ul style="list-style-type: none"> <li>Tutoring contracts or fellowships at UniBo authorized by the Board</li> <li>Tutoring or teaching contracts or grants at other universities/institutions authorized by the College</li> </ul> <p><b>To be recognized, the following is required: tutoring contract with indication of the hours of assignment.</b></p>	10 hours contract	15	25	1
<p><b>Thesis tutoring*</b></p> <p><i>The candidate must be the only PhD student co-supervisor of the thesis (multiple co-supervisors are possible but the applicant must be the only PhD student)</i></p> <p><b>To be recognized, the following is required: screen of thesis deposit on lauree.unibo.it</b></p>	N/A	N/A	For each thesis	1
<p><b>Teaching*</b></p> <p><i>Contracts for paid teaching previously authorized by the tutor and the board</i></p> <p><b>To be recognized, the following is required: teaching assignment contract with indication of teaching hours</b></p>	5 hours of contract / teaching	20 of teacher preparation	25	1
<b>Other authorized activities</b>				
<p><b>Activities authorized by the College</b></p> <p><i>It includes, for example:</i></p> <ul style="list-style-type: none"> <li>Work</li> <li>Activities not attributable to training activities</li> <li>Periods abroad</li> <li>Periods in Companies/Institutions/Universities</li> </ul>	N/A	N/A	0	0

**NOTE 1:** For activities in which the organizer explicitly defines ECTS/CFU/CD according to a scheme that complies with the general criteria, **the recognition of the CDs proposed by the organizer will normally be considered**, even in derogation from the criteria in the table. **E.g. summer school promoted for 9 PhD Credits, 9 CDs will be recognized regardless of the duration; 1st and 2nd level course with final exam (60 hours, 6 credits) will be recognized for 6 CDs.**

**NOTE 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).

**NOTE 3:** The **activities \* Supplementary teaching and tutoring** (Tutoring, Thesis Tutoring and Teaching) cannot exceed a total of 9 CDs (25% of the training CDs)

**NOTE 4:** The durations of dissemination and extracurricular activities will be considered including the transfer (e.g. **passive conference in EU country of 3 days + 2 half days for the transfer = 4 days**)

### 3.2-PhD Credits

PhD 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 obligations.**

PhD students are required to carry out, during the duration of the doctoral course, a period of research activity of at least **3 MONTHS** in a foreign location including universities, research centers, institutions or companies. This period may be non-continuous (but each period must be more than a month in order to access the 50% salary increase) and the obligation can only be waived in the event of force majeure, such as

illness, maternity/paternity or other similar reasons. The approval of the request for derogation is deliberated by the Board.

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 product search.

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:

- Fill in at the beginning of the doctoral course and subsequently keep updated your UniBo web page (i.e. <https://www.unibo.it/sitoweb/l.donati/>);
- Fill in the OPID questionnaires (opinion of doctoral students) and the AlmaLaurea questionnaire annually when uploading the final doctoral thesis.

**Candidates who have not obtained the required CDs or have not complied with the additional constraints in terms of period abroad, publications, OPID questionnaires or updating of computer applications, will be denied the change of year or admission to the final exam.**

**4. Annexes:** they are available in the next section.

## 4. Attachments

### 4.1 Template Report I year (downloadable in word format from DIMSAI website)

#### PhD Course in Mechanics and Advanced Engineering Sciences (DIMSAI)

#### I YEAR PHD STUDENT REPORT - AY XXXX/XX

Curriculum number X

Cycle XXX

Candidate: Name Surname

Supervisor: Name Surname

#### RESEARCH PROJECT TITLE

**Abstract** (200 words max)

[Use the following sections, if applicable, and use **no more than 5 pages -mandatory limit-**]

1. Introduction and aim
2. Experimental procedure
3. Results and discussion
4. Conclusions
5. Planning of research activity for the next year
6. References

[The following sections are not comprised in the 5-page limit]

- I declare to have updated my Unibo personal page (i.e. [www.unibo.it/sitoweb/l.donati/](http://www.unibo.it/sitoweb/l.donati/)) at least with CV, ORCID code and a photo;
- I declare to have filled in and submitted on time the OPID questioner.

**PUBLISHED PUBLICATIONS** (list your papers/abstracts in peer reviewed journals and in proceedings of international and national conferences, patents, etc.; mandatory request more than 2 indexed publications during the 3 years course) in the form:

I year:

1. Authors, Paper Title, Journal Name, Year, Vol, pages, DOI or Scopus/Wos code; iris reference;
  2. Authors, Paper Title, Conference Name, Place, Country, Year, Vol, pages, Doi or Scopus/Wos code; iris reference;
- I declare to have updated iris database (<https://cris.unibo.it/>) with the research publications.

**RESEARCH CONDUCTED ABROAD** (describe any research period out of Italy, already performed and completed during the I year of the doctorate, including location, duration, advisor, research topic as reported to PhD offices; mandatory request over 3 months during the 3 years course):

1. Example: Siemens Company, Munchen, Germany; January 21st 2025-March 25th 2025, Department/Laboratory of Magnetic Research, supervisor prof. Klaus Hofferback. "Magnetic field distribution in phase hardening alloys" **Months abroad: 2.1**
2. Example: Virginia Tech University, Blacksburg, Virginia, USA; May 7th 2025-July 15th 2025, Department/Laboratory of Material development, supervisor prof. Edmund Smith. "Hydrogen corrosion investigation on Ti alloys"; **Months abroad: 2.3**

**RESEARCH PERIOD CONDUCTED IN ITALY OUTSIDE UNIBO** (describe any research period in Italy but out of UniBo -i.e. Companies, Research centers, other Universities-, already performed and completed during

the 1 year of the doctorate, including location, duration, advisor; suggested over 6 months outside UniBo - including the research period conducted abroad- during the 3 years course):

<b>Period in Italy outside UniBo (Company, Universities or Research centers)</b>			
<i>Example: Period in Marcegaglia Company, Bergamo, Italy</i>	<i>Marcegaglia plant, Vicenza, QA Laboratory, supervisor. Dott. Fabio Agiletti</i>	<i>Period in Italy outside UniBo</i>	<i>20 not continuative days in the period 1 November 2024-31 August 2025</i>
<b>Total Period in Italy outside UniBo (days)</b>			<b>20</b>
<b>Total Period in Italy outside UniBo (months)</b>			<b>0.7</b>
<b>Research Period Abroad (mandatory ≥3 months in the 3 years)</b>			<b>4.4</b>
<b>Total Period outside UniBo (suggested ≥6 months in the 3 years)</b>			<b>5.1</b>

NOTE: 1 month equal to 30 days

**EDUCATION AND TRAINING CREDITS:** (describe the courses, seminars or training activities you attended during the 1 year of the doctorate indicating for each activity its name, type, location, duration and associated CD; please use the following table as template and “Regulation for the recognition of doctoral credits (CD) for training and research activities” document for definitions and credit recognition)

<b>NAME</b>	<b>TYPE &amp; LOCATION</b>	<b>TYPE OF ACTIVITY</b>	<b>DURATION</b>	<b>CD</b>
<b>i. Courses (disciplinary and multidisciplinary training)</b>				
<i>Example: ‘Machine mechanics’</i>	<i>Master course with final examination, at UniBo</i>	<i>Courses</i>	<i>60h, 6 official ECTS</i>	<i>(6 ECTS recognized)= 6.0</i>
<i>Example: ‘Machine dynamics’</i>	<i>Master course without final examination, at UniBo</i>	<i>Courses</i>	<i>60h, 6 official ECTS if taken with examination</i>	<i>(60h/25)= 2.4</i>
<i>Example: ‘Design of Experiments: theory and applications’</i>	<i>PhD course with final examination, at UniBo</i>	<i>Courses</i>	<i>12h, no official ECTS</i>	<i>(12h/5)= 2.4</i>
<i>Example: ‘Artificial Intelligence: theory and applications’</i>	<i>PhD course with final examination, at TU Dortmund</i>	<i>Courses</i>	<i>30h, no official ECTS</i>	<i>(30h/5)= 6.0</i>
<b>Total Credits (&gt;6CD in the three years)</b>				<b>16.8</b>
<b>ii. Transferable Skills (Competenze Trasversali)</b>				
<i>Example: ‘English course AcES</i>	<i>English course for PhD students in transferable skills UniBo plan</i>	<i>Transferable Skills</i>	<i>50h, 5 ECTS</i>	<i>5 ECTS recognized, 5.0</i>
<b>Total Credits (&gt;1CD in the three years)</b>				<b>5.0</b>
<b>iii. Extracurricular training</b>				
<i>Example: ‘International symposium on plasma chemistry’ attendance only</i>	<i>International conference, Kyoto, Japan</i>	<i>Extracurricular training</i>	<i>5 days -including travelling-</i>	<i>(5x8/25)= 1.6</i>
<i>Example: Summer school ‘AI data management’</i>	<i>Summer School without final examination, Rome, Italy</i>	<i>Extracurricular training</i>	<i>5 days -including travelling-, 32h, no official ECTS</i>	<i>(5x8/25)= 1.6</i>
<i>Example: Summer school ‘AI data management’</i>	<i>Summer School with final examination, Rome, Italy</i>	<i>Extra curricular training or Courses</i>	<i>5 days -including travelling-, 32h, 3 official ECTS</i>	<i>Max among (5x8/25)= 1.6 and 3 ECTS, 3.0</i>
<b>Total Credits (&gt;1CD in the three years)</b>				<b>6.2</b>

<b>iv. Dissemination</b>				
<i>Example: Paper presentation at 'International symposium on plasma chemistry'</i>	<i>International conference Kyoto, Japan</i>	<i>Dissemination</i>	<i>5 days -including travelling-</i>	<i>(5x12/25)= 2.4</i>
<b>Total Credits (&gt;2CD in the three years)</b>				<b>2.4</b>
<b>v. Teaching and Tutoring</b>				
<i>Example: Co-supervisor in master thesis</i>	<i>Student: Francesco Bruni, master thesis, Meccanica Bo</i>	<i>Thesis Tutoring</i>		<i>1.0</i>
<i>Example: Tutoring contract</i>	<i>Course "Propulsione navale"</i>	<i>Tutoring contract</i>	<i>30h</i>	<i>(30/10)= 3.0</i>
<i>Example: Course Teaching</i>	<i>Corso ITS "Dal progetto al processo", Imola, Italy</i>	<i>Teaching contract</i>	<i>Teaching contract for 30 hours in class</i>	<i>(30/5)= 6.0</i>
<b>Total Credits (&gt;1CD in the three years, maximum of 9CD)</b>				<b>10.0 (9CD)</b>
<b>Total Credits acquired in the I year (recommended &gt;18)</b>				<b>39,4</b>

**NOTE:** The attribution of fractions of credit, based on the number of actual hours of the activity to be recognized, is carried out with a proportion criterion with rounding to one decimal place (e.g. 31h of course without assessment = 1.2 CD).

**PROGRAM OF FUTURE EDUCATIONAL ACTIVITIES:** describe the courses and seminars, in terms of course name, location, hours, ECTS, you plan to attend during the II and III years of the doctorate;

**PLANNED RESEARCH ABROAD:** if already defined, describe any planned research period out of UniBo, to be performed in the next course's months, including location, duration, advisor, main results expected.

Date \_\_\_/\_\_\_/\_\_\_

*Candidate signature*

*Supervisor signature*

#### 4.2 Template Report II year (downloadable in word format from DIMSAI website)

### PhD Course in Mechanics and Advanced Engineering Sciences (DIMSAI) II YEAR PHD STUDENT REPORT - AY XXXX/XX

Curriculum number X  
Cycle XXX

**Candidate:** Name Surname  
**Supervisor:** Name Surname

#### **RESEARCH PROJECT TITLE**

**Abstract** (200 words max)

[Use the following sections, if applicable, to the activities carried out in the II year and use **no more than 10 pages -mandatory limit-**]

7. Introduction and aim
8. Experimental procedure
9. Results and discussion
10. Conclusions
11. Planning of research activity for the next year
12. References

[The following text is not comprised in the 10-page limit]

- I declare to have updated my Unibo personal page (i.e. [www.unibo.it/sitoweb/l.donati/](http://www.unibo.it/sitoweb/l.donati/)) at least with CV, ORCID code and a photo;
- I declare to have filled in and submitted on time the II year OPID questioner.

**PUBLISHED PUBLICATIONS** (list your papers/abstracts in peer reviewed journals and in proceedings of international and national conferences, patents, etc.; mandatory request more than 2 indexed publications during the 3 years course) in the form:

I year:

3. Authors, Paper Title, Journal Name, Year, Vol, pages, DOI or Scopus/Wos code; iris reference;
4. Authors, Paper Title, Conference Name, Place, Country, Year, Vol, pages, Doi or Scopus/Wos code; iris reference;

II year:

5. Authors, Paper Title, Journal Name, Year, Vol, pages, DOI or Scopus/Wos code; iris reference;
6. Authors, Paper Title, Conference Name, Place, Country, Year, Vol, pages, Doi or Scopus/Wos code; iris reference;

- I declare to have updated iris database (<https://cris.unibo.it/>) with the research publications.

**RESEARCH CONDUCTED ABROAD** (describe any research period out of Italy, already performed and completed during the I and II year of the doctorate, including location, duration, advisor, research topic as reported to PhD offices; mandatory request over 3 months during the 3 years course):

3. Example: Siemens Company, Munchen, Germany; January 21st 2025-March 25th 2025, Department/Laboratory of Magnetic Research, supervisor prof. Klaus Hofferback. "Magnetic field distribution in phase hardening alloys"  
**Months abroad: 2.1**
4. Example: Virginia Tech University, Blacksburg, Virginia, USA; May 7th 2025-July 15th 2025, Department/Laboratory of Material development, supervisor prof. Edmund Smith. "Hydrogen corrosion investigation on Ti alloys";  
**Months abroad: 2.3**

**RESEARCH PERIOD CONDUCTED IN ITALY OUTSIDE UNIBO** (describe any research period in Italy but out of UniBo -i.e. Companies, Research centers, other Universities-, already performed and completed during the I and II year of the doctorate, including location, duration, advisor; suggested over 6 months outside UniBo -including the research period conducted abroad- during the 3 years course):

<b>Period in Italy outside Unibo (Company, Universities or Research centers)</b>			
<i>Example: Period in Marcegaglia Company, Bergamo, Italy</i>	<i>Mrcegaglia plant, Vicenza, QA Laboratory, supervisor. Dott. Fabio Agiletti</i>	<i>Period in Italy outside Unibo</i>	<i>20 not continuative days in the period 1 November 2024-31 August 2025</i>
<i>Example: Period at ENEA, Bologna, Italy</i>	<i>Period in Italy in Company, Universities or Research centers,</i>	<i>Period in Italy outside Unibo</i>	<i>25 not continuative days in the period 1 September 2025-31 August 2026</i>
<b>Total Period in Italy outside Unibo (days)</b>			<b>45</b>
<b>Total Period in Italy outside Unibo (months)</b>			<b>1.5</b>
<b>Research Period Abroad (mandatory ≥3 months in the 3 years)</b>			<b>4.4</b>
<b>Total Period outside UniBo (suggested ≥6 months in the 3 years)</b>			<b>5.9</b>

NOTE: 1 month equal to 30 days

**EDUCATION AND TRAINING CREDITS:** (describe the courses, seminars or training activities you attended during the I and II year of the doctorate indicating for each activity its name, type, location, duration and associated CD; please use the following table as template and “Regulation for the recognition of doctoral credits (CD) for training and research activities” document for definitions and credit recognition)

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

<i>Example: Summer school 'AI data management'</i>	<i>Summer School without final examination, Rome, Italy</i>	<i>Extracurricular training</i>	<i>5 days -including travelling-, 32h, no official ECTS</i>	<i>(5x8/25)= 1.6</i>
<i>Example: Summer school 'AI data management'</i>	<i>Summer School with final examination, Rome, Italy</i>	<i>Extra curricular training or Courses</i>	<i>5 days -including travelling-, 32h, 3 official ECTS</i>	<i>Max among (5x8/25)= 1.6 and 3 ECTS, 3.0</i>
<b>Total Credits (&gt;1CD in the three years)</b>				<b>6.2</b>
<b>ix. Dissemination</b>				
<i>Example: Paper presentation at 'International symposium on plasma chemistry'</i>	<i>International conference Kyoto, Japan</i>	<i>Dissemination</i>	<i>5 days -including travelling-</i>	<i>(5x12/25)= 2.4</i>
<b>Total Credits (&gt;2CD in the three years)</b>				<b>2.4</b>
<b>x. Teaching and Tutoring</b>				
<i>Example: Co-supervisor in master thesis</i>	<i>Student: Francesco Bruni, master thesis, Meccanica Bo</i>	<i>Thesis Tutoring</i>		<i>1.0</i>
<i>Example: Tutoring contract</i>	<i>Course "Propulsione navale"</i>	<i>Tutoring contract</i>	<i>30h</i>	<i>(30/10)= 3.0</i>
<i>Example: Course Teaching</i>	<i>Corso ITS "Dal progetto al processo", Imola, Italy</i>	<i>Teaching contract</i>	<i>Teaching contract for 30 hours in class</i>	<i>(30/5)= 6.0</i>
<b>Total Credits (&gt;1CD in the three years, maximum of 9CD)</b>				<b>10.0 (9CD)</b>
<b>Total Credits acquired in the I and II year (recommended &gt;30)</b>				<b>39,4</b>

**NOTE:** The attribution of fractions of credit, based on the number of actual hours of the activity to be recognized, is carried out with a proportion criterion with rounding to one decimal place (e.g. 31h of course without assessment = 1.2 CD).

**PROGRAM OF FUTURE EDUCATIONAL ACTIVITIES:** describe the courses and seminars, in terms of course name, location, hours, ECTS, you plan to attend during the III years of the doctorate;

**PLANNED RESEARCH ABROAD:** if already defined, describe any planned research period out of UniBo, to be performed in the next course's months, including location, duration, advisor, main results expected.

Date \_\_\_/\_\_\_/\_\_\_

*Candidate signature*

*Supervisor signature*

#### 4.3 Template Report III year (downloadable in word format from DIMSAI website)

### PhD Course in Mechanics and Advanced Engineering Sciences (DIMSAI)

#### III YEAR PHD STUDENT REPORT - AY XXXX/XX

Curriculum number X  
Cycle XXX

Candidate: Name Surname  
Supervisor: Name Surname

#### RESEARCH PROJECT TITLE

#### Abstract (200 words max)

[Use the following sections, if applicable, to the activities carried out in the 3 years with a focus on the III year and use **no more than 10 pages -mandatory limit-**]

- 13. Introduction and aim
- 14. Experimental procedure
- 15. Results and discussion
- 16. Conclusions
- 17. References

[The following text is not comprised in the 10-page limit]

- I declare to have updated my Unibo personal page (i.e. [www.unibo.it/sitoweb/l.donati/](http://www.unibo.it/sitoweb/l.donati/)) at least with CV, ORCID code and a photo;
- I declare to have filled in and submitted on time the III year OPID questioner.

**PUBLISHED PUBLICATIONS** (list your papers/abstracts in peer reviewed journals and in proceedings of international and national conferences, patents, etc.; mandatory request more than 2 indexed publications during the 3 years course) in the form:

I year:

- 7. Authors, Paper Title, Journal Name, Year, Vol, pages, DOI or Scopus/Wos code; iris reference;
- 8. Authors, Paper Title, Conference Name, Place, Country, Year, Vol, pages, Doi or Scopus/Wos code; iris reference;

II year:

- 9. Authors, Paper Title, Journal Name, Year, Vol, pages, DOI or Scopus/Wos code; iris reference;
- 10. Authors, Paper Title, Conference Name, Place, Country, Year, Vol, pages, Doi or Scopus/Wos code; iris reference;

III year:

- 11. Authors, Paper Title, Journal Name, Year, Vol, pages, DOI or Scopus/Wos code; iris reference;
- 12. Authors, Paper Title, Conference Name, Place, Country, Year, Vol, pages, Doi or Scopus/Wos code; iris reference;

- I declare to have updated iris database (<https://cris.unibo.it/>) with the research publications.

**RESEARCH CONDUCTED ABROAD** (describe any research period out of Italy, already performed and completed during the 3 years of the doctorate, including location, duration, advisor, research topic as reported to PhD offices; mandatory request over 3 months during the 3 years course):

- 5. Example: Siemens Company, Munchen, Germany; January 21st 2025-March 25th 2025, Department/Laboratory of Magnetic Research, supervisor prof. Klaus Hofferback. "Magnetic field distribution in phase hardening alloys"  
**Months abroad: 2.1**
- 6. Example: Virginia Tech University, Blacksburg, Virginia, USA; May 7th 2025-July 15th 2025, Department/Laboratory of Material development, supervisor prof. Edmund Smith. "Hydrogen corrosion

investigation

on

Ti

alloys”;

**Months abroad: 2.3**

**RESEARCH PERIOD CONDUCTED IN ITALY OUTSIDE UNIBO** (describe any research period in Italy but out of UniBo -i.e. Companies, Research centers, other Universities-, already performed and completed during the 3 years of the doctorate, including location, duration, advisor; suggested over 6 months outside Unibo - including the research period conducted abroad- during the 3 years course):

<b>Period in Italy outside Unibo (Company, Universities or Research centers)</b>			
<i>Example: Period in Marcegaglia Company, Bergamo, Italy</i>	<i>Mrcegaglia plant, Vicenza, QA Laboratory, supervisor. Dott. Fabio Agiletti</i>	<i>Period in Italy outside Unibo</i>	<i>20 not continuative days in the period 1 November 2024-31 August 2025</i>
<i>Example: Period at ENEA, Bologna, Italy</i>	<i>Period in Italy in Company, Universities or Research centers,</i>	<i>Period in Italy outside Unibo</i>	<i>25 not continuative days in the period 1 September 2025-31 August 2026</i>
<i>Example: Period at PoliTo, Torino, Italy</i>	<i>Period in Italy in Company, Universities or Research centers,</i>	<i>Period in Italy outside Unibo</i>	<i>15 not continuative days in the period 1 September 2026-31 August 2027</i>
<b>Total Period in Italy outside Unibo (days)</b>			<b>60</b>
<b>Total Period in Italy outside Unibo (months)</b>			<b>2.0</b>
<b>Research Period Abroad (mandatory ≥3 months in the 3 years)</b>			<b>4.4</b>
<b>Total Period outside UniBo (suggested ≥6 months in the 3 years)</b>			<b>6.4</b>

NOTE: 1 month equal to 30 days

**EDUCATION AND TRAINING CREDITS:** (describe the courses, seminars or training activities you attended during the 3 years of the doctorate indicating for each activity its name, type, location, duration and associated CD; please use the following table as template and “Regulation for the recognition of doctoral credits (CD) for training and research activities” document for definitions and credit recognition)

<b>NAME</b>	<b>TYPE &amp; LOCATION</b>	<b>TYPE OF ACTIVITY</b>	<b>DURATION</b>	<b>CD</b>
<b>xi. Courses (disciplinary and multidisciplinary training)</b>				
<i>Example: 'Machine mechanics'</i>	<i>Master course with final examination, at UniBo</i>	<i>Courses</i>	<i>60h, 6 official ECTS</i>	<i>(6 ECTS recognized)= 6.0</i>
<i>Example: 'Machine dynamics'</i>	<i>Master course without final examination, at UniBo</i>	<i>Courses</i>	<i>60h, 6 official ECTS if taken with examination</i>	<i>(60h/25)= 2.4</i>
<i>Example: 'Design of Experiments: theory and applications'</i>	<i>PhD course with final examination, at UniBo</i>	<i>Courses</i>	<i>12h, no official ECTS</i>	<i>(12h/5)= 2.4</i>
<i>Example: 'Artificial Intelligence: theory and applications'</i>	<i>PhD course with final examination, at TU Dortmund</i>	<i>Courses</i>	<i>30h, no official ECTS</i>	<i>(30h/5)= 6.0</i>
<b>Total Credits (&gt;6CD in the three years)</b>				<b>16.8</b>
<b>xii. Transferable Skills (Competenze Trasversali)</b>				
<i>Example: 'English course AcES'</i>	<i>English course for PhD students in transferable skills UniBo plan</i>	<i>Transferable Skills</i>	<i>50h, 5 ECTS</i>	<i>5 ECTS recognized, 5.0</i>
<b>Total Credits (&gt;1CD in the three years)</b>				<b>5.0</b>

<b>xiii. Extracurricular training</b>				
<i>Example: 'International symposium on plasma chemistry' attendance only</i>	<i>International conference, Kyoto, Japan</i>	<i>Extracurricular training</i>	<i>5 days -including travelling-</i>	<i>(5x8/25)= 1.6</i>
<i>Example: Summer school 'AI data management'</i>	<i>Summer School without final examination, Rome, Italy</i>	<i>Extracurricular training</i>	<i>5 days -including travelling-, 32h, no official ECTS</i>	<i>(5x8/25)= 1.6</i>
<i>Example: Summer school 'AI data management'</i>	<i>Summer School with final examination, Rome, Italy</i>	<i>Extra curricular training or Courses</i>	<i>5 days -including travelling-, 32h, 3 official ECTS</i>	<i>Max among (5x8/25)= 1.6 and 3 ECTS, 3.0</i>
<b>Total Credits (&gt;1CD in the three years)</b>				<b>6.2</b>
<b>xiv. Dissemination</b>				
<i>Example: Paper presentation at 'International symposium on plasma chemistry'</i>	<i>International conference Kyoto, Japan</i>	<i>Dissemination</i>	<i>5 days -including travelling-</i>	<i>(5x12/25)= 2.4</i>
<b>Total Credits (&gt;2CD in the three years)</b>				<b>2.4</b>
<b>xv. Teaching and Tutoring</b>				
<i>Example: Co-supervisor in master thesis</i>	<i>Student: Francesco Bruni, master thesis, Meccanica Bo</i>	<i>Thesis Tutoring</i>		<i>1.0</i>
<i>Example: Tutoring contract</i>	<i>Course "Propulsione navale"</i>	<i>Tutoring contract</i>	<i>30h</i>	<i>(30/10)= 3.0</i>
<i>Example: Course Teaching</i>	<i>Corso ITS "Dal progetto al processo", Imola, Italy</i>	<i>Teaching contract</i>	<i>Teaching contract for 30 hours in class</i>	<i>(30/5)= 6.0</i>
<b>Total Credits (&gt;1CD in the three years, maximum of 9CD)</b>				<b>10.0 (9CD)</b>
<b>Total Credits acquired in the 3 years (≥36)</b>				<b>39,4</b>

**NOTE:** The attribution of fractions of credit, based on the number of actual hours of the activity to be recognized, is carried out with a proportion criterion with rounding to one decimal place (e.g. 31h of course without assessment = 1.2 CD).

**MISSING TRAINING ACTIVITIES, PUBLICATIONS OR RESEARCH PERIODS ABROAD:** in reasonable conditions, the doctoral student should have already carried out all training activities, publications or research periods abroad before this "admission to the final exam" phase; in case of minor delays, recoverable by October 31th, provide a description of the recovery plan here. In the event of significant delays, please contact the program coordinator together with your supervisor.

Date \_\_\_/\_\_\_/\_\_\_

*Candidate signature*

*Supervisor signature*