

Programma formativo e di ricerca del DAST e regolamento di riconoscimento dei crediti dottorali (CD) a partire dal 40° ciclo

L'obiettivo del programma formativo del dottorato in Scienze e Tecnologie Aerospaziali (DAST) è offrire un percorso strutturato e monitorabile, ma sufficientemente flessibile da poter essere adattato alle esigenze specifiche dei diversi ambiti di ricerca e dei progetti dei dottorandi. Il corso pubblica questo documento, applicabile agli studenti immatricolati dal 40° ciclo, sul proprio sito web (<https://phd.unibo.it/dast/en>).

1. Obiettivi: Il Corso di Dottorato in Scienze e Tecnologie Aerospaziali - DAST è finalizzato all'acquisizione di competenze di elevato livello, anche metodologiche, nei settori della ricerca che riguardano l'Ingegneria Aerospaziale e le Scienze Applicate allo studio del volo entro e oltre l'atmosfera terrestre. Le tematiche spaziano anche nei settori affini quali la fluidodinamica, i sistemi di controllo, i materiali, il disegno e metodi dell'ingegneria industriale ed i sistemi propulsivi.

Gli obiettivi del percorso formativo offerto dal DAST sono volti a: a) sviluppare le capacità del candidato di svolgere studi e ricerche, con finalità accademiche e professionali, in modo indipendente, sistematico ed approfondito; b) incrementare il livello di conoscenze del candidato nelle materie specifiche del programma di ricerca e in quelle specifiche del Dottorato, fornire ai dottorandi competenze multidisciplinari incoraggiando la partecipazione ad eventi organizzati dagli altri Dottorati del Dipartimento e stimolare la partecipazione ad eventi utili per acquisire le competenze trasversali indispensabili per le future attività professionali; incoraggiare la partecipazione ad eventi organizzati da altri Atenei o Istituti di Ricerca, all'Italia e all'estero; d) migliorare la capacità del candidato di articolare in forma scritta e in inglese i risultati della propria attività di ricerca, sottoponendo articoli alla comunità scientifica di riferimento; e) migliorare la capacità del candidato di esporre e discutere il proprio lavoro in modo chiaro ed efficace, anche in lingua inglese, sia ad un pubblico specialistico che in occasioni di public engagement; f) stimolare la capacità di condurre attività di ricerca in collaborazione con gruppi di ricerca internazionali.

Grazie alla supervisione di uno o più tutori, il percorso formativo fornirà le conoscenze teoriche e pratiche per elaborare una tesi di Dottorato che dimostri il livello di originalità e la rilevanza degli studi effettuati e dei risultati raggiunti nell'ambito delle tematiche del corso.

Le tematiche di ricerca del corso di Dottorato hanno obiettivi pienamente coerenti con le direttrici di sviluppo indicate dal Piano Nazionale di Ripresa e Resilienza (PNRR) tra le quali: "digitalizzazione, innovazione e competitività nel sistema produttivo", M1C2, per rafforzare la partecipazione alla Space Economy e i sistemi di osservazione della terra per il monitoraggio dei territori, in particolare per gli aspetti che riguardano le Tecnologie Satellitari e la Space Economy; "Energia rinnovabile, idrogeno, rete e mobilità sostenibile", M2C2, in particolare per lo "sviluppo di un trasporto aereo (tipicamente Urban Air Mobility) più sostenibile, attraverso la riduzione inquinamento dell'aria e acustico; "Intermodalità e logistica integrata", M3C2, trattando temi che riguardano l'Innovazione digitale dei sistemi aeroportuali. Infine, gli obiettivi del Dottorato sono coerenti con il tema "dalla ricerca all'impresa", M4C2, fortemente incentivato da una stretta collaborazione con le imprese per sostenere i processi di innovazione e trasferimento tecnologico.

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 sui 180 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 o da altri corsi di dottorato anche non UniBo;
- attività trasversali espressamente erogate da Unibo per il terzo ciclo formativo con gli altri dottorati quali, ad es., il perfezionamento linguistico e informatico, attività nel campo della didattica, la formazione nel campo della gestione, disseminazione e della valorizzazione della ricerca e della proprietà intellettuale, la conoscenza dei sistemi di ricerca europei e internazionali, dell'accesso aperto ai dati e ai prodotti della ricerca, dei principi fondamentali di etica, uguaglianza di genere e integrità anche in riferimento agli sbocchi professionali dei dottorati di ricerca;
- Conferenze, summer schools, workshops, seminari, corsi universitari nelle tematiche specifiche o complementari relative al proprio programma di ricerca;

c) 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 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.

f) 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 Alma laurea in fase di caricamento della tesi finale.

g) Il progetto formativo si conclude con la stesura della tesi finale redatta in lingua inglese, valutata da revisori esterni e la successiva discussione di fronte ad una commissione di membri esperti. Le modalità di svolgimento dell'esame finale sono pubblicate sul sito web del DAST (<https://phd.unibo.it/dast/en/phd-programme/learning-program>).

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) e una presentazione dell'attività svolta.

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

Il percorso dei dottorandi è regolato dal Regolamento di Ateneo in Materia di Corsi di Dottorato (<https://www.unibo.it/it/studiare/dottorati-master-specializzazioni-e-altra-formazione/dottorati/regolamento-dateneo-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 DAST 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 una attività di formazione e didattica pari almeno al 20% (≥ 36 CD), come riportato in tabella A.

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

3.1-Crediti Dottorali di Formazione e Didattica

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

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

Tabella B – Requisiti per la distribuzione dei CD tra le attività di formazione		
Tipologia di attività	Numero minimo di CD	Numero massimo di CD (opzionale)
Formazione disciplinare e multidisciplinare	6	-
Competenze trasversali	1	-
Formazione extra curricolare	1	-
Disseminazione	2	-
Didattica integrativa e Tutorato	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.

Per il riconoscimento delle attività di formazione, disseminazione e didattica il Collegio del DAST 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
Corsi (formazione disciplinare e multidisciplinare)				

Corsi frontali con verifica dell'apprendimento Include, ad esempio: <ul style="list-style-type: none"> • Corsi 3° livello PhD@DIN • Corsi 3° livello altri PhD (anche non UniBo) • Seminari come parte di un corso (ciclo di seminari, con verifica) • Corsi di formazione UNIBO con verifica finale (e.g. ACEs) • Corsi di 1° e 2° livello non sostenuti in carriera (anche non UniBo) con superamento verifica finale • Corsi laboratoriali teorico-pratici <ul style="list-style-type: none"> ○ corsi che includono l'utilizzo pratico di strumentazione, di software, che realizzano anche formazione di tipo teorico, ad. es. corso MATLAB, corso PYTHON, etc) 	5	20	25	1
Corsi frontali senza verifica dell'apprendimento Include, ad esempio: <ul style="list-style-type: none"> • Seminari singoli (non nel contesto di un corso con verifica) • Corsi di formazione UNIBO senza verifica finale • Corsi extra-curricolari • Corsi di 1° e 2° livello non sostenuti in carriera (anche non UniBo) senza verifica finale 	25	0	25	1
Corsi laboratoriali pratici con verifica dell'apprendimento esempio: corsi per l'utilizzo di strumentazione o di software senza formazione teorica	10	15	25	1
Corsi laboratoriali pratici senza verifica dell'apprendimento	25	0	25	1
Seminari o cicli di seminari con verifica dell'apprendimento	5	20	25	1
Seminari o cicli di seminari senza verifica dell'apprendimento	25	0	25	1
Competenze trasversali				
Corsi per lo sviluppo di competenze trasversali con verifica dell'apprendimento Include, ad esempio, corsi non PhD@DIN su tematiche quali: <ul style="list-style-type: none"> • Orientamento al lavoro e progettazione della carriera • Conoscenza dei sistemi di ricerca europei e internazionali • Formazione alla didattica 	5	20	25	1

<ul style="list-style-type: none"> • Formazione alla disseminazione ed alla pubblicazione • Formazione alla comunicazione • Corsi su competenze trasversali per dottorato 				
<p>Corsi per lo sviluppo di competenze trasversali senza verifica dell'apprendimento Include, ad esempio, corsi non PhD@DIN su tematiche quali:</p> <ul style="list-style-type: none"> • Orientamento al lavoro e progettazione della carriera • Conoscenza dei sistemi di ricerca europei e internazionali • Formazione alla didattica • Formazione alla disseminazione ed alla pubblicazione • Formazione alla comunicazione • Corsi su competenze trasversali per dottorato 	25	0	25	1
Formazione extra curricolare				
<p>Partecipazione a evento con verifica dell'apprendimento Include, ad esempio scuole di dottorato / Summer School / Winter school con verifica finale</p> <p><small>Per essere riconosciuto viene richiesta copia attestato di partecipazione. Sono inclusi i giorni di viaggio</small></p>	1 giorno = 8h di evento	4,5h di preparazione	12,5	0,5
<p>Partecipazione a evento senza verifica dell'apprendimento Include, ad esempio:</p> <ul style="list-style-type: none"> • Partecipazione a convegno senza presentazione di un lavoro o chairing di sessione • Scuole di dottorato / Summer School / Winter school senza verifica finale • PhD simposia <p><small>Per essere riconosciuto viene richiesta copia attestato di partecipazione. Sono inclusi i giorni di viaggio</small></p>	1 giorno (8h "frontali" dell'evento)	0	8	0,3
Disseminazione				
<p>Partecipazione a convegno che include Include, ad esempio:</p> <ul style="list-style-type: none"> • presentazione di almeno un lavoro o poster • Partecipazione attiva a un panel di discussione • chairing di sessione <p><small>Per essere riconosciuto viene richiesto: copia attestato di partecipazione e presentazione lavoro (o programma della conferenza con esplicitati i presenter).</small></p>	1gg = 8h evento	4,5h di preparazione	12,5	0,5
Didattica integrativa e tutorato				

<p>Contratto di Tutorato*</p> <p>Include:</p> <ul style="list-style-type: none"> • Contratti di tutorato presso UniBo autorizzati dal Collegio • Contratti di tutorato o insegnamento presso altri Atenei/Enti autorizzati dal Collegio <p><small>Per essere riconosciuto viene richiesto: contratto di tutorato con indicazione delle ore di incarico.</small></p>	10h di contratto	15h	25	1
<p>Tutorato tesisti</p> <p>Il candidato deve essere unico dottorando correlatore della tesi (possibili più correlatori ma deve essere unico dottorando)</p> <p><small>Per essere riconosciuto viene richiesto: schermata di deposito della tesi su lauree.unibo.it</small></p>	-	-	Per ogni tesi	1
<p>Docenza</p> <p>Contratti per docenze retribuite preventivamente autorizzati dal tutor e dal collegio</p> <p><small>Per essere riconosciuto viene richiesto: contratto di incarico docenza con indicazione delle ore di docenza</small></p>	5 h di contratto / docenza	20 h	25	1

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, anche in deroga ai criteri in tabella.

Nota 2: Per i corsi/seminari senza verifica di apprendimento si richiede una frequenza minima del 75%. Il numero di crediti riconosciuti sarà calcolato in base alla frequenza effettiva certificata.

Nota 3: Per i corsi/seminari con verifica di apprendimento si richiede una frequenza minima del 75% e il superamento della prova di verifica.

Nota 4: Le durate delle attività di disseminazione verranno considerate includendo il trasferimento (e.g. conferenza all'estero di 3 gg + 2gg per il trasferimento=5gg)

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, di 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);
- 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.

DAST learning and research programme and regulation for the recognition of doctoral credits (CD) starting from 40° cycle

The objective of the PhD program in Aerospace Science and Technology (DAST) is to provide a structured and monitorable educational pathway that is flexible enough to be adapted to the specific cultural needs of the various research fields and projects of the DAST doctoral students. The course publishes this document, applicable to students enrolled from the 40th cycle onwards, on its website (<https://phd.unibo.it/dast/en>).

1. Objectives: The PhD program in Aerospace Science and Technology (DAST) aims to foster the acquisition of high-level, including methodological, skills in research areas related to Aerospace Engineering and Applied Sciences focused on the study of flight within and beyond Earth's atmosphere. Topics also cover related fields such as fluid dynamics, control systems, materials, design methods for engineering, and propulsion systems. The objectives of the educational path offered by DAST are to: a) develop the candidate's ability to carry out academic and professional studies and research independently, systematically, and in depth; b) increase the candidate's knowledge in both specific areas of the research program and PhD-specific fields, provide doctoral students with multidisciplinary skills by encouraging participation in events organized by other Departmental PhD programs, and stimulate participation in activities that build the transversal skills essential for future professional activities; c) encourage participation in events organized by other universities or research institutes in Italy and abroad; d) enhance the candidate's ability to articulate their research results in written form in English by submitting articles to the relevant scientific community; e) enhance the candidate's ability to clearly and effectively present and discuss their work in English, both for specialist audiences and at public engagement events; f) stimulate the ability to conduct research activities in collaboration with international research groups.

Under the supervision of one or more tutors, the educational path will provide the theoretical and practical knowledge needed to develop a doctoral thesis that demonstrates originality and the relevance of the studies conducted within the program's topics and of the results achieved.

The research topics of the PhD program are fully aligned with the development directions outlined in the National Recovery and Resilience Plan (PNRR), including:

- "Digitalization, innovation, and competitiveness in the production system," M1C2, to strengthen participation in the Space Economy and earth observation systems for territory monitoring, particularly regarding Satellite Technologies and the Space Economy;
- "Renewable energy, hydrogen, networks, and sustainable mobility," M2C2, specifically for developing more sustainable air transport (such as Urban Air Mobility) through reduced air and noise pollution;
- "Intermodality and integrated logistics," M3C2, addressing themes related to the digital innovation of airport systems.

Finally, the PhD objectives align with the theme "from research to enterprise," M4C2, strongly encouraged by close collaboration with businesses to support innovation processes and technology transfer.

2. Structure. The learning and research program foresees:

- a) Conducting an individual research program under the guidance of one or more supervisors, initially proposed by the candidate, which may be redefined and updated, and is ultimately reviewed and approved by the Academic Committee, in a field covered by the PhD program;
- b) Participation in educational, training, and outreach activities that complement research work, selected by the candidate in collaboration with their supervisor, to obtain at least 36 doctoral credits out of the 180 required over the three-year program. Training activities that qualify for credits include:

- disciplinary, multidisciplinary, and transdisciplinary courses specifically designed for the third-level education cycle by the DIN Department or other PhD programs, including non-UniBo ones;
- transferable skills activities provided by UniBo for the third-level education cycle, such as advanced language and IT training, teaching experience, training in research management, dissemination and exploitation, intellectual property, understanding of European and international research systems, open access to research data and results, and fundamental principles of ethics, gender equality, and integrity, including career opportunities for PhD graduates;
- Conferences, summer schools, workshops, seminars, and university courses in topics related to or complementary to the research program;

c) completion of a period abroad lasting no less than 3 months, aimed at increasing the level of internationalization of one's research activity.

d) Conducting internships or placements in companies, universities, or research centers (in Italy or abroad) in addition to the three months mentioned in the previous point.

e) Publication of at least two articles over the three years of the program, preferably in scientific journals or indexed conference proceedings, along with consistent updates to the iris database (<https://cris.unibo.it/>) with the research results produced by the candidate.

f) Completion and regular updating of one's personal webpage on the UniBo site and annual completion of OPID questionnaires on doctoral students' opinions, as well as the AlmaLaurea questionnaire upon submission of the final thesis.

g) The training program concludes with the drafting of the final thesis in English, evaluated by external reviewers and subsequently defended before a committee of expert members. Details on the final examination process are published on the DAST website (<https://phd.unibo.it/dast/en/phd-programme/learning-program>).

The progress and consistency of the training and research program are assessed annually, along with the acquisition of training credits and compliance with other requirements, by the Academic Committee during the year-end meeting, where an annual report and a presentation of the activities carried out are evaluated. Templates for the annual reports are attached and available on the PhD program's website.

The doctoral students' path is governed by the UNIVERSITY REGULATIONS ON DOCTORAL PROGRAMS (<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 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. The DAST 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% (≥ 36 CDs) as shown in Table A.

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

3.1-Doctoral Training and Teaching Credits

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

- disciplinary and multidisciplinary training,
- training related to the acquisition of transversal skills,
- 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.),
- dissemination of research results,
- teaching and tutoring.

Type of activity	Minimum number of CDs	Maximum number of CDs
Disciplinary and multidisciplinary training	6	-
Soft skills	1	-
Extracurricular training	1	-
Dissemination	2	-
Teaching and Tutoring	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.

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

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.

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

Type of activity	Hours in the classroom	Hours of self-study	Total hours	CDs
Courses (disciplinary and multidisciplinary training)				
Courses with final assessment It includes, for example:				
<ul style="list-style-type: none"> • 3rd level courses PhD@DIN • 3rd level courses other PhD (also non-UniBo) 	5	20	25	1

<ul style="list-style-type: none"> • Seminars as part of a course (seminar cycle, with verification) • UNIBO training courses with final exam (e.g. ACEs) • 1st and 2nd level courses not taken in the career (even non-UniBo) with passing the final exam • Theoretical-practical laboratory courses with final assessment <ul style="list-style-type: none"> ○ courses that include the practical use of instrumentation or software and also provide theoretical training (e.g. MATLAB course, PYTHON course, etc.) 				
Courses without final assessment It includes, for example: <ul style="list-style-type: none"> • 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 	25	-	25	1
Practical laboratory courses with final assessment Example: courses for the use of instrumentation or software without a theoretical training part	10	15	25	1
Practical laboratory courses without final assessment Example: courses for the use of instrumentation or software without a theoretical training part	25	0	25	1
Seminars or seminar series with final assessment	5	20	25	1
Seminars or seminar series without final assessment	25	0	25	1
Soft skills				
Courses for the development of transversal skills, with final assessment It includes, for example, non-PhD@DIN courses on topics such as: <ul style="list-style-type: none"> • Career guidance and career planning • Knowledge of European and international research systems • Teaching training • Dissemination and publication training • Courses on transversal skills for doctoral degrees 	5	20	25	1
Courses for the development of soft skills, without final assessment	25	0	25	1

<p>It includes, for example, non-PhD@DIN courses on topics such as:</p> <ul style="list-style-type: none"> • Career guidance and career planning • Knowledge of European and international research systems • Teaching training • Dissemination and publication training • Courses on transversal skills for doctoral degrees 				
Extracurricular training				
<p>Participation in events with final assessment Including, for example, doctoral schools / Summer Schools / Winter Schools with a final assessment</p> <p><small>To be recognized, copy of the certificate of participation is required. Days of travel are included</small></p>	1 day = 8h of event	4,5h (preparatory)	12,5	0,5
<p>Participation in events without final assessment Including, for example:</p> <ul style="list-style-type: none"> • Participation in a conference without presenting a paper or chairing a session • Doctoral schools / Summer Schools / Winter Schools without a final assessment • PhD symposia <p><small>To be recognized, copy of the certificate of participation is required. Days of travel are included</small></p>	1 day = 8h of event	0	8	0,3
Dissemination				
<p>Participation in a conference with</p> <ul style="list-style-type: none"> • presentation of a paper or poster • active participation in a discussion panel • session chairing <p><small>To be recognized, the following are required: copy of the certificate of participation and presentation of the work (or conference program with the presenters explicit).</small></p>	1 day = 8h of event	4,5h (preparatory)	12,5	0,5
Supplementary Teaching and tutoring				
<p>Tutoring Includes:</p> <ul style="list-style-type: none"> • Tutoring contracts at UniBo authorized by the Board • Tutoring or teaching contracts at other universities/institutions authorized by the Board <p><small>To be recognized, the following is required: tutoring contract with indication of the hours of assignment.</small></p>	10h contract	15h	25	1
<p>Thesis tutoring The candidate must be the only doctoral student co-supervisor of the thesis (more than one co-supervisor is possible but he/she must be the only doctoral student)</p>	N/A	N/A	For each thesis	1

To be recognized, the following is required: screen of thesis deposit on lauree.unibo.it				
Teaching Contracts for paid teaching previously authorized by the tutor and the PhD board <small>To be recognized, the following is required: teaching assignment contract with indication of teaching hours</small>	5 h contract / teaching	20 h	25	1

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 proposed CDs will normally be considered, even in derogation from the criteria in the table.

Note 2: For courses/seminars without an assessment, a minimum attendance of 75% is required. The number of credits granted will be calculated based on the certified actual attendance.

Note 3: For courses/seminars with an assessment, a minimum attendance of 75% and passing the assessment are required.

Note 4: The duration of dissemination activities will account for travel time (e.g., a 3-day international conference + 2 days for travel = 5 days).

3.2-Doctoral Research Credits

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.

Doctoral students are required to carry out, during the duration of the doctoral course, a period of research 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 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 DAST Board.

As a criterion for evaluating the relevance and quality of research activities, each candidate is required to publish at least **2 articles** during the doctoral program, preferably in scientific journals or 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 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.

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.

4. Attachments

4.1 Template Report I year

PhD Course in Aerospace Science and Technology (DAST)

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. **Methods**
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 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 I 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):

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

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)

NAME	TYPE & LOCATION	TYPE OF ACTIVITY	DURATION	CD
Courses (disciplinary and multidisciplinary training)				
<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: 'Uncertainty analysis for engineers'</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>
Total Credits (>6CD in the three years)				16.8
Transferable Skills (Competenze Trasversali)				
<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>
Total Credits (>1CD in the three years)				5.0
Extracurricular training				
<i>Example: 'Astrodynamics Specialist Conference' attendance only</i>	<i>International conference Colorado, USA</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>
Total Credits (>1CD in the three years)				6.2
Dissemination				

<i>Example: Paper presentation at 'Astrodynamics Specialist Conference'</i>	<i>International conference Colorado, USA</i>	<i>Dissemination</i>	<i>5 days -including travelling-</i>	<i>(5x12/25)= 2.4</i>
Total Credits (>2CD in the three years)				2.4
Teaching and Tutoring				
<i>Example: Co-supervisor in master thesis</i>	<i>Student: Name Surname, master thesis, Aerospace Engineering, Forlì</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>
Total Credits (>1CD in the three years, maximum of 9CD)				10.0 (9CD)
Total Credits acquired in the 3 years (≥36)				39,4

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

PhD Course in Aerospace Science and Technology (DAST) 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-**]

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

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

- I declare to have updated my Unibo personal page 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:

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;

II 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 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):

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 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):

Period in Italy outside Unibo (Company, Universities or Research centers)			
<i>Example: Period in Marcegaglia Company, Bergamo, Italy</i>	<i>Marcegaglia plant, Vicenza, QA Laboratory, supervisor: Name Surname</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>
Total Period in Italy outside Unibo (days)			45
Total Period in Italy outside Unibo (months)			1.5
Research Period Abroad (mandatory ≥3 months in the 3 years)			4.4
Total Period outside UniBo (suggested ≥6 months in the 3 years)			5.9

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)

NAME	TYPE & LOCATION	TYPE OF ACTIVITY	DURATION	CD
Courses (disciplinary and multidisciplinary training)				
<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: 'Uncertainty analysis for engineers'</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>
Total Credits (>6CD in the three years)				16.8
Transferable Skills (Competenze Trasversali)				
<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>
Total Credits (>1CD in the three years)				5.0
Extracurricular training				
<i>Example: 'Astrodynamics Specialist Conference' attendance only</i>	<i>International conference Colorado, USA</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>
Total Credits (>1CD in the three years)				6.2
Dissemination				
<i>Example: Paper presentation at 'Astrodynamics Specialist Conference'</i>	<i>International conference Colorado, USA</i>	<i>Dissemination</i>	<i>5 days -including travelling-</i>	<i>(5x12/25)= 2.4</i>
Total Credits (>2CD in the three years)				2.4
Teaching and Tutoring				
<i>Example: Co-supervisor in master thesis</i>	<i>Student: Name Surname, master thesis, Aerospace Engineering, Forli</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>
Total Credits (>1CD in the three years, maximum of 9CD)				10.0 (9CD)
Total Credits acquired in the 3 years (≥36)				39,4

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

PhD Course in Aerospace Science and Technology (DAST)

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-**]

1. **Introduction and aim**
2. **Methods**
3. **Results and discussion**
4. **Conclusions**
5. **References**

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

- I declare to have updated my Unibo personal page 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:

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;

II 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;

III 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 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):

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 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):

Period in Italy outside Unibo (Company, Universities or Research centers)			
<i>Example: Period in Marcegaglia Company, Bergamo, Italy</i>	<i>Marcegaglia plant, Vicenza, QA Laboratory, supervisor: Name Surname</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>
Total Period in Italy outside Unibo (days)			60
Total Period in Italy outside Unibo (months)			2.0
Research Period Abroad (mandatory ≥3 months in the 3 years)			4.4
Total Period outside UniBo (suggested ≥6 months in the 3 years)			6.4

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)

NAME	TYPE & LOCATION	TYPE OF ACTIVITY	DURATION	CD
Courses (disciplinary and multidisciplinary training)				
<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: 'Uncertainty analysis for engineers'</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>
Total Credits (>6CD in the three years)				16.8
Transferable Skills (Competenze Trasversali)				
<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>
Total Credits (>1CD in the three years)				5.0

Extracurricular training				
<i>Example: 'Astrodynamics Specialist Conference' attendance only</i>	<i>International conference Colorado, USA</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>
Total Credits (>1CD in the three years)				6.2
Dissemination				
<i>Example: Paper presentation at 'Astrodynamics Specialist Conference'</i>	<i>International conference Colorado, USA</i>	<i>Dissemination</i>	<i>5 days -including travelling-</i>	<i>(5x12/25)= 2.4</i>
Total Credits (>2CD in the three years)				2.4
Teaching and Tutoring				
<i>Example: Co-supervisor in master thesis</i>	<i>Student: Name Surname, master thesis, Aerospace Engineering, Forlì</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>
Total Credits (>1CD in the three years, maximum of 9CD)				10.0 (9CD)
Total Credits acquired in the 3 years (≥36)				39,4

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