

Guidelines for defining the Training Program

Version approved at the Teachers' Board Meeting on 1/12/2022 - Cycle XXXVIII

Generalities

The Training Program is the document that describes how the students of the Industrial Doctorate Program in Technologies for Resilient Living Environments at the University of Campania "Luigi Vanvitelli" will be trained, thus creating the pre-requisites for developing the Ph.D. student's autonomy in conceiving, designing, implementing and disseminating research and innovation programs.

The Teachers' Board approves each student's Training Program and is assisted by one or more Supervisors and one or more co-supervisors for each student and any informative discussions.

The acquisition of the degree is based on the system of educational credits (CFUs). Credits are acquired by completing the planned activities among those in the training program and with any other activities agreed with the Supervisor(s) and approved by the Board; the credits that can be acquired are determined for each activity on the basis of the overall commitment required of the student in terms of study, learning and research. Admission to the final examination requires the acquisition of 180 CFUs. Ph.D. students must achieve at least 60 credits each year, distributed according to the training program agreed with the supervisor and co-supervisor(s), approved by the Board of Teachers, and consistent with the educational offerings.

The Ph.D. program periodically reviews and updates the educational and research paths of Ph.D. students to align them with the cultural and scientific evolution of the Ph.D. target areas and encourages the realization of formative moments of exchange/presentation of research results; the use of English for all activities envisaged in the educational program and the preparation of related supporting materials is strongly recommended.

Articulation of the Training Program

The Educational Program includes various types of activities such as teaching, research, subsidiary, and business activities; the weight of the previously mentioned activities must be appropriately modulated to take due account the types of positions advertised in the Ph.D. Program, which is verified and updated for subsequent cycles. It can be summarized as follows for the 38th cycle,

- Executive Ph.D. positions (reserved for corporate employees);
- 100% corporate-funded places;
- places co-founded 50% by companies (ex: DM 352);
- 100% nationally funded posts (e.g., DM 351);
- ordinary and reserved Ateneo positions.

The following table shows an indicative percentage distribution of CFUs based on the various activities that make up the Training Program, according to the positions advertised.

	<i>Ph.D. Executive</i>	<i>Position financed 100% Enterprises</i>	<i>Position co-funded 50% (DM 352)^L</i>	<i>100% funded position (DM 351)²</i>	<i>Position Ordinary and Reserved Athenaeum³</i>
Educational activities (%)	5-10	5-15	10-15	15-25	15-25
Research activities (%)	5-10	5-15	10-25	35-50	35-50
Subsidiary activities (%)	-	5-10	5-10	15-20	15-20
Corporate Activities (%)	80-90	60-70	40-50	0-10	0-10
Study and research period abroad (%)	-	Min 3 months, corresponding to about 9% Max 12 months corresponding to 33%	Min 6 months, corresponding to about 17% Max 18 months corresponding to 50%	Min 6 months, corresponding to about 17% Max 18 months corresponding to 50%	Min 3 months, corresponding to about 9% Max 12 months corresponding to 33%

The following table, purely for illustrative purposes, shows a hypothetical hourly distribution of the various activities that make up the Training Program for the entire three-year period and with reference to two particular positions put out to tender.

	<i>Ph.D. Executive</i>	<i>Position Ordinary and Reserved Athenaeum³</i>
Educational activities*	5% → 225 hours (including 68 hours of frontal teaching/seminars and the remaining 157 hours covered by the individual study)	25% → 1125 hours (including about 338 hours of frontal teaching/seminars and the remaining 787 hours covered by the individual study)
Research activities	5% → 225 hours	50% → 2250 hours
Subsidiary activities	-	15% → 675 hours
Corporate Activities	90% → 4050 hours	5% → 225 hours
Study and research period abroad	-	5% → 675 hours (5.4 months)

*For teaching activities, 1 CFU, equal to 25 hours, was assumed to consist of 30% frontal teaching/seminar hours and the remaining 70% of hours covered by individual study; for all other activities, 1 CFU is assumed equal to 25 hours.

In the development of the Training Program, special attention will need to be paid to balancing particular topics, referring to the various areas of research, including in relation to frontier scientific and technological aspects concerning responsiveness to environmental and/or social changes and stresses, with aspects of a more general nature and aimed at filling training gaps, in each case introducing multidisciplinary, transdisciplinary and interdisciplinary elements.

The aim is to standardize the skills and knowledge of incoming learners, as well as to build common and multidisciplinary skills in the research areas. Subsequently, through appropriate operational tools, possible methods of analysis and evaluation will be identified to represent and analyze the selected living environments; this is to strengthen sustainability with an innovative and human-centric vision in which the most technologically advanced solutions are identified. The activities should also be directed at developing a dissemination/communication capacity of the research activity and issues related to technology transfer and entrepreneurship.

Trainees framed in executive Ph.D. positions or recipients of grants funded 100% by an institution or company may propose a customized Training Program in line with their technical and scientific interests, consistent with the educational objectives of the Ph.D. Program.

¹ DM No. 352 of 09-04-2022, provides for the in-company study and research periods from a minimum of 6 months to a maximum of 18 months and study and research periods abroad from a minimum of 6 months to a maximum of 18 months

² DM No. 351 of 09-04-2022, provides for the in-company study and research periods from a minimum of 6 months to a maximum of 12 months and study and research periods abroad from a minimum of 6 months to a maximum of 18 months

³ The University Regulations and the Call for Admission provide a period of study and research abroad for up to 12 months. The University for Ph.D. students in previous cycles has recommended a minimum of 3 months for study and research periods abroad.

The Board, at the end of each year, in the final stage, for each of the students,

- Acknowledges credits earned for work performed during the year on the basis of a descriptive report of the work performed, a public presentation, and the supervisor's opinion;
- if the conditions are met, authorize admission to the final examination or passage to the following year, possibly defining the activities to be carried out to recover unearned credits.

The Training Program may be developed on the basis of the following activities:

Educational activities

Educational activities include:

- activities to standardize incoming students' skills and knowledge so they can profitably follow the Ph.D. Training Program; this is in light of the educational background accrued prior to entering the Course.
- activities to build common skills on solutions and technologies, referring to living, working, and cultural production environments at various scales, to ensure successful course attendance.
- activities to develop specialized skills by targeting individual students or specific groups of Course students with higher education courses taught by highly qualified internal or external faculty.

Teaching activities are usually carried out either through collegial forms, intended for all students in the Course or homogeneous groups or in a more specialized or personalized form, intended for specific groups of students or individual Ph.D. students; these activities can be carried out either at the Ph.D. sites (both Departmental and Corporate) or off-site (including at the sites of consortium companies). The Board, based on the Ph.D. educational objectives, year by year, defines:

- the educational activities to be organized for the implementation of the Training Program, specifying their content, articulation, time location, the person(s) responsible, the students for whom they are intended, and the corresponding CFUs;
- the other, possibly external, educational activities (national schools, activities borrowed from other courses, seminars, etc.) to be included in the Training Program.

Recognition of credits/hours of activity requires:

- A certificate of participation issued by the teacher or the institution that organized the activity;
- The attestation of a positive profit evaluation, where one is provided.

Attestation and assessment are based on appropriate assessment criteria defined by the Board based on the specific teaching requirements of the Course and are framed within the general assessment process provided for all Course activities.

The Board, where necessary, reserves the right to identify, in the list of planned courses, the teachings and other educational activities (seminars, laboratory and research activities, interdisciplinary, multidisciplinary, and transdisciplinary training) the activities to be compulsorily included in the Educational Program.

The Board, on the basis of the educational objectives of the Ph.D. program, year by year, having also heard the proposal of the Supervisor(s), agrees on the teaching activities for each student (or homogeneous groups of students) within the respective Educational Programs, specifying the CFUs (hours) that can be acquired.

Research activities

Research activities include:

- Experimental or numerical activity aimed at technical and scientific objectives;
- Preparation of scientific papers for presentation at national or international conferences or publication in national or international journals;
- Participation in scientific conferences, congresses, and seminars;
- Processing and production of documents (reports, papers, procedures, etc.) of technical and scientific significance;
- Participation in the work of national or international research groups;
- Participation in technology transfer activities;
- Scientific contribution to the organization of scientific events;
- thesis writing;
- Other possible, to be defined by the Board.

Research activities aim to:

- Deepen the potential for the use of specific technologies for the different living environments considered; this is with particular reference to their applications in laboratory and field experiences.
- Be able to set up and/or monitor full- and/or small-scale components or systems for experimental or field trials; this is with particular reference to evaluating the efficiency of these components and systems and their effectiveness in terms of sustainability and resilience.
- Develop and/or apply models of analysis of the technologies employed; with particular reference to the possibility of assessing their impact with reference to living, working, and cultural production environments at various scales.
- Develop scientific and technical papers;
- Participate in technical and scientific dissemination activities at various levels;
- develop additional specialized skills by targeting individual students or specific groups of Course students with events (meetings, workshops, etc.) held by highly qualified internal or external researchers.

Recognition of credits for participation in scientific conferences, congresses, and seminars, if provided by the organizers, is based on attestation from the entity that organized the activity.

The Board, on the basis of the educational objectives of the Ph.D. program, year by year, after also hearing the proposal of the supervisor, agrees on the technical-scientific activity for each student (or homogeneous groups of students) within the respective Educational Programs, specifying the CFUs (hours) to be acquired.

Subsidiary activities

Subsidiary activities include.

- Subsidiary or supplementary teaching activity to the extent specified in the regulations;
- mentoring activities within the limits specified in the regulations;
- The third mission activity within the limits specified in the regulations;
- The propositional and organizational activity of scientific projects;
- The organization of scientific conferences and meetings or higher education events;
- Any other activities useful, in the judgment of the Board, to the training of students.

Business activities

Business activities include all those activities that may be particularly useful within SMEs that intend to implement and improve R&D activities on fundamental research, industrial research, and experimental development; these activities are aimed at bringing the added value of Ph.D. training over ordinary work activities, with the use of the results and spillovers of the research activity for the enhancement of the Ph.D. student's skills.

Enterprise activities are also stipulated by Ministerial Decrees or Regulations as periods of study and research in the enterprise.

Corporate activities, among others, include:

- Development and implementation of projects and services;
- R&D activities of an experimental or numerical nature, aimed at specific technical objectives of the company's production process, such as analysis and development of procedures, prototypes, monitoring, etc.;
- Preparation of technical scientific reports;
- Participation in technical and scientific seminars;
- Processing and production of documents (business reports, elaborations, procedures, etc.);
- Participation in technology transfer activities.

Training Program Evaluation System

The evaluation system of the Training Program, framed within the more general evaluation system of the Ph.D. Program, includes the following specific activities:

- Learners' evaluation of the Course (organization, articulation, training program, facilities, assistance, mentoring, availability of funds, etc.);
- Course evaluation by faculty (organization, pre-requisites, facilities)

Annex 1 - 38th Cycle Training Program Organization

For the 38th cycle, the main training areas are identified, which, in a non-exhaustive manner, group together the research and training topics that can be associated with the Scientific Disciplinary Sectors present in the proposed accreditation of the Ph.D. Program:

- Scope #1: Energy, Building, and Environment;
- Scope #2: Soil, Infrastructure, and Mobility;
- Scope #3: Culture, Nature, and Wellness.

For the scheduling of the training program, the holding of interdisciplinary courses during the 1st year of the Ph.D. program is favored; such courses may consist of i) University Seminars (enhancement and dissemination of research results, scientific writing, computer enhancement, language enhancement, promotion of European research, research evaluation, ii) training days and/or seminars regarding transdisciplinary topics and selected technologies, iii) in-training days/seminars with visits to the facilities (laboratories, production departments, etc.) Departmental and contracted Companies.

Starting in Year 2, however, specific training activities with reference to each of the previously identified areas will be favored.

With a view to fostering the autonomy of Ph.D. students, it will also be possible to submit proposals for additional training events "outside" the offerings identified for the 38th cycle to the Teachers' Board, in agreement with the supervisor.

In order to facilitate the activities of Ph.D. students, also in relation to the different types of scholarships in the 38th cycle, we will concentrate, where possible, on the planned activities in the first 3 days (Mon, Tue, or Wed) of the last week of each month.

Ambito #3: Cultura, Natura e Benessere	Ambito #2: Suolo, Infrastrutture e Mobilità	Ambito #1: Energia, Edifici ed Ambiente	
Ciclo di 4 eventi informativi (1 per ogni Dipartimento coinvolto nel dottorato) (6 ore * ogni evento informativo) - Sedi Dipartimenti			Anno 1
Ciclo di 8 eventi formativi (2 per ogni Dipartimento coinvolto nel dottorato) (5 ore * ogni evento formativo) - Sedi Dipartimenti			
Ciclo di seminari aziendali (4 ore * 4 seminari) - Sedi aziendali - Aziende Dottorato			
Resilienza urbana ai fenomeni alluvionali (Urban Resilience to Floods) (4 ore) - DING - Gisonni			
Programmazione in Python (4 ore) - DADI - Esterno			
Archeologia e contemporaneo (8 ore) - DiLBeC - Rescigno			
Metodologie e strumenti per il rilievo di edifici e infrastrutture nei contesti antichi e contemporanei (8 ore) - DADI - Cirillo			
Gestione resiliente dei luoghi della cultura (6 ore) - DiLBeC - Barrella			
Innovazioni tecnologiche nel settore dei trasporti e della mobilità (8 ore) - DING - Carteni			
Efficientamento energetico di edifici resilienti (4 ore) - DADI - Ciampi			
Sviluppo Ambienti VR (8 ore) - DADI - Esterno			
Seminari di Ateneo - XX seminari formativi su i seguenti argomenti: valorizzazione e disseminazione di risultati della ricerca, scientific wrting, perfezionamento informatico, perfezionamento linguistico, promozione della ricerca Europea, valutazione della ricerca (2 ore * 9 Seminari) - Sedi Ateneo			
Individuazione e potenzialità rigenerative delle aree quiete: il ruolo delle corti e dei chiostri (4 ore) - DADI - Masullo	Metodologie di diagnostica strutturale (6 ore) - DADI - De Matteis	Metodologie di diagnostica strutturale (6 ore) - DADI - De Matteis	Anno 2
Seminario - Da depositi a biblioteche di oggetti (2 ore) - DiLBeC - Rescigno	Metodologie di diagnostica strutturale (6 ore) - DADI - De Matteis	Metodologie di diagnostica strutturale (6 ore) - DADI - De Matteis	
Seminario - Risultati principali delle attività di ricerca dedicate a soluzioni innovative per i musei (2 ore) - DiLBeC - Barrella	Seminario - Valutazione delle infrastrutture esistenti ai sensi delle LLGG20 (2 ore) - DADI - De Matteis	Seminario - Valutazione delle infrastrutture esistenti ai sensi delle LLGG20 (2 ore) - DADI - De Matteis	
Sviluppo Ambienti VR (24 ore) - DADI - Esterno	Sviluppo Ambienti VR (24 ore) - DADI - Esterno	Sviluppo Ambienti VR (24 ore) - DADI - Esterno	
	Il contributo dell'ingegneria geotecnica alla valutazione della resilienza delle infrastrutture stradali e ferroviarie (8 ore) - DING - Mandolini	Involucri edilizi per edifici resilienti (12ore) - DADI - Ciampi	
	Seminario - L'interconnessione esistente tra la rete infrastrutturale italiana (stradale e ferroviaria) e la classificazione del territorio interessato in termini di rischio da frana (6 ore) - DING - Mandolini	Modellazione e simulazione dinamica di sistemi conversione dell'energia (8 ore) - DADI - Rosato	
		Seminario - Sistemi passivi per l'efficienza energetica degli edifici: facciate a schermo pelle realizzate con materiali innovativi (2 ore) - DADI - Ciampi	
		Seminario - Analisi energetica, economica ed ambientale delle prestazioni di impianti di riscaldamento e teleriscaldamento (2ore) - DADI - Rosato	
Attività di Laboratorio - Attività di ricerca e nell'attuazione di attività sperimentali, che prevedono: test di laboratorio, focalizzate su indagini connettive su standard LLQM (2 ore) - DiLBeC - Barrella	Seminario - Effettua un'esperienza sul campo per l'applicazione di metodologie e strumenti di rilievo per la conoscenza di edifici e infrastrutture (2 ore) - DADI - Cirillo	Seminario - Analisi di metodologie e strumenti per l'identificazione e la diagnosi automatica di anomalie di funzionamento nei sistemi di conversione dell'energia ai fini dello sviluppo di tecniche di manutenzione "predittiva" (2 ore) - DADI - Rosato	
Mitigazione del rumore da traffico veicolare nei parchi urbani ed informatici/mobility (4 ore) - DADI - Masullo	Seminario - Diagnostica dei ponti esistenti e metodologie di riparazione (2 ore) - DADI - De Matteis	Tecnologie per l'illuminazione integrata come strumento per ridurre l'impatto ambientale e migliorare il comfort visivo (12 ore) - DADI - Schito-Scorpo	
			Anno 3