UNIVERSITÀ DEGLI STUDI DI PALERMO

dipartimento di ingegneria unipa

DOCTORAL DEGREE IN
MECHANICAL, MANUFACTURING, MANAGEMENT AND AEROSPACE INNOVATION (M3AI)

EDUCATION AND TRAINING ACTIVITIES REGULATION

This regulation integrates the requirements regarding the Ph.D. students educational path listed in the Regulation of the Ph.D. Programs of the University of Palermo, issued by D.R. 1884/2022, as specifically set out in Art. 13, Paragraphs 3, 7 and 11, and reported below.

Art.13, paragraph 3 "The training/educational activities must be quantified in credits (60 ECTS per year) and may be organized, in accordance with the requirements of the Ph.D. Program, through specialized lectures, laboratory and experimental activities, advanced learning through research, internship, writing of the doctoral thesis, and participation in conferences and doctoral schools - Omissis"

Art.13, paragraph 5 "At the beginning of the course, a Tutor and one or more Co-Tutors are assigned to every Ph.D. student. At least one of them must belong to the University of Palermo and be selected within the Ph.D. College board. Tutors and Co-Tutors may also be appointed from outside the Ph.D. College Board, provided that at least one meets the requirements for membership on the same Board."

Art.13, paragraph 9 "**At the end of each doctoral year, the Ph.D. student must submit a detailed written report to the Ph.D. College board**, outlining the activities carried out during the year. In addition, the student may also be required to discuss/present the report according to the procedures established by the Ph.D. College Board. If the Doctoral Program is organized into different curricula, the Ph.D. College Board can delegate the competent Committee to receive and evaluate the report."

ART. 1
Supervisory activity of the Ph.D. student

1. As outlined in Art. 13, paragraph 5 of the University Regulation, at the beginning of the program the Ph.D. College Board assigns a Tutor and, where appropriate, one or more Co-Tutors to every Ph.D. student. The assignment is based on the student's research project, the research objectives of the Department of Engineering, and the funding source of the Ph.D. scholarship.

2. Based on the Tutor proposal and in consultation with the Co-Tutor, where applicable, the Ph.D. College Board identifies an expert (i.e. R.Tutor), who will provide critical feedback on the training activities carried out by the Ph.D. student. **To this end, the R. Tutor needs to receive updates on the student's progress every six months**. The R.Tutor may be internal or external to the College Board, affiliated with other universities or research centers.
   During the annual review of training activities (as detailed in Art. 4 of the present Regulation), following the Tutor's presentation of the Ph.D. student's activities to the Ph.D. College board, the R.Tutor will provide a critical assessment of the student's work. To this purpose, **at least 15 days prior to the end-of-year Ph.D. College Board meeting, the Ph.D.**

student will submit to the R.Tutor the annual report on the activities carried out. If there are concerns about the Ph.D. student's scientific development or the fulfillment of the minimum requirements for progression to the following year or for admission to the final examination (Art. 4 of the present regulation), the R.Tutor will promptly inform the Tutor and the Coordinator of the Ph.D. College Board, who will identify two additional Members within the College Board to further assess the student's report. Afterwards, the outlined criticalities will be discussed in-depth during the Ph.D. presentation. However, **the R.Tutor will provide the Ph.D. student with written feedback within seven days**, outlining any concerns and proposing appropriate corrective actions.

3. **At the beginning of every year, the Ph.D. student, in agreement with the Tutor(s), will submit to the Coordinator a general proposal for the training activities to be carried out (or possibly already carried out) (at least 45 ECTS)**. The proposal has to be signed by the Ph.D. student and the Tutor(s). For the first year, it will be submitted within 3 months from the enrollment; for subsequent years, it will be submitted by the 10th of the month in which the enrollment occurs. Upon positive feedback from both the Tutor and the Coordinator, the learning activity plan may be modified or supplemented during the year, if there are substantiated reasons.

ART. 2
Activities required for the acquisition of the Academic Formative Credits (ECTS)

1. The training activities are designed to ensure that Ph.D. students achieve the following minimum objectives over the three-year program:
    a. By the end of the first year, the acquisition of a solid and mature understanding of the scientific literature relevant to their research topic;
    b. By the end of the second year, the development of the original scientific contribution they intend to bring to literature, possibly also through effective collaboration with research groups of foreign institutions.
    c. This development will be completed during the third year with the finalization of the doctoral thesis.

2. The training activities are classified into Learning Activities (LA) and Research Activities and Academic Training – (RAAT). Over the three-year period, the Ph.D. student is required to achieve 180 ECTS, with an annual workload ranging form 51 to 69 ECTS. In particular, the student must achieve between 41 and 49 ECTS related to LA and between 131 and 139 ECTS related to RAAT. The acquisition of at least 18 LA ECTS and 9 LA ECTS in the first and second years respectively is expected. Annex 1 specifies the different types of LA and RAAT activities, providing a brief description per category, the corresponding ECTS allocation, and the range of ECTS to be acquired over the three-year period (unless otherwise specified).
   Master classes selected by the Ph.D. student cannot overlap with courses already attended during previous academic programs, e.g. M.Eng studies. Any request to include undergraduate-level courses shall be evaluated by the Coordinator. If the Ph.D. student

includes undergraduate or master's level courses, he/she is required to take a final examination at the end of the course. The examination format should be agreed with the Tutor(s) and the course Professor, and may consist, for example, of a report illustrating the application of the knowledge or methodologies acquired to the Ph.D. research, or a state-of-the-art review related to both the attended course and the Ph.D. research project. After the examination, the course Professor will inform the Coordinator and Ph.D. Tutor(s) of the results.
The Ph.D. student must spend a period abroad of six months at least and twelve months at most. Any exception must be approved by the Ph.D. College Board based on a motivated proposal from the Ph.D. student's Tutor. For co-tutored Ph.D. programs and dual degree programs, the duration of the period abroad will be governed by the relevant agreement.

3. The formal acquisition of ECTS occurs when the Ph.D. student is admitted to the subsequent year or receives the positive evaluation needed for admission to the final exam, as specified in Art. 4 of the present regulation. The Ph.D. student is required to self-certify the training activities carried out, including the attendance of classes, in an appropriate record. In addition, the Ph.D. student is expected to save and submit any certificate issued by the Institutions where specific training activities were undertaken or by the Professor of the attended courses.
At the end of each academic year, the Ph.D. student will submit to the Ph.D. College Board an analytical report detailing the overall training activities carried out, as specified in Art. 4 of the present regulation. By countersigning the submitted report, the Tutor certifies the consistency between the training activities carried out and the learning plan provided as indicated in Art. 2 of the present regulation. The Ph.D. student is solely responsible for the truthfulness of the statements made. If the Ph.D. College Board becomes aware of any untruthful statement, the Ph.D. student will not be admitted to the subsequent Ph.D. year or from taking the final exam.

ART. 3
Activities requiring permission according to the University Regulation
Ph.D. students must submit an authorization request for the activities listed below:

1. Study abroad (Art. 16, Paragraph 9 of the University Regulation): at least three months before departure if the period abroad exceeds six months; otherwise, one month before.
2. Supplementary teaching (Art. 14, Paragraph 3 of the University Regulation): at the beginning of the year, together with the activity plan.
3. Tutoring – UniPa Call (Art. 14, Paragraph 3 of the University Regulation): as soon as the rankings are published, the Coordinator, in consultation with the Tutor(s), will grant authorization.
For the first year, a moderate level of activities 2 and 3, it is suggested.

ART. 4

DOCTORAL DEGREE IN
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Admission to the second and third years and evaluation for final examination eligibility

1. **At the end of every year, the Ph.D. student must submit to the Ph.D. College Board a report on the training activities carried out during the year**, following the template provided in Annex 2. The report will also include a detailed description of the research activity performed, in particular:
   - At the end of the first year, the Ph.D. student will provide a critical review of the state of the art and discuss his/her research topic against the background of the analyzed literature, highlighting, where appropriate, his/her own contribution, methodology and expected results. Any results achieved shall also be presented, if available.
   - At the end of the second and third years, the Ph.D. student will present an analysis of the research activities carried out with reference to the work plan presented at the beginning of the year, with an in-depth analysis of the results achieved.
2. For admission to the second and third years, as well as for obtaining a positive evaluation for admission to the final examination, the Ph.D. student's scientific output must meet the minimum additional requirements set out below.

   Admission to the second year
   The Ph.D. student is expected to have written and submitted a scientific article either to a national or international conference for oral presentation or to a journal indexed in Scopus.

   Admission to the third year
   The Ph.D. student is expected to have submitted an article to an ISI-indexed journal, classified as Q1 or Q2.

   Positive assessment for admission the final examination
   In line with the doctoral thesis, the Ph.D. student is expected to have published at least one article in an ISI-indexed journal (Q1 or Q2), and presented a paper at an international conference.

3. For admission to the subsequent year or for evaluation of eligibility for the final examination, the Ph.D. student will present the activities carried out to the Ph.D. College Board. The Coordinator will provide the student with all necessary information about the final examination.
4. Based on the proposal of the Tutor and R.Tutor, the Ph.D. College Board will decide on admission based on the activity report presented, its discussion and the achievement of the minimum requirements. Admission implies the formal acquisition of ECTS as presented in the learning activities report. However, the Ph.D. College Board may validate ECTS even in the event of non-admission.
5. The evaluation outcome (either positive or negative) will be transmitted to the final examination committee along with the reports provided by the two thesis reviewers and the R.Tutor.
6. Any request for extension from the aforementioned criteria must be motivated and submitted to the Ph.D. College Board, which will decide on the matter.

7. Any extension will be granted in accordance with the University Regulation, as outlined Articles 14 and 17.
8. The procedures for awarding the doctoral degree are governed by Art. 17 of the University Regulations.

Annex 1
ECTS equivalence table of learning activities

Learning Activities - LA (36-44 ECTS)

Type	Short Description	N of hours/days per ECTS	No. of ECTS in the three years
Language skills	English/Italian courses or other language courses organized by the CLA also through the Rosetta Stone platform. https://www.unipa.it/amministrazione/direzionegenerale/serviziospecialeinternazionalizzazione/u.o.centrolinguisticodateneo/ (For Italian native-speaking students, the goal is to achieve a C1 level in English. If they already have a C2 level or if reaching this level does not fulfill the required credits for this activity, they may allocate the remaining credits to study another language. This choice must be approved by the Learning Activities Commission (LAC). Non-Italian foreign student who have reached at least a B2 level in English must allocate any remaining credits to study the Italian language. In the latter case, at least an A2 level in Italian must be achieved.	10 hours	3-6
Computer knowledge	Interdisciplinary courses organized by the Department of Engineering M3AI/ICT: Big-data Analytics – Machine learning - IOT – Block chain – Industry 4.0	8 hours	Min 3
Research management, knowledge	Courses organized by the University	8 hours	Min 3

management of research systems and funding systems	https://www.unipa.it/amministrazione/direzionegenerale/serviziospecialericercadiateneo/carta-europea-dei-ricercatori/		
Exploitation of research results and intellectual property	Courses organized by the University https://www.unipa.it/amministrazione/direzionegenerale/serviziospecialericercadiateneo/carta-europea-dei-ricercatori/	8 hours	Min 3
Courses borrowed from master's degree courses	https://offweb.unipa.it/offweb/public/corso/ricercaSemplice.seam	As defined in the Course description	0-9
Ad hoc courses for M3AI Ph.D. students	Specialized courses organized by the Doctoral Committee or other academic and research institutions	As defined in the Course syllabus	3-10
Ad hoc courses for engineering Ph.D. students	Interdisciplinary courses organized by the Department of Engineering or by other academic and research institutions	As defined in the Course syllabus	5-20
Seminars	Seminars on the main topics of the Ph.D. program and a cycle of seminars during the third year, the latter aimed at facilitating the placement of the Ph.D. student	8 hours	0-6
Summer School	Ph.D. Summer Schools organized by the associations of the scientific disciplinary sectors of the course	1 day	0-18

Research Activities and Academic Training – RAAT (131-139 ECTS)

Type	**Short Description**	**Equivalence of hours / days / scientific article / poster / reports for each ECTS**	**N. of ECTS in the three years**
Individual research activity (theoretical,	Not strictly supervised and not included in the commitment for the activities listed below	25 hours = 1 ECTS	0-40

analytical, computational)			
Experimental or laboratory activities	Experimental or laboratory activities relevant to the Ph.D. student's research project	15 hours = 1 ECTS	0-40
Stage	Internship in a company or research institution (including teaching tutor)	25 hours = 1 ECTS	0-6
Supervised research activity	Research activity supported by the tutor or by experts in the sector	6 hours = 1 ECTS	20-40
Participation in conferences and workshops	Activities relevant to the research project and to be agreed with the tutor	1 day = 1 ECTS	3-15
Report preparation for a conference	Activities relevant to the research project and to be agreed with the tutor	1 report = 2 ECTS	2-10
Preparation of a posters for a congress	Activities relevant to the research project and to be agreed with the tutor	1 poster = 2 ECTS	0-4
Preparation of a research article for a congress	Activities relevant to the research project and to be agreed with the tutor	1 paper = 5 ECTS	10-
Preparation of a research article for a scientific journal	Activities relevant to the research project and to be agreed with the tutor	1 scientific article = 10 ECTS	10-
Teaching support activities (MUST BE APPROVED BY THE COLLEGE BOARD)	Max 40 hours of teaching per year This activity must be approved by the College Board and the request must be submitted within the deadlines specified in Art. 3. Other teaching support activities (thesis co-tutoring, student reception, teaching assistance - correction of papers, etc.) Tutoring (Unipa call) This activity must be approved by the the College Board and the request must be submitted within the deadlines specified in Art. 3.	3 hours of teaching = 1 ECTS 15 hours of support activities (thesis, office hours, etc.) = 1 ECTS 20 hours = 1 ECTS	1-15 (per year)
Tutoring and support for orientation activities, scientific dissemination	These activities include all those initiatives that actively involve the doctoral student in communicating their research project to colleagues, college professors and students of the major master's degrees. The contamination of knowledge will be promoted with the aim of creating synergies	8 hours = 1 ECTS	1-5

and knowledge contamination	and importing methodologies between the various areas.		
Research period abroad	The Training Activities Committee, on the recommendation of Tutor, will identify the foreign institution where the Ph.D. student may undertake a research period of no less than 6 months and no more of 12 (unless it involved a co-tutored or double degree thesis). This activity must be approved by the the Coordinator or the Board, and the request must be submitted within the deadlines specified in Art. 3.	20 days = 1 ECTS	Min 9
Thesis writing	The writing of the thesis consists in the preparation of a critical collection of the research work carried out in the three years	15 hours = 1 ECTS	20

Annex 2
Template of the end-of-year report on learning activities

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Doctoral Degree Program in

MECHANICAL, MANUFACTURING, MANAGEMENT AND AEROSPACE INNOVATION

CICLO XYXYXY

Annual Report on Activities Performed

Ph.D. Student (Name and Surname)	
Tutor	
Co-Tutor	
R.Tutor	
Coordinator	Giovanna Lo Nigro
Year of Ph.D. (First/Secod/Third)	
Title of the Research Project	

Signature of the Ph.D. Student

Signature of Tutor/Tutors

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Title of the Research Project

1 Introduction (max 1500 characters, excluding spaces)

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2 Description of the research activity carried out (max 10.500 characters, excluding spaces)

Briefly describe your research activities, highlighting the following sections: Motivations and expected impact; State of the art; Methodology; Originality and innovation of your contribution; Results achieved and/or anticipated; Future developments; Bibliography (excluded from character count, max 20 references). The use of graphs and/or illustrations to describe key aspects of your research is encouraged. Highlight any periods spent abroad and collaborations established with research institutions outside of UniPa.

2.1 Motivations and expected impact

What are the motivations for the proposed research? What is the expected impact?

2.2 State of the art

Outline the current state of research by briefly discussing the most relevant contributions on which your research is based.

2.3 Methodology

Briefly describe.

2.4 Originality and innovation

Highlight the novelty of your proposed research within the context of the current state of the art.

2.5 Future developments

Briefly describe the planned activities for the next year of the Ph.D. program or following the thesis defense.

2.6 Bibliography (max 20 references)

(This section is excluded from characters' count).

3 Outcomes

Provide a list, organized by type (peer-reviewed journal articles; international conference proceedings; conference abstracts; etc..) of the publications resulting from the conducted research along with their IRIS handle (https://iris.unipa.it)

4 Description of training activities

For each type of activity, provide a list of participated activities including title, number of hours, verification method, and estimated ECTS credits. List each type in a dedicated subsection, as shown in the following examples.

Courses from the Master's Degree Program

- **Aerospace Structures**, 54 hours, assessed by a final report, 6 ECTS

Seminars

- **Seminar "Management strategies in unprecedented scenarios: the CoViD-19 case study"**, Prof. Jan Mendelson, MIT, USA. 8 hours, assessed via participation certificate (attached), 1 ECTS
- **Seminar "Python for scientific visualization"**, Prof. G. Sutton, Stanford University. 24 hours, assessed via participation certificate (attached), 3 ECTS
-

Conference Paper Preparation

Specify the paper and conference

Journal Paper Submission

Specify paper, journal, and status of the review process (submitted on XX, major revision on XY, etc…)

Period abroad

At the University of Amsterdam under the supervision of Professor Steiner, from November 10, XXXX to May 10, XXXX +1

Teaching Support

Detail the type of support (10 hours of exercises for the Corporate Finance course, 40 hours supervising thesis students, etc..).

Summarize the ECTS obtained in the following table and provide details for each activity separately.

Type	**Activity**	**Workload for the current year**	**ECTS 3rd year**	**ECTS 2nd year**	**ECTS 1st year**	**Total ECTS**	**Min expected ECTS**	**Max ECTS**
Learning Activities (LA)	Language skills				3	3	3	6
	Computer knowledge				3	3	3	
	Seminars	2 seminars, 32 hours		4	2	4	0	6
	Courses of the Master's offer	1 course, 54 hours		6	6	12	9	18
	Insert lines where necessary							
	Total ECTS for LA			**10**	**14**	**24**		
Research activities and academic training (RAAT)	Individual research	300 hours		12	19	31		40
	Supervised research activity	60 hours		10	15	25	20	40
	Research period abroad	160 days		8		8	9	
	Preparation of a research article for a congress	1		5	5	10		
	Conference attendance				5	5	3	15
	Submission of articles in journals	1 submitted		10		10		
	Teaching support (exercises)	20 hours		7		7		
	Insert lines where necessary							

	Total ECTS for RAAT		**52**	**44**	**96**		

Seminars:….

Courses…..