



## PHD PROGRAM IN INDUSTRIAL ENGINEERING REGULATIONS

- THE OFFICIAL VERSION OF THE REGULATION IS THE ITALIAN VERSION ONLY -

### Art. 1 – Establishment of the PhD Program

1. The PhD Program in Industrial Engineering (PhD Program) is established at the University of Cagliari by rectoral decree, subject to accreditation granted by Ministerial Decree, upon proposal of the Departments indicated in paragraph 2, following favourable decision of the Academic Senate and approval of the Administrative Board.

2. The proposal for the establishment of the PhD Program is formulated by the following Departments:

- Department of Mechanical, Chemical and Materials Engineering;
- Department of Electrical and Electronic Engineering.

The above-mentioned Departments provide teaching, research and administrative staff, facilities, services, and funding appropriate for the activities of the PhD Program. The administrative headquarters of the PhD Program is the Department to which the Coordinator belongs.

3. Establishment, activation and functioning of the PhD Program and methods for granting the academic title are governed by the Regulations for the PhD Program of the University of Cagliari, integrated by the following articles.

### Art. 2 – Objectives of the PhD program

1. The objective of the PhD Program is to prepare first stage researchers (R1 - First Stage Researcher) with high scientific qualification in the field of Industrial Engineering, as well as in interdisciplinary areas that require similar competencies, to be able to carry out high-profile technical activities in the industry sector, or within public institutions.

2. The PhD Program promotes, organizes, and coordinates all teaching and scientific activities required for the training of the PhD students.

3. The PhD Program pursues the principles of the Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe (C/2023/1640) and the European Charter for Researchers<sup>1</sup> and the objectives of the Human Resources Strategy for Researchers of the Institution.

### Art. 3 – Research fields

1. The research fields of the PhD Program are the European Research Council (ERC) sectors and subsectors listed in annex 1.

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<sup>1</sup> [https://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=OJ:C\\_202301640](https://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=OJ:C_202301640) (Italian version); [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AC\\_202301640](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AC_202301640) (English version).



2. The Scientific-Disciplinary Groups (G.S.D.) are listed in annex 2.

#### **Art. 4 – Organisation of the PhD Program**

1. Composition and functioning of the Academic Board of the PhD Program (PhD Board), including the modalities of achievement of the structural quorum for the validity of its assemblies, are ruled by the Regulations of the University of Cagliari. PhD Board's members must attend at least 65 % of assemblies; if not, related Departments evaluate the member's exclusion from the PhD Board for the subsequent PhD cycle.

1 bis. PhD Board members who cannot attend an assembly for personal or institutional reasons must send an email to the PhD Coordinator, before the starting time of the assembly, communicating the non-attendance so that the Coordinator could always update the number of attendees for the structural quorum for the validity of the PhD Board assembly.

2. The PhD Program adopts a Quality Assurance System, implemented by institutional and specific bodies and structures, as described in the "Sistema di Assicurazione della Qualità del Corso di dottorato in Ingegneria Industriale".

3. Supervisors and Co-supervisors assigned to each PhD student play an active and responsible role, supporting, supervising and promoting the progresses of PhD students in the research activity, in particular, making PhD students aware of their role in the initial phase of their career development as well as inform them about the availability of a budget, which has assigned to them in order to sustain their research in Italy and abroad and cover costs functional to their training program. Budget must be adequate to the PhD Program activity and its amount must not be less than 10 % of the PhD scholarship, as defined in article 11, paragraph 10 of the Regulations of the PhD Programmes of the University of Cagliari.

#### **Art. 5 – Training program**

1. To award the PhD title, candidates enrolled in the PhD Program are required to earn 180 credits, in accordance to the following scheme:

- a) at least 24 credits earned through educational activities, as described in the following article 6;
- b) 45 credits earned through the annual presentations to the PhD Board (15 credits per year);
- c) 30 credits earned through the final defence of the thesis;
- d) The remaining credits can be earned through the activities listed in annex 3.

2. PhD students submit a personal career training plan where they indicate all activities chosen to fulfil the credit requirements. Correspondence between credits and activities is indicated in annex 3.

3. Training plan is undersigned by the Supervisor and approved by the PhD Board. It can be revised at least annually.

4. Credit recognition is formalised annually by the PhD Board upon request of the PhD student.



### **Art. 6 – Educational activities**

1. Educational activities indicated in article 5, paragraph 1, letter a) include:

- a) courses specifically offered by the PhD Program;
- b) second-level courses offered by the University of Cagliari;
- c) other educational activities offered by the University of Cagliari or other (Italian or foreign) Universities, similar in terms of duration and test modalities to third-level courses offered by the PhD Program;
- d) national and international PhD Schools;
- e) activities such as training days and seminars not included in the previous categories;
- f) the acquisition of language competencies above B2 English Level during the PhD Program.

2. Courses offered by the PhD Program are third-level courses specifically established by the PhD Program, which:

- a) are approved annually by the PhD Board;
- b) require attendance obligation and the achievement of a final test, certified by the course lecturers;
- c) are evaluated by attending PhD students, as defined by the PhD Board.

### **Art. 7 – Website**

1. All the information related to the activities of the PhD Program is posted on the PhD Program web site.

### **Art. 8 – Amendments to the Regulations**

1. Amendments to the present Regulations, except the modifications enforced by law, are proposed by the PhD Board and approved by the competent academic authorities of the University of Cagliari.

### **Art. 9 – General rules**

1. In relation to what is not explicitly stated in the present Regulations, reference is made to current legislation, as well as to the Statute and Regulations of the University of Cagliari and to the Regulations of the PhD Programmes of the University of Cagliari.



## **Annex 1**

### **ERC (European Research Council) Sectors**

#### **MAIN ERC SECTORS**

PE7 Systems and Communication Engineering: Electrical, electronic, communication, optical and systems engineering

PE8 Products and Processes Engineering: Product and process design, chemical, civil, environmental, mechanical, vehicle engineering, energy processes and relevant computational methods

#### **SECONDARY ERC SECTORS**

LS7 Prevention, Diagnosis and Treatment of Human Diseases: Medical technologies and tools for prevention, diagnosis and treatment of human diseases, therapeutic approaches and interventions, pharmacology, preventative medicine, epidemiology and public health, digital medicine

PE2 Fundamental Constituents of Matter: Particle, nuclear, plasma, atomic, molecular, gas, and optical physics

PE6 Computer Science and Informatics: Informatics and information systems, computer science, scientific computing, intelligent systems

PE11 Materials Engineering: Advanced materials development: performance enhancement, modelling, large-scale preparation, modification, tailoring, optimisation, novel and combined use of materials, etc.

SH1 Individuals, Markets and Organisations: Economics, finance, management

#### **ERC SUBSECTORS**

PE7\_1 Control engineering

PE7\_2 Electrical engineering: power components and/or systems

PE7\_3 Simulation engineering and modelling

PE7\_4 (Micro- and nano-) systems engineering

PE7\_5 (Micro- and nano-) electronic, optoelectronic and photonic components

PE7\_6 Communication systems, wireless technology, high-frequency technology

PE7\_7 Signal processing

PE7\_8 Networks, e.g. communication networks and nodes, Internet of Things, sensor networks, networks of robots

PE7\_9 Man-machine interfaces

PE7\_10 Robotics

PE7\_11 Components and systems for applications (in e.g. medicine, biology, environment)

PE7\_12 Electrical energy production, distribution, applications

PE8\_1 Aerospace engineering

PE8\_2 Chemical engineering, technical chemistry

PE8\_3 Civil engineering, architecture, offshore construction, lightweight construction, geotechnics

PE8\_4 Computational engineering

PE8\_5 Fluid mechanics

PE8\_6 Energy processes engineering



PE8\_7 Mechanical engineering

PE8\_8 Propulsion engineering, e.g. hydraulic, turbo, piston, hybrid engines

PE8\_10 Manufacturing engineering and industrial design

PE8\_11 Environmental engineering, e.g. sustainable design, waste and water treatment, recycling, regeneration or recovery of compounds, carbon capture & storage

PE8\_13 Industrial bioengineering

LS7\_1 Medical imaging for prevention, diagnosis and monitoring of diseases

LS7\_11 Environmental health, occupational medicine

LS7\_12 Health care, including care for the ageing population

LS7\_14 Digital medicine, e-medicine, medical applications of artificial intelligence

PE2\_3 Experimental particle physics with accelerators

PE6\_6 Algorithms and complexity, distributed, parallel and network algorithms, algorithmic game theory

PE11\_13 Metamaterials engineering

SH1\_4 Finance; financial markets

SH1\_5 Corporate finance; international finance

SH1\_12 Management; operations management, international management



**Annex 2**  
**Scientific-Disciplinary Groups (G.S.D.)**

<b>G.S.D.</b>	<b>Denominazione G.S.D. Denominazione inglese S.S.D.</b>
09/IIND-06	MACCHINE E SISTEMI PER L'ENERGIA E L'AMBIENTE FLUID MACHINERY, ENERGY SYSTEMS AND POWER GENERATION
09/IIND-02	MECCANICA APPLICATA ALLE MACCHINE APPLIED MECHANICS
09/IIND-03	PROGETTAZIONE INDUSTRIALE, COSTRUZIONI MECCANICHE E METALLURGIA INDUSTRIAL DESIGN, MACHINE CONSTRUCTION AND METALLURGY
09/IIND-04	TECNOLOGIE E SISTEMI DI LAVORAZIONE MANUFACTURING TECHNOLOGIES AND SYSTEMS
09/IIND-05	IMPIANTI INDUSTRIALI MECCANICI INDUSTRIAL MECHANICAL PLANTS
09/ICHI-02	IMPIANTI E PROCESSI INDUSTRIALI CHIMICI CHEMICAL PLANTS AND TECHNOLOGIES
09/ICHI-01	SISTEMI, METODI E TECNOLOGIE DELL'INGEGNERIA CHIMICA E DI PROCESSO SYSTEMS, METHODS AND TECHNOLOGIES OF CHEMICAL AND PROCESS ENGINEERING
09/IJET-01	ELETTROTECNICA ELECTRICAL ENGINEERING
09/IIND-08	INGEGNERIA DELL'ENERGIA ELETTRICA ELECTRICAL ENERGY ENGINEERING
09/IINF-04	AUTOMATICA SYSTEMS AND CONTROL ENGINEERING
09/IMIS-01	MISURE MEASUREMENTS



**Annex 3**  
**Credit recognition reference table**

<b>Activity</b>	<b>Credits</b>	<b>Evaluation</b>	<b>Documents</b>
Further language competencies acquired during the PhD Program (above B2 English Level) *	3 maximum	Mandatory	Certificate of attendance and examination
Third-level courses offered by the PhD Program *	2 per 10 hours	Mandatory	Certificate of attendance and examination
Second-level courses offered by the University of Cagliari *	0,5 per 10 hours	Mandatory	Attendance certificate
Attendance to national and international PhD Schools *	2 per 10 hours	Optional	Certificate of attendance and examination
Other educational activities offered by the University of Cagliari or other (Italian or foreign) Universities, similar in terms of duration and test modalities to third-level courses offered by the PhD Program *	2 per 10 hours	Mandatory	Certificate of attendance and examination
Attendance to national conferences	2 + 1 if oral presentation	Attendance certificate and attendance as speaker certificate	
Attendance to international conferences	3 + 1 if oral presentation	Attendance certificate and attendance as speaker certificate	
Scientific papers on international journals with Impact Factor (I.F.)	9 +3 if the contribution on the publication is significant (e.g. data acquisition or model making and implementation; data analysis; draft writing) +1 if the journal belongs to the first or second quartile Scopus/WOS	Copy of the paper (published or in press) Contribution explicitly declared in the publication	
Scientific papers on proceedings of international conferences with ISBN	4	Copy of the paper published in the Proceedings of the Conference	
Scientific papers on proceedings of national conferences with ISBN	2	Copy of the paper published in the Proceedings of the Conference	
Seminar activities (as lecturer/teacher)	1 per hour of seminar held	Documents attesting the seminar activity (announcement, program, number of participants, certificate of the supervisor or of the host institution)	
Research periods abroad	5 per month	Certificate of the host institution	
“Third mission” activities	Up to 2 per activity (6 maximum for the 3 years)	Assignment following proposal by the Supervisor	
Attendance to training days and seminars not included in the previous categories *	0,05 per 1 hour	Attendance certificate	
Annual reports on the research activity	15 per year		
Final thesis defence	30		

\* Educational activities appropriate to fulfil the 24-credit requirement as defined in article 5, paragraph 1, letter a).