

<b>PhD Programme in INDUSTRIAL ENGINEERING</b>	
DISCIPLINARY SCIENTIFIC AREA	09 - INDUSTRIAL AND INFORMATION ENGINEERING; 08 - CIVIL ENGINEERING AND ARCHITECTURE
COORDINATOR	PROF. MICHELE MASCIA
HEAD DEPARTMENT	DEPARTMENT OF MECHANICAL, CHEMICAL AND MATERIAL ENGINEERING
DURATION	3 years
LEARNING OUTCOMES AND RESEARCH TOPICS	<p>The goal of the PhD programme is to train students who are aiming to become research-oriented staff members at academic institutions, research centres and industries, and who will be able to develop new projects with high scientific and technological content. The role of the Doctor in Industrial Engineering arises mainly from the request of the industrial sector to combine technical needs typical of the development, design and management of complex systems with the needs of research and technological innovation in the sectors of manufacturing and process industry, production, energy transformation and distribution, environmental sustainability.</p> <p>The PhD involves: the completion of a literature review, developing original research with the collection of results, producing a thesis, submitting it as a written study, and elaborating the thesis in an oral exam or presentation to the PhD evaluation board.</p> <p>Specific courses with final exams are also included in the programme.</p> <p>The main topics (as ERC subsector) of the PhD programme in Industrial Engineering are the following:</p> <p>PE7_1 Control engineering  PE7_2 Electrical and electronic engineering: semiconductors, components, systems  PE7_4 Simulation engineering and modelling  PE6_6 Informatics and information systems  PE8_2 Chemical engineering, technical chemistry  PE8_6 Energy systems (production, distribution, application)  PE8_8 Mechanical and manufacturing engineering (shaping, mounting, joining, separation)  PE2_3 Nuclear physics  LS7_1 Medical engineering and technology</p> <p>PhD students will have to carry out a period of study and research abroad, lasting a minimum of 6 months, at universities or research centres, in order to deepen their theoretical/applicative knowledge and gain training experience both from a linguistic point of view and in terms of technical and cultural growth.</p> <p>The training path of the PhD programme promotes and stimulates the acquisition of multidisciplinary and transversal skills and knowledge, with the aim of training professional figures capable of operating in the design, optimization and management of advanced engineering systems. The collaboration of the Academic Board members with national and international companies and bodies, and within consolidated networks, guarantees training in an environment in close contact with the reality of industrial research and their easy job placement once the PhD students have obtained the qualification.</p>

	<p>Through annual presentations of the research activity carried out, participation in seminars and study days, the writing of works for presentation at conferences or for publication in specialized journals, the drafting of the thesis, the doctoral students will also acquire the communication skills necessary for a more effective entry into the world of work.</p>
ELIGIBILITY AND OTHER REQUIREMENTS FOR CANDIDATES (ART. 2 - NOTICE OF COMPETITION)	<p>LM-4 Architettura e ingegneria edile-architettura LM-13 Farmacia e farmacia industriale LM-17 Fisica LM-20 Ingegneria aerospaziale e astronautica LM-21 Ingegneria biomedica LM-22 Ingegneria chimica LM-23 Ingegneria civile LM-24 Ingegneria dei sistemi edilizi LM-25 Ingegneria dell'automazione LM-26 Ingegneria della sicurezza LM-27 Ingegneria delle telecomunicazioni LM-28 Ingegneria elettrica LM-29 Ingegneria elettronica LM-30 Ingegneria energetica e nucleare LM-31 Ingegneria gestionale LM-32 Ingegneria informatica LM-33 Ingegneria meccanica LM-34 Ingegneria navale LM-35 Ingegneria per l'ambiente e il territorio LM-40 Matematica LM-44 Modellistica matematico-fisica per l'ingegneria LM-53 Scienza e ingegneria dei materiali LM-54 Scienze chimiche LM-70 Scienze e tecnologie alimentari LM-71 Scienze e tecnologie della chimica industriale LM-75 Scienze e tecnologie per l'ambiente e il territorio And equivalent "Lauree specialistiche"</p> <p>Candidates with other master's degrees: Foreign academic degrees equivalent to the Italian degrees mentioned above (the equivalence with the Italian regulations will be assessed by the PhD admission board).</p>
ADMISSION TESTS	<p>ASSESSMENT OF QUALIFICATIONS AND CURRICULUM VITAE, AND VIDEOCONFERENCE INTERVIEW</p> <p>The interview will mainly focus on the presentation and discussion of the candidate's research project (to be written using the form available on the webpage <a href="https://unica.it/dottoraticerca">https://unica.it/dottoraticerca</a> - "Instructions for registration to the competition and forms - Annex C"), in order to assess the adequacy of the profile with regard to personal competence in the disciplinary field of the project, aptitude for scientific research and linguistic knowledge (English language).</p>
POSITIONS	2
SCHOLARSHIPS	2 funded by NRRP Ministerial Decree no. 630/2024
CONTACT PERSON	<p>PROF. MICHELE MASCIA</p> <p>EMAIL: <a href="mailto:michele.mascia@unica.it">michele.mascia@unica.it</a> - TEL. +39 0706755054</p>
WEBSITE	<a href="https://dottorati.unica.it/ingegneriaindustriale/">https://dottorati.unica.it/ingegneriaindustriale/</a>

SCHOLARSHIPS FUNDED BY MINISTERIAL DECREE NO. 630/2024	
<b>SCHOLARSHIP 1 - CUP F22B24000250005</b>	
RESEARCH PROJECT	Innovative Power Distribution Planning with New Technologies, Flexibility, and Artificial Intelligence
PRINCIPAL INVESTIGATOR	Prof. Fabrizio G. L. Pilo
DESCRIPTION OF DOCTORAL TRAINING	Study of optimisation techniques and applications to planning. Study of artificial intelligence techniques in planning. Development of algorithms for planning including flexibility resources and energy communities. Application in national (RSE) and international (SINTEF/NTU) contexts / Study of optimisation techniques and their applications to planning. Study of artificial intelligence techniques in planning. Development of algorithms for planning including flexibility services from consumers, producers and energy communities. Application in the national (RSE) and international context (SINTEF/NTU).
COMPANY	Ricerca Sistema Energetico S.p.A. Address: via Rubattino 25, Milano, Italy Contact person: Marco Rossi
NO. OF MONTHS TO BE SPENT IN THE COMPANY	6
FOREIGN INSTITUTION	SINTEF – NTNU (National Technical University Trondheim)
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
<b>SCHOLARSHIP 2 - CUP F22B24000250005</b>	
RESEARCH PROJECT	The energy trilemma in Sardinia
PRINCIPAL INVESTIGATOR	Prof. Fabrizio G. L. Pilo
DESCRIPTION OF DOCTORAL TRAINING	The training will be structured as follows: - Benefit from the educational offer of the PhD in Industrial Engineering. - Research activities at the partner company for the knowledge of the management of the national electricity system and the different active markets. - Research activities at the foreign institution for knowledge of the models used for estimating system service requirements and evaluating investment plans. - Preparation of scientific articles, communications at conferences.
COMPANY	TERNA S.p.A. Address: via Egidio Galbani 70, 00156 Roma, Italy Contact person: Ing. Chiara Vergine (Responsabile Real Time)
NO. OF MONTHS TO BE SPENT IN THE COMPANY	12
FOREIGN INSTITUTION	SINTEF - NTNU (National Technical University Trondheim)
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6