









INDUSTRIAL ENGINEERING	
CYCLE	XXXIX
COORDINATOR	Prof. Gianni ROYER CARFAGNI email: gianni.royer@unipr.it Department of Engineering and Architecture
DURATION	3 years
STARTING DATE OF THE PHD PROGRAM	01/11/2023
TRAINING OBJECTIVES	
The Industrial Engineering PhD program aims at giving to the participants a deep knowledge in the main topics relevant to industrial engineering. The PhD course presents numerical, analytical and experimental techniques, in order to face any technical or scientific problem of the industrial engineering, with managerial skills, to provide autonomy in work and readiness of inclusion in a collaborative environment with other researchers and technicians. The internationalization phase, envisaged in the three-year curriculum, allows to forge links with other foreign realities by providing to the graduate student an additional tool to get into a scientific context, not just limited by national borders	
RESEARCH AREAS	
<ul style="list-style-type: none"> Theoretical and applied mechanics, mechanics of materials and structures, material technology, machine design, measurements and diagnostics; Economic, organizational, managerial, logistics, plants and legal aspects in the field of engineering; Energy systems, thermo-fluid dynamics, fluid machinery, applied physics Industry 4.0 and future evolution 	
ADMISSION REQUIREMENTS	Regardless of age and citizenship, applicants holding at least one of the following academic qualifications can apply for admission: <ul style="list-style-type: none"> – Laurea specialistica or Laurea magistrale (second cycle master's degree) – Laurea Vecchio Ordinamento (degree obtained under the previous Italian regulations); – Second cycle Master's degree obtained abroad, equivalent to the above mentioned Italian degrees and recognized as suitable for the admission to doctoral program Undergraduates can also apply for admission to the selection, with the obligation to obtain the degree by 31.10.2023

POSITIONS PUT OUT TO COMPETITION*		15
(Modified by Rector Decrees n. 1320 of 19.07.2023 and n. 1397 of 28.07.2023)		
With Scholarship		12
Reserved to holders of Research Grant		1
Reserved for employees of affiliated companies or institutions engaged in highly qualified activities (with salary maintenance)		2
Position with Scholarship		
N°	Funding entity	Research Topic, if any
3	Scholarship funded by University of Parma (Ministerial funds)	---
1	Scholarship funded by University of Parma (University funds)	---
1	Scholarship co-funded by Fondazione Cariparma	---



Position with Scholarship LINKED TO SPECIFIC TOPICS (art. 11 of the Competition notice) (Modified by Rector Decrees n. 1320 of 19.07.2023 and n. 1397 of 28.07.2023)		
N°	Funding entity	BOUND RESEARCH TOPIC
1	Scholaship funded by EMILIA ROMAGNA REGION  The assignment of this scholarship is subject to the declaration of residence or domicile of the beneficiary in Emilia-Romagna	A knowledge-based Design for Disassembly methodology to enhance the circular economy of mechatronic products
1	Scholarship financed with funds under the PNRR– Mission 4 component 1 (Ministerial Decree 118/2023 art. 8 “PNRR Research”) CUP D92J2300019000 	Circular materials for eco-friendly packaging
1	Scholarship financed with funds under the PNRR– Mission 4 component 1 (Ministerial Decree 118/2023 art. 8 “PNRR Research”) CUP D92J23000190006 	Circular economy models, based on new patterns of collection, reuse, regeneration and recycling of textile waste, through the use of modern ICT technologies
1	Scholarship financed with funds under the PNRR– Mission 4 component 1 (Ministerial Decree 118/2023 art. 8 “PNRR Research”) CUP D92J23000190006 	Development of composites for multifunctional elements for aerospace applications, through the synergetic use of traditional and innovative materials, such as carbon nanotube fibres
1	Scholarship co-financed with funds under the PNRR - Mission 4 component 2 (Ministerial Decree 117/2023) and co-financed by the Company Casappa S.p.A. CUP D92J23000320004 	Development of experimental and numerical methodologies to increase the performance of positive displacement hydraulic machines
1	Scholarship co-financed with funds under the PNRR - Mission 4 component 2 (Ministerial Decree 117/2023) and co-financed by the Company AIRBUS Operations SAS CUP D92J23000320004 	Value Driven Design Methodology in the Conceptual Development of Aircraft Architectures
1	Scholarship co-financed with funds under the PNRR - Mission 4 component 2 (Ministerial Decree 117/2023) and co-financed by the Company GEA Mechanical Equipment Italia S.p.A. CUP D92J23000320004 	Development and study of an innovative predictive maintenance system for industrial plants and production lines based on the integration of local acquisition systems and sensor arrays by complex algorithms with target variables



Position reserved to HOLDERS OF RESEARCH GRANT	
N°	Subject area of the research
1	ING-IND/17 Mechanical Industrial Plants “Environmental Impact Analysis using LCA methodology of packaging technologies, with a main focus on the food sector, in order to find recyclable solutions with a low global impact in line with the principles and timelines dictated by the European Union”
Position reserved for EMPLOYEES of affiliated companies or institutions engaged in highly qualified activities (with salary maintenance)	
N°	Company/Institution
1	Reserved to employees of company Maffei Engineering S.p.A. for the project “Modelling and numerical implementation of advanced models for the calculation and testing of special structures characterised by non-linear behaviour, both geometric and constitutive”

ADMISSION PROCEDURES		
Assessment of QUALIFICATIONS: up to 70 points (a minimum score of 40 points shall be required to be admitted to the Oral Exam) ORAL EXAM: up to 50 points Minimum score for ELIGIBILITY: 70/120		
Foreign Language	Language the fluency of which shall be assessed during the Oral Exam The evaluation of the knowledge of this language will be oral and will consist in reading and translating of a scientific text	ENGLISH
ORAL EXAMINATION INDICATION		
Applicants admitted to the ORAL EXAM can take it either in PRESENCE or REMOTELY in Audio and Video Teleconference (Applicants who intend to take the Oral Exam remotely must submit a formal request, using the form attached to the competition notice)		
THE INTERVIEW MAY BE HELD ALSO IN ENGLISH		
LIST OF QUALIFICATIONS TO BE SUBMITTED AND THEIR ASSESSMENT		
MANDATORY DOCUMENTS TO BE ATTACHED TO THE ON-LINE APPLICATION		
ANNEX A	(art. 5 of the Competition notice)	
Identification Document	Scanned Copy of a valid identity document with photo (i.e. identity card, passport)	
Curriculum Vitae et studiorum	No specific CV format is required (see art. 4 of the Competition notice)	
Abstract of degree thesis	Abstract of the second cycle master’s degree thesis. Undergraduate applicants must submit the draft of the thesis approved by their supervisor (abstract/draft of the thesis: 10.000 characters including spaces)	
Academic Qualifications	Certificates and academic transcript of records for both Bachelor’ and Master’ degrees containing the following details for each degree held: (art. 4 of the Competition notice): University that granted the degree - Type of degree (first cycle/second cycle/single cycle) Name of the degree program - Date of graduation - Final mark - List of exams and corresponding scores (academic transcript of records) - Translation into Italian or English (only for degrees issued in languages other than Italian or English).	



Research Project	<p>Written in Italian or in English, according to the format attached to the competition notice, it will have to focus on an original research topic (unpublished, developed personally by the candidate. It should be noted that the Examination Board can use of IT tools useful for verifying the originality of the submitted Project).</p> <p>To identify the topic of the aforementioned project, the candidate may contact one of the Members of the Academic Board (available at: https://dia.unipr.it/it/node/2834).</p> <p><u>It does not represent a constraint with respect to the following choice of the doctoral thesis</u>, which will be assigned by the Academic Board.</p>	
LIST OF EVALUABLE QUALIFICATIONS (only qualifications attested by a document drawn up in Italian or in English)		
Curriculum Vitae et studiorum	<p>Including academic career and postgraduate experience, accompanied by a statutory declaration in lieu of the certification of the exams passed with the relevant marks, as well as the final graduation mark, both of the bachelor's and master's degrees</p> <p>The marks of the exams and the graduation mark will be the most relevant element of the evaluation.</p>	Up to 25 points
Graduation thesis	Consistency of the Master's Degree thesis with the doctoral program research topics	Up to 10 points
Research Project	<p>Points relating to the research project shall be allocated on the basis of the following criteria:</p> <ul style="list-style-type: none"> ○ Scientific value and or originality of the proposal ○ description and structure of the proposal ○ proposal feasibility 	Up to 15 points
Statement of Research Interest	Evaluation of the candidate's motivations to attend the doctoral course and congruity of the research interests with the research topics of the doctoral course.	Up to 5 points
Scientific Publications	Articles on national and international journals, contributions presented at conferences or symposia, book chapters. It is necessary to attach a copy to online application	Up to 5 points
Reference Letters	<p>A maximum of 2 written by professors or researchers at the University of origin of the candidate or from other universities or from experts in the research areas working in public or private research facilities.</p> <p>They must be sent directly by the signer to the address e-mail: elisa.pasquinelli@unipr.it indicating in the subject "Letter of presentation - Doctorate in Industrial Engineering (The candidate, therefore, must not upload them through the procedure of the competition online registration</p>	Up to 5 points
Other Academic qualifications	First or second level Master's degree obtained in Italy and/or specialization degree in subjects consistent with the research topics of this PhD program	Up to 2 points
Other experiences (training, work, research, teaching, etc.)	<ul style="list-style-type: none"> – Research activity (basic, applied, translational, etc.) carried out in any capacity, including when covered by research grant, and as a staff member of research units – Working activity – Professional and/or training internship – Language proficiency certificates – Periods of study abroad, outside the country of origin (e.g. Erasmus programme or other similar mobility programmes) – Other qualifications attesting the suitability of the applicants (scholarships, awards, etc.) 	Up to 3 points



ORAL EXAM		
Interview Program	Evaluation CRITERIA	POINTS
The ORAL EXAM includes the presentation of the research project and is intended to assess the suitability of the applicant to pursue scientific research as well as the general knowledge of issues connected to the PhD course	<ul style="list-style-type: none">○ research project presentation○ general knowledge of issues connected to the PhD course○ knowledge of foreign languages	Up to 50 points

SCHEDULE OF THE ADMISSION EXAMS		
It is the candidate's responsibility to verify the outcome of the evaluation of qualifications, which can be consulted in their reserved area by connecting to the page http://unipr.esse3.cineca.it/Home.do in the days preceding the date of the Oral Exam.		
ORAL EXAM	DATE	6 September 2023 (with possible extension in the following days)
	TIME	09:00 AM (Italian Time)
	PLACE	Meeting Room – Building 10 Department of Engineering and Architecture Parco Area delle Scienze, 181/A - Campus 43124 PARMA - ITALY
ALTRE INDICAZIONI	The choice of the Research Topic to be expressed in Annex A is not binding on the assignment of the research project, and it is intended to assess candidates skills during the admission exam. <u>The PhD research topic will be assigned by the Academic Board.</u> For foreign candidates, the admission examinations may be held in English at the candidate's choice.	