

DOCTORAL PROGRAMME IN INDUSTRIAL ENGINEERING

Director prof. Giampaolo Manfrida

XXXVI cycle – academic year 2020/2021

TECHNOLOGICAL AREA	
ADMINISTRATIVE OFFICE	Department of Industrial Engineering Florence (DIEF)
CURRICULA	<ol style="list-style-type: none"> 1. Energy and Innovative Industrial and Environmental Technologies 2. Design and development of Industrial Products and Processes 3. Industrial Engineering and Reliability 4. Science and Engineering of Materials
<p>POSITIONS AVAILABLE: 15 + 1 industrial doctoral position</p> <p>Positions with scholarship: 13 Positions without Scholarship: 2</p>	
SCHOLARSHIPS: 13	<p>6 - University of Florence</p> <p>5 - Department of Industrial Engineering Florence (DIEF)</p> <p>1 - co-funded by Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (INSTM) and Department of Industrial Engineering Thematic: "Nano-structured magnetic materials: development and applications"</p> <p>1 - co-funded by Consorzio RE-CORD and Department of Industrial Engineering Thematic: "Thermochemical conversion of fossil and organic feedstocks in bio-based or recycled carbon products and energy"</p>
RESERVED POSITION INDUSTRIAL DOCTORAL PROGRAMME: 1	Reserved position for Consorzio RE-CORD. employees
STUDY/RESEARCH PERIODS ABROAD	Mandatory only for positions with scholarship
MANDATORY PERIOD REQUIRED	3 months
DOCUMENTS REQUIRED FOR THE ADMISSION (under penalty of exclusion)	<ul style="list-style-type: none"> • Copy of the Identification Document • <u>Replacement Declaration Form</u> self-declaration for: <ul style="list-style-type: none"> - Italian Degree required for the access - transcript of records with marks (<i>for those candidates whose degrees will be awarded within the 31st October 2020</i>) - acknowledgment of compliance for any other qualification documents enclosed with the application

fact sheet updated on July, 6th 2020

- one additional position with scholarship funded by the Department of Industrial Engineering

- one Industrial Doctoral position

- two additional topics (the last two of the section "Thematics")

	<ul style="list-style-type: none"> Foreign Degree required for the access (<i>those candidates whose degrees will be awarded within the 31st October 2020 shall enclose the list of the examinations with individual marks per exam</i>) 																		
DOCUMENTS REQUIRED FOR THE EVALUATION	<p>MANDATORY</p> <ul style="list-style-type: none"> Title of the MSc degree Thesis (or equivalent) subscribed with the <u>Replacement Declaration Form</u> Curriculum Vitae Research project <p>OPTIONAL</p> <ul style="list-style-type: none"> Abstract of the MSc degree Thesis Scientific publications Any other additional qualification document 																		
REFERENCE LETTERS	A section is provided in the online application to specify the e-mail addresses of two professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D. course.																		
RESEARCH PROJECT	The research project must be written in Italian or English in NO MORE than 12,000 characters including spacing, abstract, introduction and references The project must be related, and should make specific reference, to one of the proposed work subjects listed in the below section " Thematics ".																		
EVALUATION PROCEDURE	<ul style="list-style-type: none"> Evaluation of curriculum vitae, research project, publications and /or other qualification documents Interview <p>As detailed in the section below "Evaluation Marks".</p>																		
OTHER LANGUAGES FOR THE INTERVIEW	English																		
INTERVIEW MODE	For candidates residing in Italy: in person For candidates residing abroad: by Google Meet or Skype																		
EVALUATION MARKS	<table border="1"> <thead> <tr> <th>parameter</th> <th>minimum score</th> <th>maximum score</th> </tr> </thead> <tbody> <tr> <td>Curriculum vitae; publications, other qualification documents</td> <td>12/120</td> <td>18/120</td> </tr> <tr> <td>Evaluation of the research project</td> <td>48/120</td> <td>62/120</td> </tr> <tr> <td colspan="3">Applicants who obtain a mark of at least 60/120 according to the minimum score for each parameter will be admitted to the interview.</td> </tr> <tr> <td>Interview: discussion of the project and publications (if any)</td> <td>20/120</td> <td>40/120</td> </tr> <tr> <td colspan="3" style="text-align: center;">Eligibility is achieved with a minimum score of 80/120</td> </tr> </tbody> </table>	parameter	minimum score	maximum score	Curriculum vitae; publications, other qualification documents	12/120	18/120	Evaluation of the research project	48/120	62/120	Applicants who obtain a mark of at least 60/120 according to the minimum score for each parameter will be admitted to the interview.			Interview: discussion of the project and publications (if any)	20/120	40/120	Eligibility is achieved with a minimum score of 80/120		
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THEMATICS	<p>Innovative solutions for geothermal energy conversion Evaluation and improvement of sustainable geothermal energy Flexible and distributed solutions for renewable energy with embedded storage Multiphase heat exchange in components for refrigeration Nanostructured materials for new technological applications Innovative control techniques for the next generation of internal combustion</p>																		

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	<p>engines</p> <p>Innovative Solutions for Energy storage systems application and liquified Natural Gas</p> <p>Low Cost micro-expanders for Energy recovery from Single and two-phase flows</p> <p>CFD HiFi methods for the aerodynamic and aeroacoustic analysis of turbomachinery components</p> <p>Numerical methods for the analysis and performance prediction of turbomachinery for industrial applications</p> <p>Advanced turbomachinery design techniques for industrial applications</p> <p>Development and integration of multidisciplinary numerical and experimental methodologies for the thermo-fluid dynamics development of high temperature components for industrial gas turbines and aero-engines with low environmental impact</p> <p>Development and integration of numerical and/or experimental multidisciplinary methodologies for the study of secondary air systems and stator/rotor cavities in industrial and aeronautical gas turbines.</p> <p>Innovative Risk Based Maintenance Models for Industrial Plants</p> <p>Development of IA and 3D vision-based systems for biomedical applications</p> <p>Thermochemical conversion of fossil and organic feedstocks in bio-based or recycled carbon products and energy</p> <p>Safer and/or environmentally friendly road vehicles</p> <p>Functional design of mechatronic systems with particular emphasis on wearable assistive and rehabilitative robotic devices</p> <p>Development of wear and fatigue models for railway applications</p> <p>Development of innovative mechanisms models</p> <p>Design and optimization of turbomachinery components</p> <p>Advanced solutions of physical and cognitive human robot cooperation</p> <p>Advanced models of bio-inspired social robots</p> <p>Motor cognitive tasks for the evaluation of prodromal phases in neurodegenerative diseases</p> <p>Study and analysis of noise abatement strategies through active control systems</p> <p>Advanced solutions for Thermodynamic Solar Energy Conversion</p> <p>Advanced solutions for coupled energy and water production</p> <p>Advanced 3D CAD modelling for industrial applications</p> <p>Design of mechatronic systems for the automotive sector</p> <p>Study of hydrogen introduction in gas turbines for the development innovative dedicated combustors also based on pressure gain combustion concept</p> <p>Methodologies for the optimization of thermal transients and exhaust hood in industrial steam turbines</p> <p>Methods and models for homecare service management and optimization</p> <p>Diagnostics and measurement for the characterization of electrical/electronics device.</p> <p>Analysis of solar thermal systems integrated with energy plant</p> <p>Analysis and Monitoring of energy consumption of industries</p> <p>Development, modelling and optimization of production processes</p> <p>Development of processes and technologies for biomass thermochemical conversion for energy production and the bioeconomy</p>
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Further information available at the following web page:
<https://www.dief.unifi.it/vp-344-dottorato.html>

EXAMINATION SCHEDULE			
	DATE	TIME	PLACE
INTERVIEW	September 9 th 2020	9:30 a.m.	Centro Didattico Morgagni Viale G. Morgagni 40 – Firenze Room 327
The list of the candidates admitted to the interview and the final ranking will be published online at the following web page: https://www.unifi.it/p11741.html			

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