



INFORMATION TECHNOLOGIES	
<b>CYCLE</b>	<b>XXXVIII</b>
<b>COORDINATOR</b>	Prof. Marco LOCATELLI email: <a href="mailto:marco.locatelli@unipr.it">marco.locatelli@unipr.it</a> Department of Engineering and Architecture
<b>DURATION</b>	3 years
<b>STARTING DATE OF THE PHD PROGRAM</b>	01/11/2022
<b>RESEARCH TOPICS</b> (The candidate <b>MUST mandatorily</b> indicate one research topic in the form ANNEX A and submit a RESEARCH PROJECT in the relevant field)	
<ul style="list-style-type: none"> <li>• Electronics instrumentation and electrical drives</li> <li>• Computer systems and automatic control</li> <li>• Telecommunications and electromagnetic fields</li> </ul>	
<b>TRAINING OBJECTIVES</b>	
The course aims at educating the future Ph.D.'s so that they will enter the research world with an active role, within both universities and industries.	
<b>ADMISSION REQUIREMENTS</b>	<p>Regardless of age and citizenship, applicants holding at least one of the following academic qualifications can apply for admission:</p> <ul style="list-style-type: none"> <li>– Laurea specialistica or Laurea magistrale (second cycle master's degree)</li> <li>– Laurea Vecchio Ordinamento (degree obtained under the previous Italian regulations);</li> <li>– Second cycle Master's degree obtained abroad, equivalent to the above mentioned Italian degrees and recognized as suitable for the admission to doctoral program</li> </ul> <p>Undergraduates can also apply for admission to the selection, with the obligation to obtain the degree within the deadline set for enrollment, that is <b>by 24.10.2022</b></p>

<b>POSITIONS PUT OUT TO COMPETITION</b>	<b>14</b>	With Scholarship	<b>11</b>
		Reserved to holders of Research Grant	<b>1</b>
		Reserved to holders of scholarship funded by foreign States	<b>1</b>
		Reserved for employees of companies or public institutes and research centers engaged in highly qualified activities	<b>1</b>
<b>Position with Scholarship</b>			
<b>N°</b>	<b>Funding entity</b>	<b>Research Topic, if any</b>	
<b>3</b>	Scholarship funded by University of Parma (Ministerial funds)	---	
<b>1</b>	Scholarship co-funded by Fondazione Cariparma	---	



Position with Scholarship LINKED TO SPECIFIC TOPICS (art. 11 of the Competition notice)		
During the Oral Exam, applicants may express and/or confirm their interest of being assigned a scholarship linked to a specific research topic. The Examination Board will evaluate their eligibility based on specific competences, experience and specific aptitudes of the applicants.		
N°	Funding entity	BOUND RESEARCH TOPIC
1	Scholarship partly financed with UNIVERSITY funds and co-financed by the Department of . Engineering and Architecture	<ul style="list-style-type: none"> <li>Study and implementation of control systems for collaborative robots</li> </ul>
1	Scholarship partly financed with UNIVERSITY funds and co-financed by the Department of . Engineering and Architecture	<ul style="list-style-type: none"> <li>Development and implementation of machine learning techniques for the online monitoring of optical communication links</li> </ul>
1	Scholarship financed with funds under the PNRR– Mission 4 component 1 ( <b>Ministerial Decree 351/2022 art. 7 “PNRR Research”</b> ) 	<ul style="list-style-type: none"> <li>Study and development of underwater communication systems based on visible light communication technology: channel modeling, performance evaluation in typical 6G scenarios, integration with terrestrial, wireless, and satellite networks</li> </ul>
1	Scholarship co-financed with funds under the PNRR - Mission 4 component 2 ( <b>Ministerial Decree 352/2022</b> ) and co-financed by the Company LAUMAS Elettronica S.r.l. 	<ul style="list-style-type: none"> <li>Development and implementation of advanced signal processing algorithms for the design of embedded systems based on microcontrollers or programmable logic devices, for load cells with high dynamic performance</li> </ul>
1	Scholarship co-financed with funds under the PNRR - Mission 4 component 2 ( <b>Ministerial Decree 352/2022</b> ) and co-financed by the Company eDriveLAB S.r.l. 	<ul style="list-style-type: none"> <li>Smart Converters for Hybrid and Electric propulsion and generation in Marine Applications (SCHEMA), with sensorless control and virtual sensing</li> </ul>
1	Scholarship co-financed with funds under the PNRR - Mission 4 component 2 ( <b>Ministerial Decree 352/2022</b> ) and co-financed by the Company LOOGOS S.r.l. 	<ul style="list-style-type: none"> <li>Machine Learning methods for early detection of anomalies in industrial machines and plants</li> </ul>
1	Scholarship co-financed with funds under the PNRR - Mission 4 component 2 ( <b>Ministerial Decree 352/2022</b> ) and co-financed by the Company STMicroelectronics S.r.l. 	<ul style="list-style-type: none"> <li>Design of ultra-low power analog and RF integrated circuits in CMOS technologies (bulk and FD-SOI) for IoT application</li> </ul>
Position reserved to HOLDERS OF RESEARCH GRANT		
N°	Subject area of the research	
1	<b>Academic discipline</b> ING-INF/05 “Information processing systems” <b>Research title:</b> Deep learning and generative models for sustainable and ecological agriculture	



Position reserved to HOLDERS OF SCHOLARSHIP FUNDED BY FOREIGN STATES	
N°	<i>University or Foreign State</i>
1	Reserved to holders of Qatar
Position reserved for EMPLOYEES of companies or public institutes and research centers engaged in highly qualified activities	
N°	<i>Company/Institution</i>
1	Reserved to employees of company Maps S.p.A.

<b>ADMISSION PROCEDURES</b>	<b>Assessment of QUALIFICATIONS:</b> up to 70 points (a minimum score of 30 points shall be required to be admitted to the Oral Exam) <b>ORAL EXAM:</b> up to 50 points <b>Minimum score for ELIGIBILITY:</b> 70/120
<b>Foreign Language</b>	Language the fluency of which shall be assessed during the Oral Exam: <b>ENGLISH</b> . The evaluation of the knowledge of this language will be oral and will consist of a brief interview on a technical topic (for example a translation of a scientific text).
<b>CANDIDATES ADMITTED TO THE ORAL TEXT CAN TAKE THE EXAM IN PRESENCE OR REMOTELY IN AUDIO AND VIDEO TELECONFERENCE</b>  (Candidates who intend to take the Oral Exam remotely must submit request, to this purpose, as per the model attached to the competition notice)	
<b>THE INTERVIEW MAY BE HELD ALSO IN ENGLISH</b>	
<b>LIST OF QUALIFICATIONS TO BE SUBMITTED AND THEIR ASSESSMENT</b>	
<b>MANDATORY DOCUMENTS TO BE ATTACHED TO THE ON-LINE APPLICATION</b>	
<b>ANNEX A</b>	(art. 5 of the Competition notice)
<b>Identification Document</b>	Scanned Copy of a valid identity document with photo (i.e. identity card, passport)
<b>Curriculum Vitae et studiorum</b>	No specific CV format is required (see art. 4 of the Competition notice)
<b>Abstract of degree thesis</b>	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)
<b>Qualifications</b>	<b>Certificates and academic transcript of records for both Bachelor' and Master' degrees</b> 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).
<b>Research Project</b>	Max 10.000 characters, written in English, it will have to focus on an original research topic and structured as follows: introduction of the problem in the scientific context, significance of the problem, expected results, argumentation. It does not represent a constraint with respect to the following choice of the doctoral thesis, that shall be defined together with the supervisor and approved by the Academic Board. However, this project must be prepared after having contacted and consulted one of the research groups related to the PhD course in Information Technologies (information on the research groups and their contacts can be found at <a href="https://dia.unipr.it/en/node/3080">https://dia.unipr.it/en/node/3080</a> ). <b>Failure to submit the project will result in exclusion from procedure for admission to the course.</b>



## FURTHER QUALIFICATIONS THAT MAY BE ATTACHED TO THE APPLICATION, IF IN POSSESSION OF THE APPLICANT

(only qualifications attested by a document drawn up in Italian or in English)

<b>Scientific Publications</b>	Articles on national and international journals, papers presented at conferences or symposia, book chapters etc.
<b>Reference Letters</b>	Maximum 2 letters and must be sent directly by the signer to the address e-mail: <a href="mailto:marco.locatelli@unipr.it">marco.locatelli@unipr.it</a> (The candidate, therefore, must not upload them through the procedure of the competition online registration)
<b>Other experiences (training, work, research, teaching, etc.)</b>	<ul style="list-style-type: none"> <li>– <b>Periods of study abroad</b>, outside the country of origin (e.g., Erasmus programme or other similar mobility programmes)</li> <li>– <b>Other qualifications</b> attesting the suitability of the applicants (scholarships, awards, etc.)</li> </ul>

### EVALUATION CRITERIA

QUALIFICATION	EVALUTATION CRITERIA	POINTS
<b>Curriculum Vitae et studiorum</b>	<p>Evaluation of the marks of the exams and of the master's degree mark (if available). The candidate is required to provide the average of the marks of all the exams of the master's degree, in addition to the details of the same</p> <p>It will also be evaluated the congruence of the degree obtained with the PhD themes.</p>	<b>Up to 25 points</b>
<b>Abstract of the Master's degree thesis</b>	It will be evaluated the congruence of the Master's Degree thesis with the doctoral program research topics	<b>Up to 5 points</b>
<b>Research Project</b>	<p>Points relating to the research project shall be allocated on the basis of the following criteria:</p> <ul style="list-style-type: none"> <li>○ Scientific value and originality of the proposal: max 10 points</li> <li>○ description and structure of the proposal: max 10 points</li> <li>○ proposal feasibility: max 10 points</li> </ul>	<b>Up to 30 points</b>
<b>Scientific publications</b>	Evaluation of the editorial position of the publication and its impact on the scientific community on the basis of the available indicators. It will be evaluated only publications from the past five years.	<b>Up to 5 points</b>
<b>Reference Letters</b>	Evaluation of the judgments reported in the reference letters.	<b>Up to 2 points</b>
<b>Other experiences</b>	Duration evaluation (for scholarships and internships), score (for the GRE test), prestige (for awards)	<b>Up to 3 points</b>
ORAL EXAM	EVALUATION CRITERIA	POINTS
The ORAL EXAM includes the presentation of the research project and is intend 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"> <li>○ knowledge of the foreign language: max 5 points</li> <li>○ research project presentation: max 25 points</li> <li>○ general knowledge of issues connected to the PhD course: max 20 points</li> </ul>	<b>Up to 50 points</b>



## SCHEDULE OF THE ADMISSION EXAMS

<b>ORAL EXAM</b>	<b>DATE</b>	15 September 2022 (with possible extension in the following days)
	<b>TIME</b>	10.30 AM (Italian Time)
	<b>PLACE</b>	Department of Engineering and Architecture Scientific Engineering Headquarters Parco Area delle Scienze, 181/A – Campus Universitario 43124 PARMA - ITALY
<b>OTHER INFORMATION</b>	For foreign candidates, the admission examinations may be held in English at the candidate's choice.  <b>For foreign candidates all documents written in a language other than Italian will have to be translated into English, otherwise they will not be evaluated</b>	