



## Annex 9

### PhD in Emerging Digital Technologies

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<b>Brief description</b>	<p>The PhD Programme in Emerging Digital Technologies is a full-time, mandatory attendance three-year programme with an interdisciplinary approach, which provides an exhaustive training path with structured teaching and supervised research activities with a view to producing an original thesis to discuss in a public examination.</p> <p>In line with the standards of excellence pursued by the School, the objective of the programme is to train a professional figure able to successfully integrate in both national and international public and private research facilities and in companies manufacturing products or service providers operating in the field of communication, information and perception technologies.</p> <p>For further information: <a href="http://www.santannapisa.it/en/education/international-phd-course-emerging-digital-technologies">http://www.santannapisa.it/en/education/international-phd-course-emerging-digital-technologies</a></p>	
<b>Language</b>	English	
<b>Duration</b>	3 years	
<b>Curricula</b>	<b>Embedded Systems</b>	design and development of software for real-time embedded systems
	<b>Photonic Technologies</b>	photonic integrated circuits, sensors, photonic communications and telecommunications networks
	<b>Perceptual Robotics</b>	Human-robot interaction systems, telerobotics and virtual environments
<b>Number of positions available</b>	<p><b>6 positions with scholarship, funded by Scuola Superiore Sant'Anna</b> divided among the curricula as follows:</p> <ul style="list-style-type: none"> <li>- curriculum <b>Embedded Systems: 2 positions</b></li> <li>- curriculum <b>Photonic Technologies: 2 positions</b></li> <li>- curriculum <b>Perceptual Robotics: 2 positions</b></li> </ul> <p>Furthermore, before the beginning of the Course, on the basis of specific agreements following positions may be activated:</p> <ul style="list-style-type: none"> <li>- positions dedicated to specific industrial research activities, in partnership with organisations and private companies;</li> <li>- positions intended for apprenticeship contracts, pursuant to article 11 of Italian Ministerial Decree no. 45/2013 and article 5 of Italian Legislative Decree 167/2011 (High-level Apprenticeship PhD);</li> <li>- positions reserved for employees of companies which perform research and development activities, pursuant to article 11 of Italian Ministerial Decree no. 45/2013 (Industrial PhD).</li> <li>- positions reserved to foreign recipients of scholarship.</li> </ul> <p>PhD positions mentioned above are reserved for eligible candidates under the provision of a grant or a scholarship, from a public or private sponsor, at least equal to the three years Sant'Anna scholarship (including canteen services, periods out of office and external research activities).</p>	



<p><b>Scholarship amount</b></p>	<p><b>Euro 16.000,00</b> gross paid to payee in deferred monthly instalments The gross amount includes social security contributions payable by the recipient.</p>
<p><b>Requirements for taking part in the competition (in addition to those under article 2 of the competition notice)</b></p>	<p>Candidates shall possess specific skills, certified by examinations taken in Bachelor's and Master's programmes, as defined for each curriculum in the "<i>Sheet of the skills required for admission to the International Phd in Emerging Digital Technologies</i>" attached below. The Assessment Board may admit candidates without some of the required skills to the PhD programme, appropriating debits which must be made up by the end of the first year of the programme.</p>
<p><b>Submission deadline for the online application</b></p>	<p>June 15<sup>th</sup>, 2017 at 1.00 p.m. (Italian time)</p>
<p><b>Documentation obligatory under penalty of exclusion, to be attached to the online application</b></p>	<p>Candidates should attach the following documents (all documents should be in pdf format with files named as specified below):</p> <ol style="list-style-type: none"> <li>1. Passport_Surname_Name.pdf: copy of a valid identity document. Non-EU candidates are required to attach a copy of their passport;</li> <li>2. Cv_Surname_Name.pdf: CV (in English or Italian), placing special emphasis on scientific training, professional experience, publications and any other information which can be used to assess the candidate;</li> <li>3. Transcripts_Surname_Name.pdf: certificate (in English or Italian) of the exams passed in the Bachelor's and Master's programmes, specifying corresponding credits and the marks received for each of them;</li> <li>4. Thesis_Surname_Name.pdf: copy of the MSc degree thesis (or an abstract of the thesis, with a photocopy of the cover page, in English or Italian), and of any other publication deemed of use for the assessment. Candidates who have not yet obtained the qualification should attach a copy of the degree thesis as a final draft to the application, or an abstract of the same;</li> <li>5. <b>only for candidates who obtained their qualification abroad:</b> copy of the Master's Degree Certificate or equivalent qualification translated into Italian or English unless written in French, German or Spanish;</li> <li>6. ResearchProject_Surname_Name: a detailed research plan in Italian or English of no more than 3000 words. It should be a three-year research plan including details of: <ul style="list-style-type: none"> <li>• the title of the research;</li> <li>• the scientific premises and relevant bibliography;</li> <li>• the aim and expected results of the research project;</li> <li>• experimental and data analysis methodologies, where necessary.</li> </ul> <p>The research plan submitted is not binding for the definition of the research plan to be carried out as part of the Programme;</p> </li> <li>7. References_Surname_Name (not mandatory, strongly recommended): up to two letters of reference (in English or Italian), written by university teaching staff who monitored the candidate's education during his/her university studies. Alternatively, the teaching staff may email letters of reference to phdtecip@sssup.it, by the deadline of the competition announcement, specifying "Candidate's surname and name – reference letter" as the subject of the email. It is the candidate's duty to make sure that the letters of reference are sent by the specified deadline;</li> <li>8. Other_Surname_Name: any other documents deemed useful for the assessment (for example, GRE certificates, certificates for course and internship attendance, etc.).</li> </ol>
<p><b>Test examinations</b></p>	<p><b>Qualifications and interview</b> Selection consists in the assessment of the qualifications submitted and an interview. The Board will award a score out of one hundred, from 1 to 100.</p>



	<p><i>Assessment of qualifications – maximum score possible: 70</i> The Examining Board will assess the CV of studies and any scientific qualifications submitted. The candidate's research plan will be assessed in terms of both quality and feasibility and relevance with respect to the lines of research specified in the "brief description" and "curricula" sections of this information sheet. Those candidates obtaining a score of at least 49/70 in the assessment of qualifications phase will be accepted for interview. The School will publish the list of candidates selected for interview and the relative schedule at .</p> <p><b>Candidates are not required to be present during the assessment of qualifications.</b></p> <p><i>Interview – maximum score possible: 30</i> The interview will consist in a discussion about the qualifications submitted, in particular the CV, and about the proposed research topics, as well as verification of the level of knowledge of the English language.</p> <p>Candidates obtaining a score below 21/30 in the interview will be excluded from the merit ranking list. The interviews will take place on the premises of the School, in the city of Pisa. In special cases, to be subjected to the opinion of the Board, the interview may be conducted as a video conference (for example using the software Skype). In this case, the candidate shall specify this choice in the application to take part in the competition, attaching a copy of his/her identity document which should include a clear photograph. The identity document used in the online form should be shown before the start of the test in order to enable identification of the candidate. Candidates should be prepared to conduct the interview throughout the whole day scheduled in the selection schedule, until their respective interviews take place. In the event of failure or problems with the connection, the Examining Board may decide to postpone the interview to another time, included within the test schedule. It is in any case the candidate's responsibility to make sure that required hardware (PC, webcam) and software are available and that there is a reliable internet connection. 70/100 is the minimum score for being added to the general merit ranking list.</p> <p>The School will notify only successful candidates of their admission to the School, using the email address given in the application; the said candidates will be required to confirm their acceptance by responding within 7 days, on pain of forfeiture and awarding of the position to the first suitable candidate on the ranking list.</p> <p>If positions are left empty in one of the curricula making up the Programme, the relative scholarships may be assigned to other curricula, according to the ranking list.</p>
<p><b>Test schedule</b></p>	<p>Publication of the list of those selected for interview: list will be published on <a href="http://www.santannapisa.it/phdedt-application">http://www.santannapisa.it/phdedt-application</a></p> <p>Interviews: dates will be published on <a href="http://www.santannapisa.it/phdedt-application">http://www.santannapisa.it/phdedt-application</a></p> <p>The general merit ranking list will be published on the page: <a href="http://www.santannapisa.it/phdedt-application">http://www.santannapisa.it/phdedt-application</a> by dates will be published on</p>
<p><b>Information</b></p>	<p><a href="mailto:phdtecip@sssup.it">phdtecip@sssup.it</a> tel. +39.050.882.189</p>



## SHEET OF THE SKILLS REQUIRED FOR ADMISSION TO THE INTERNATIONAL PHD IN EMERGING DIGITAL TECHNOLOGIES

Skills required for the Embedded Systems curriculum:

Basic Calculus
Fundamentals of Physics
Fundamentals of Computer Programming
Computer Architectures
Fundamentals of Digital Circuits
Automatic Control
Operating Systems

Skills required for the Photonic Technologies curriculum:

Profile A – Communication systems and devices	Profile B – Photonic Networks and control
Advanced Calculus	Advanced Calculus
Fundamentals of Physics	Fundamentals of Physics
Digital Communication Theory	Digital Communication Theory
Fundamentals of Optical Communications	Fundamentals of Optical Communications
Fundamentals of Optoelectronics	Computer Networks
Electromagnetic Fields and Propagation	Fundamentals of Computer Science
Fundamentals of Computer Programming	Fundamentals of Computer Programming

Skills required for the Perceptual Robotics curriculum:

Profile A – Virtual Environments	Profile B – Automation
Elements of Algebra and Analysis	Elements of Algebra and Analysis
Elements of Physics	Elements of Physics
Geometry	Signal Theory
Elements of Computer Programming	Theory of Dynamic Systems
Computer Architectures	Automation and Control
Operating Systems	Robotics
Profile C – Mechanics	Profile D – Perception
Elements of Algebra and Analysis	Elements of Algebra and Analysis
Elements of Physics	Fundamentals of Physics
Fundamentals of Applied Mechanics	Fundamentals of Computer Science
Fundamentals of Machine Design	Fundamentals of Computer Programming
Dynamics & Control	Dynamics & Control
Robotics	Robotics
Profile E - Mechatronics	
Elements of Algebra and Analysis	
Elements of Physics	
Mechatronics	
Fundamentals of Electronics	
Measurement and Data Analysis	
Elements of Artificial Intelligence	