

<b>PHYSICS</b>	
<b>Cycle</b>	<b>XXXII</b>
<b>Duration</b>	3 years
<b>Coordinator</b>	Prof. Cristiano VIAPPANI – Department of Physics and Earth Sciences E-mail: <a href="mailto:cristiano.viappiani@unipr.it">cristiano.viappiani@unipr.it</a>
<b>Research Topics</b> (the applicant MUST indicate ONLY ONE research topic)	<ol style="list-style-type: none"> <li>1. Perturbative and non-perturbative physics in quantum field theory: theoretical and computational features</li> <li>2. Quantum Control and Quantum Simulation</li> <li>3. Molecular technologies for multi-phase complex systems</li> <li>4. Development and characterization of novel semiconducting oxides</li> <li>5. Nanostructured materials for photocatalytic or optical applications</li> <li>6. Biophysical studies on bacterial photoreceptors of agronomic and biotechnological relevance</li> <li>7. High orders in Numerical Stochastic Perturbation Theory: renormalons and study of quasi conformal windows</li> <li>8. Metal surface fabrication with ultrashort laser pulses</li> <li>9. Modeling gravitational waves from compact binary mergers</li> <li>10. Carbon-based nanostructured materials for solid state hydrogen-storage</li> <li>11. Development of photosensitizing proteins for superresolution microscopy</li> <li>12. Experimental study of non-equilibrium transformations in cooking processes and definition of statistical models</li> </ol> <p>A detailed description of the themes is available at the address: <a href="http://www.difest.unipr.it/">http://www.difest.unipr.it/</a> along with the contact person for each of the proposed themes</p>
<b>Training objectives</b>	<p>The PhD in Physics, with a duration of 3 years, is established as a unifying element of the third-level University education in the Physics` area. Besides their main commitment to the research activity, students are supposed to spend a substantial part of their training period in attending advanced courses as well as national and international schools. Students are encouraged to spend part of their time abroad in order to participate in scientific collaborations in their fields of interest and follow advanced courses in support of their research program. During the three-years, teaching commitments are progressively reduced towards a full time engagement in the research activity. The evaluation of the training program is carried out - at the end of each year - through open seminars held by the students. The independent scientific research is expected to lead to publication of results in international, peer reviewed journals. The ultimate goal of the PhD in physics is a highly specialized scientific training that opens professional carriers in academic institutions and research laboratories, either public or private. The PhD in Physics is divided into three areas corresponding to major groups of disciplines of Physical Sciences covered by the research activity of the Department of Physics and Earth Sciences: Condensed Matter and Materials Physics, Theoretical Physics, Biophysics and Applied Physics.</p>

<b>Academic degree required</b>	Laurea pursuant to the previous university system, laurea specialistica or laurea magistrale, or a foreign academic qualification that has been recognized as equivalent.	
<b>POSITIONS PUT OUT TO COMPETITION</b>		
<b>With Scholarship</b>	7	
<b>Without Scholarship</b>	1	
<b>Reserved to holders of scholarship funded by foreign States</b>	1	
<b>TOTAL</b>		<b>9</b>
<b>KIND OF SCHOLARSHIP</b>		
<b>N°</b>	<b>Funding entity</b>	<b>Research Topic, if any</b>
3	Scholarship Ministerial funds	--
1	Scholarship University funds	--
1	Funded by INFN (the Italian National Institute for Nuclear Physics)	--
1	Funded by UNOX S.p.A.	• Experimental study of non-equilibrium transformations in cooking processes and definition of statistical models
1	Co-funded by Fondazione Cariparma	--
<b>Positions reserved to holders of scholarship funded by foreign States</b>		
<b>N°</b>	<b>Universities or Foreign State</b>	
1	University of Edinburgh (Scotland)	
<b>ADMISSION PROCEDURES</b>		
<b>Assessment of QUALIFICATIONS:</b> up to 50 points <b>ORAL EXAM:</b> up to 70 points <b>Minimum score for ELIGIBILITY:</b> 70/120		
<b>ADMISSION PROCEDURES for positions reserved to holders of scholarship funded by foreign States</b>	<b>Assessment of QUALIFICATIONS:</b> up to 120 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> .	
<b>Possibility of videoconference for candidates residing abroad</b> (the relevant request shall be submitted using the form attached to the competitive examination announcement)		<b>YES</b>
THE INTERVIEW MAY BE HELD ALSO IN ENGLISH		
<b>LIST OF QUALIFICATIONS TO BE SUBMITTED AND THEIR ASSESSMENT</b>		
<b>Graduation thesis</b>	Abstract of the graduation thesis. If the degree is pending the abstract must be signed by the Master supervisor. ( <b>mandatory qualification</b> )	<b>Up to 5 points</b>

<b>Curriculum Vitae et studiorum and other qualifications</b>	Including academic career and postgraduate experience, accompanied with a statutory declaration in lieu of the certification of the exams passed with the relevant marks, as well as the final graduation mark ( <b>mandatory qualification</b> )	<b>Up to 25 points</b>
<b>Research Project and Statement of Research Interest</b>	A brief text (max 3 pages) in English. The candidates must describe their research interests and outlay an original research project including a concise state of the art, the relevance of the problem and the expected results. Candidates are warmly invited to contact the potential supervisors listed at <a href="http://www.difest.unipr.it/">http://www.difest.unipr.it/</a>	<b>Up to 10 points</b>
<b>Other qualifications</b>	publications, awards, presentations to scientific meetings, stages, fellowships etc...	<b>Up to 10 points</b>

**LIST OF QUALIFICATIONS TO BE SUBMITTED AND THEIR ASSESSMENT –  
Positions reserved to holders of scholarship funded by UNIVERSITY OF EDINBURGH**

<b>Graduation thesis</b>	Abstract of the graduation thesis. If the degree is pending the abstract must be signed by the Master supervisor. ( <b>mandatory qualification</b> )	<b>Up to 30 points</b>
<b>Curriculum Vitae et studiorum and other qualifications</b>	Including academic career and postgraduate experience, accompanied with a statutory declaration in lieu of the certification of the exams passed with the relevant marks, as well as the final graduation mark ( <b>mandatory qualification</b> )	<b>Up to 60 points</b>
<b>Other qualifications</b>	publications, awards, presentations to scientific meetings, stages, fellowships etc...	<b>Up to 30 points</b>

**SCHEDULE OF THE ADMISSION EXAMS**

<b>ORAL EXAM</b>	<b>DATE:</b> 15 settembre 2016 <b>TIME:</b> starting from 10:00am in accordance with the schedule to be published on the website of the Department of Physics and Earth Sciences <a href="http://www.difest.unipr.it/">http://www.difest.unipr.it/</a> <b>PLACE:</b> Department of Physics and Earth Sciences – Physics building - Parco Area delle Scienze, 7/A – 43124 PARMA, ITALY
<b>Oral Exam topics</b>	The Oral Exam will focus on the description of the research work carried out to prepare the Graduation Thesis for the Laurea Magistrale/Specialistica, as well as of the research project that the candidate proposes to carry out within the research topics of the Research Doctorate Program in Physics at the Department of Physics and Earth Sciences of the University of Parma which are described at <a href="http://www.difest.unipr.it/">http://www.difest.unipr.it/</a>
<b>OTHER INFORMATION</b>	In the application to participate in the competitive examination, the candidate must choose and specify only ONE research. The above choice will be binding with regard to the winner's research activity.  For foreign candidates, the admission examinations may be held in English at the candidate's choice.