ADDENDUM TO THE CALL FOR APPLICATIONS - PH.D. COURSES – XXXVI CYCLE – UNIVERSITY OF CATANIA, ISSUED BY RECTOR’S DECREE N. 1730 OF JULY 7 2020

THE RECTOR

Having regard to the following:

- Ministerial Decree n. 45, 08/02/2013, “Regolamento recante modalità di accreditamento delle sedi e dei corsi di dottorato e criteri per la istituzione dei corsi di dottorato da parte degli enti accreditati”;
- The Regulation on Ph.D. courses currently in force the University of Catania;
- The Call for applications–Ph.D. Courses XXXVI cycle, issued by Rector’s Decree n. 1730 of July 7 2020 and successive modifications and integrations;
- Annex 7 of the aforementioned call concerning the Ph.D. course in “Computer Science”;
- Annex 8 of the aforementioned call concerning the Ph.D. course in “Systems, energy, computer and telecommunications engineering” as modified and integrated by the Rector’s Decree n. 2005 of July 30 2020;
- Annex 11 of the aforementioned call concerning the Ph.D. course in “Materials science and nanotechnologies”;
- Article 14, pt. 1, of the aforementioned call, which stipulates that the administration considers the possibility of modifications, updates or integrations - to be exclusively advertised through www.unict.it (section “Bandi, gare e concorsi” > “Studenti e Post laurea” > “Dottorati di ricerca”) - in case the number of places with scholarships, and consequently the number of places without scholarships, increases due to further funds made available after the issuing of this call, provided the respect of the terms of assignation of places to candidates on the pass list;
- The agreement concerning the grant of an additional scholarship for the Ph.D. course in “Computer Science” – XXXVI cycle by Enel Green Power S.p.A., stipulated on October 23 2020 with the aforementioned funding company;
- The agreement concerning the grant of an additional scholarship for the Ph.D. course in “Systems, energy, computer and telecommunications engineering” by Enel Green Power S.p.A., stipulated on October 23 2020 with the aforementioned funding company;
- The agreement stipulated on October 21 2020 with the National Council for Research and ST Microelectronics S.r.l., concerning the funding of an additional scholarship for the Ph.D. course in Materials science and nanotechnologies;
- The necessity of redefining the number of places related to the Ph.D. courses in “Computer Science”, “Systems, energy, computer and telecommunications engineering” and “Materials science and nanotechnologies” in consideration of the supervened availability of additional scholarships;
- The Decree of the Minister of Education, University and Research n. 800 of September 19 2019, registered on the same date with the University’s protocol system with n. 13798, according to which Prof. Francesco Priolo was appointed Rector of the University of Catania for six years as from the same date as the Decree;
- All this considered;

DECREES

UNIVERSITÀ DEGLI STUDI
DI CATANIA
Protocollo Generale

29/10/20

Prot. 347204............. Tit.VII Cl.1...

Rep. Decreti 3099.....................
The call for applications – Ph.D courses, XXXVI cycles of the University of Catania, issued by Rector’s Decree n. 1730 of July 7 2020, is integrated as follows:

Art. 1 The number of places with scholarships concerning the Ph.D. course in “Computer Science” is redefined as indicated in Annex 7, with the number of available places being increased by one (1) according to what is stated in the premises.

Art. 2 The number of places with scholarships concerning the Ph.D. course in “Systems, energy, computer and telecommunications engineering”, as integrated and modified by Rector’s Decree n. 2005 of July 30 2020, is redefined as indicated in Annex 8, with the number of available places being increased by one (1) according to what is stated in the premises.

Art. 3 The number of places with scholarships concerning the Ph.D. course in “Materials science and nanotechnologies” is redefined as indicated in Annex 11, with the number of available places being increased by one (1) according to what is stated in the premises.

CATANIA, 29/10/2020

The Rector
(Prof. Francesco Priolo)
<table>
<thead>
<tr>
<th>Title of the Ph.D. course</th>
<th>COMPUTER SCIENCE (INTERNATIONAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle</td>
<td>XXXVI</td>
</tr>
<tr>
<td>Scientific area</td>
<td>Mathematics, physics and natural science</td>
</tr>
<tr>
<td>Duration</td>
<td>3 years</td>
</tr>
<tr>
<td>Department</td>
<td>Department of Mathematics and Computer Science</td>
</tr>
<tr>
<td>Department website</td>
<td><a href="http://web.dmi.unict.it">http://web.dmi.unict.it</a></td>
</tr>
<tr>
<td>Ph.D. course Coordinator</td>
<td>Prof. Sebastiano Battiato</td>
</tr>
<tr>
<td>Partner Institution(s)</td>
<td>University of Hertfordshire (U.K)</td>
</tr>
</tbody>
</table>

**Research themes**

The 3-year Ph.D. course in Computer Science is primarily aimed at training young researchers in the domains of Computer science, both basic and applied, and developing professionals who can have career opportunities in the academic world as well as in the industry. The principal research themes concern:

- Algorithms and Combinatorics
- Artificial Intelligence
- Assistive Technologies;
- Autonomous Systems;
- Big Data;
- Computer Vision and applications;
- Cryptography and Safety Information;
- Information Forensics and Security;
- Pattern Recognition and Machine Learning;
- Smart Cities & Communities;
- Distributed systems;
- Video Analytics (e.g. Retail, Security, etc.)

**Available places**

<table>
<thead>
<tr>
<th>Available places</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Places with scholarship financed by the University of Catania: 4</td>
</tr>
<tr>
<td>2) Places with scholarship financed by TIM S.p.A.: 1</td>
</tr>
<tr>
<td>Research theme: 5G Digital Services &amp; Massive IoT</td>
</tr>
<tr>
<td>3) Places with scholarship financed by Enel Green Power: 1</td>
</tr>
<tr>
<td>Research theme: Development of a multifunctional integrated system for the collection, management and automatic and inferential processing of heterogeneous and multi-source data (e.g., systems of energy production, systems of analysis and measure, visual data, etc.)</td>
</tr>
<tr>
<td>4) Places without scholarship: 2</td>
</tr>
<tr>
<td>TOTAL: 8</td>
</tr>
</tbody>
</table>

**Selection procedures**

1) Evaluation of qualifications;
2) Oral examination
Candidates living abroad can take the form of videoconference interview

**Date, place, format and language of the oral examination**

Date: September 23 2020, h. 10:00 (10,00 a.m. Italian time)
Place: Department of Mathematics and Computer Science, via Santa Sofia n. 62, Catania
Format:
- Dissertation on the research project
- General knowledge of the themes of the candidate’s degree and/or the themes related to the Ph.D. course
Language: English
Annex n. 8

<table>
<thead>
<tr>
<th>Ph.D. Course</th>
<th>SYSTEMS, ENERGY, COMPUTER AND TELECOMMUNICATION ENGINEERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle</td>
<td>XXXIV</td>
</tr>
<tr>
<td>Scientific area</td>
<td>Industrial and Information Engineering</td>
</tr>
<tr>
<td>Duration</td>
<td>3 years</td>
</tr>
<tr>
<td>Department</td>
<td>Department of Electric, Electronic and Computer Engineering</td>
</tr>
<tr>
<td>Department website</td>
<td><a href="http://www.dieei.unict.it/">http://www.dieei.unict.it/</a></td>
</tr>
<tr>
<td>Ph.D. Course Coordinator</td>
<td>Prof. Paolo Arena</td>
</tr>
<tr>
<td>Partner Institution(s)</td>
<td>None</td>
</tr>
</tbody>
</table>

Research themes
The course provides candidates with a skill profile that associates technical-scientific training with the development of a research project to be carried out at highly qualified institutions, both national and international, or enterprises. The academic board is integrated by foreign academics who support candidates in their training and research work.

Available places
1) Places with scholarship financed by the University of Catania: 6
2) Places with scholarship financed by CNR-IMM e ST Microelectronics. S.r.l. within the project “Industrial Doctorates” sponsored by CNR and Confindustria: 1
   Research theme: “Development of data solutions for quality processes related to the industry of semiconductors”
3) Places with scholarship financed by the National Institute for Volcanology and Geophysics: 2
   Research theme 1: Volcanic monitoring of the space
   Research theme 2: Advanced analysis of space-time data for the recognition of volcanic dynamics
4) Places with scholarship financed by the Italian Institute of Social Security reserved to the children and orphans of users registered with the unitary system of social security credits and the children of retirees registered with the management of public employees: 1
   Research theme: Innovative Doctorates “Industry 4.0” : 5G network and Artificial Intelligence for an evolution toward Industry 4.0
5) Place with scholarship co-financed by the Department of Agriculture, Food and Environment and by the Department of Electric, Electronic and Computer Engineering: 1
   Research theme: Smart dairy farming: innovative solutions to improve herd productivity
6) Place with scholarship financed by the Department of Electric, Electronic and Computer Engineering: 1
   Research theme: Unsupervised learning methods and models for data in the medical sector
7) Place with scholarship co-financed by the Department of Electric, Electronic and Computer Engineering and by the National Institute of Astrophysics – Observatory of Catania: 
   Research theme: AI crossing the borders of Astronomy and Particle Physics: Unsupervised and Explainable Deep Learning Models for Discovery in SKA and DUNE precursors Big Data

8) Place with scholarship co-financed by the Department of Electric, Electronic and Computer Engineering, by the Department of Civil Engineering and Architecture and by the Department of Biomedical and Biotechnological Sciences: 
   Research theme: Safe Driving by E-Health Monitoring

9) Place with scholarship financed by the Department of Electric, Electronic and Computer Engineering: 
   Research theme: Information theoretical modelling of biological signalling, communication and networks

10) Place with scholarship financed by the Department of Electric, Electronic and Computer Engineering: 
    Research theme: Reinforcement Learning Models for Autonomous Robot Traversability and Navigation

11) Places with scholarship financed by Enel Green Power: 
    Research theme: Advanced integrated systems of check and monitoring of the performance of photovoltaic modules and systems for the prediction of solar plants lifetime

12) Places without scholarship: 

13) Places without scholarship reserved to graduates from foreign universities: 

TOTAL: 19

Selection procedures
1) Evaluation of qualifications
2) Oral examination

Date, place, format and language of the oral examination
Date: September 14 2020 h. 9,00 (9,00 am Italian time)
Place: Department of Electric, Electronic and Computer Engineering, viale Andrea Doria, n. 6, Catania
Format:
- Dissertation on the research project
- General knowledge of the themes of the candidate’s degree and/or the themes related to the Ph.D. course
Language: Italian or English
### ANNEX n. 11

<table>
<thead>
<tr>
<th>Ph.D. Course</th>
<th>MATERIALS SCIENCE AND NANOTECHNOLOGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle</td>
<td>XXXVI</td>
</tr>
<tr>
<td>Scientific area</td>
<td>Mathematics, Physics and Natural Science</td>
</tr>
<tr>
<td>Duration</td>
<td>3 years</td>
</tr>
<tr>
<td>Department</td>
<td>Department of Physics and Astronomy</td>
</tr>
<tr>
<td>Ph.D. Course Coordinator</td>
<td>Prof. Giuseppe Compagnini</td>
</tr>
<tr>
<td>Partner Institution(s)</td>
<td>None</td>
</tr>
<tr>
<td>Research themes</td>
<td>Materials and nanotechnologies for the environment, energy, health, electronics and photonics</td>
</tr>
</tbody>
</table>

#### Available places

<table>
<thead>
<tr>
<th>Ordinary places</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Places with scholarship financed by the University of Catania: 5</td>
</tr>
<tr>
<td>2) Places with scholarship financed by IMM-CNR: 1</td>
</tr>
<tr>
<td>3) Places with scholarship financed by CNR and ST Microelectronics S.r.l. within the project “Industrial Doctorates” sponsored by CNR and Confindustria: 1</td>
</tr>
<tr>
<td>4) Places without scholarship: 1</td>
</tr>
</tbody>
</table>

**TOTAL:** 8

#### Places reserved to graduates from foreign universities:

<table>
<thead>
<tr>
<th>Ordinary places</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Places with scholarship financed by the University of Catania: 1</td>
</tr>
</tbody>
</table>

**TOTAL:** 1

#### Selection procedures

1) Evaluation of qualifications;
2) Oral examination. Candidates living abroad can take the oral interview in the form of video-conference interview

#### Date, place, format and language of the oral examination

Date: September 23 2020, h. 9,00 (9 am Italian time)
Place: Dipartimento di Scienze Chimiche (Aula A), viale Andrea Doria n. 6, Catania

Format:
- Dissertation on the research project
- General knowledge of the themes of the candidate’s degree and/or the themes related to the Ph.D. course

Language: Italian and English