



# Sapienza PhD in ICT

Doctoral program in Information and Communications Technologies at Sapienza Università di Roma, Rome, Italy

## First Year Doctoral Program Form

<b>LAST NAME</b>	<b>Romano</b>
<b>NAME</b>	<b>Giulio</b>
<b>CURRICULUM</b>	<b>Electronic Engineering</b>
<b>DOCTORAL CYCLE</b>	<b>XXXI</b>

The Doctoral Program Form contains, year by year, the description of the PhD program of each Doctoral student. This form must be submitted to the PhD coordinator with roughly the following timing:

- by the end of February of the first year for first year students
- before the admission to the second year by perspective second year students
- before the admission to the third year by perspective third year students

The Doctoral Program Proposal is approved by the PhD board shortly after submission. The Doctoral Program requirements place formalized emphasis on methodology and mastery of fundamental and applied engineering systems concepts. A Doctoral Program Proposal should be constructed in agreement with the Faculty mentor, that is the supervisor or tutor, by complying to the requirements, described in the Tables below.

### ADVANCED COURSES: 12 CREDIT FORMATION UNITS (CFU)<sup>1</sup>

Only courses/schools providing a final verification test with pass/fail outcome certified by instructor can be included here.

Title	Type	Duration / period	CFU <sup>2</sup>	Motivation for selection
Neural Network	Master Degree Course	Start 29/09/2015 End 12/12/2015	6	With this course I can get the skill to simulate my project.
Fondamenti del sapere scientifico e tecnologico	PHD Course	Start 23/02/2016 End 10/03/2016	3	The course aims to provide the skills of creativity and innovation in a context in which that science and technology are characterized by problems of complexity and vastness.
La scrittura tecnico-scientifica	PHD Course	January 2017	4	Useful to improve the quality of scientific writing
<b>Total CFU</b>			<b>13</b>	

### SEMINARS AND LABORATORY ACTIVITIES: 6 CFU<sup>3</sup>

Activity	Type	Duration / period	CFU <sup>4</sup>	Motivation for selection
MemoCIS Whorkshop 3	Workshop	21/03/2016	1	This workshop is about the use of the memristor for different tasks. I think it is very useful to gain new knowledge for the use of memories for my project
Wodim 2015	Workshop	27-30/06/2016	3	This workshop is on Dielectrics in Microelectronics. I believe I can acquire new knowledge on the use of dielectrics to build memories.
Other seminars	Other		2	
<b>Total CFU</b>			<b>6</b>	

<sup>1</sup> Please insert lines as required/appropriate, and for each line complete each column of the Table.

<sup>2</sup> Indicate here the CFUs that can be accounted for as a result of the successful completion of the activity; for Master Degree courses, assume 1 CFU = 8 teaching hours + 12 homework/study hours, for a total of 20 hours. This rule can be slightly adjusted for other types of courses/activities (e.g., PhD courses may require slightly less hours per CFU)

<sup>3</sup> Please insert lines as required/appropriate, and for each line complete each column of the Table.

<sup>4</sup> Indicate here the CFUs that can be accounted for as a result of the successful completion of the activity; as a rule of thumb, assume 1 CFU = 20 working hours.

**ADDITIONAL INDEPENDENT FORMATION AND RESEARCH ACTIVITIES: 6 CFU<sup>5</sup>**


Indicate activities that extend and complement the mandatory activities listed above

Activity	Type	Duration / period	CFU <sup>6</sup>	Motivation for selection
Second MemoCIS Training School	School	6-9 May 2016	4	This school is focused on use of resistive memories. There will be courses on neural networks. Both are key topics for my research.
Other			2	
<b>Total CFU</b>			<b>6</b>	

**RESEARCH ACTIVITY: 36 CFU**

<b>Research area</b>	Memristors - Devices, Models, Circuits, Systems and Applications
<b>Research topic</b>	This research has as objective the analysis and simulation of innovative neuromorphic circuits of high density and low power consumption based on memristor RRAM.
<b>Framework of the proposed research topic</b>	Initially I will have to carry on the experimental characterization of different types of cells for the materials used; I will have to write the physical-electric model of the memory cells RRAM, declined for applications in neuromorphic circuits. Then I will need to extract the electrical parameters voted to the memory cell used as a synapse and I will find one or more behavioral models simplified for the implementation of a high number of neural networks.
<b>Research environment</b>	Institute of Neuroinformatics - University of Zurich - Prof. Indiveri ECS - University of Southampton – Prof. Prodromakis

**FACULTY MENTOR (TUTOR OR SUPERVISOR)**

<b>Prof. Dr.</b>	Fernanda Irrera
Supervisor signature for approval	

Signature of Doctoral student



Date

23/03/2016

<sup>5</sup> Please insert lines as required/appropriate, and for each line complete each column of the Table.<sup>6</sup> Indicate here the CFUs that can be accounted for as a result of the successful completion of the activity; as a rule of thumb, assume 1 CFU = 20 working hours.