



Sapienza PhD in ICT

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

First Year Doctoral Program Form

LAST NAME	Ferranti
NAME	Ludovico
CURRICULUM	ICT
DOCTORAL CYCLE	XXXI

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)¹

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

Title	Type	Duration / period	CFU ²	Motivation for selection
ECE 5606 Micro and Nano Fabrication (Northeastern University)	Master Degree course	45 hours in 3 months (Spring 2016 semester)	8	Miniaturization is the key factor to achieve pervasive and efficient microrobotics system. The need of designing and fabricating smaller sensors and transceivers to enforce new communication devices made me choose this course.
ECE 5698: Special topics in Wireless Sensor Networks and the Internet of Things (Northeastern University)	Master Degree course	45 hours in 3 months (Spring 2016 semester)	8	As communications possibilities are being exploited in all everyday objects, I felt the need to have a more advanced study in the matter of Wireless Sensor Networks and the Internet of Things. Protocols and state-of-the-art technology were studied during the course.
Total CFU			16	

SEMINARS AND LABORATORY ACTIVITIES: 6 CFU³

Activity	Type	Duration / period	CFU ⁴	Motivation for selection
Edward W. Knightly (Rice University) – "Diverse Spectrum Wi-Fi: Research Advances and Global Trials"	Seminar	1 hour	2	As prof. Knightly were visiting Electrical and Computer Engineering Faculty at Northeastern University as a Distinguished Speaker, getting to know how advanced technology on various spectrum's frameworks represent an interesting opportunity to understand this topic research challenges.
Destination Europe: Your Research and Innovation opportunity in Horizon 2020 Framework	Seminar	8 hours	2	In the perspective of Horizon 2020 Research Programme, several European Research opportunities were presented in this conference, with representatives from the most important European research Institutes (France, Switzerland, Belgium, Ireland, Spain, Germany, Sweden, Italy, Czech Republic, Poland, Netherlands).

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

² 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)


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

⁴ 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.

Total CFU			4	

ADDITIONAL INDEPENDENT FORMATION AND RESEARCH ACTIVITIES: 6 CFU⁵ Indicate activities that extend and complement the mandatory activities listed above				
Activity	Type	Duration / period	CFU⁶	Motivation for selection
Seminars on robotics and wireless sensor networks	Seminar		6	
Participation to workshops and conferences	Workshop		6	
Tutoring for Network Infrastructures MS course			2	
Total CFU			14	

RESEARCH ACTIVITY: 36 CFU	
Research area	Wireless sensor networks
Research topic	Microrobotics and Internet Of Things. Building a prototype of networked microrobot using ultrasound communication for biomedical purposes.
Framework of the proposed research topic	Investigating which would be the main challenges in miniaturization and communication using ultrasounds in a human body.
Research environment	Expected collaborations with nanotechnology research groups at Northeastern University, Boston, MA, where I spent a semester in the WINES Lab to get a deep and comprehensive knowledge about ultrasounds communication.

FACULTY MENTOR (TUTOR OR SUPERVISOR)	
Prof. Dr.	Francesca Cuomo
Supervisor signature for approval	

Signature of Doctoral student



Date

28/02/2016

⁵ Please insert lines as required/appropriate, and for each line complete each column of the Table.

⁶ 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.