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	Nardi
NAME	Luca
CURRICULUM	Radar and Remote Sensing
DOCTORAL CYCLE	XXXIV

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
Telerilevamento, held by Professor Gianluigi Liberti at Tor Vergata University	Master's Degree Course with final exam	64 hours, October-December 2019	8	This course is strictly related to the topic of my PhD project, since it is deeply focused on theoretical and practical application of remote sensing methods, radiative transfer issues and retrieval techniques
Chemodinamica dell'atmosfera, held by Professor Francesca Costabile at Tor Vergata University	Master's Degre Course with final exam	64 hours, October-December 2019	8	This course provides a theoretical knowledge of the photochemical, optical and scattering properties of the atmosphere; these knowledges are applicable to Martian atmosphere, too, and are essential in the interpretation of data and results
Total CFU			16	

SEMINARS AND LABORATORY ACTIVITIES: 6 CFU[3]

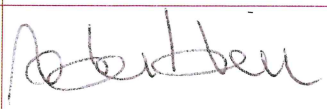
Activity	Type	Duration / period	CFU[4]	Motivation for selection
NOMAD Science Working Team meeting at ASI	Seminar and Workshop	4 days	2 CFU	This is a seminar and a workshop related to the state of the art on the analysis of NOMAD data, on which the research project is based
EPSC-DPS joint meeting at Geneva, Switzerland	Congress	6 days	3 CFU	This is the main European meeting for planetary science, in which I plan to participate and to presents the first results from my research activity
IAPS seminars	Seminars	2 times a month	1 CFU	Short seminars held by researchers of the INAF-IAPS at ARTOV that explain the state of the art and issues of their researches and projects. This is useful to be up to date on the current research in the planetary science environment

[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.

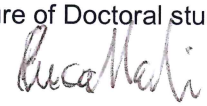
Total CFU	6	

ADDITIONAL INDEPENDENT FORMATION AND RESEARCH ACTIVITIES: 6 CFU[5] Indicate activities that extend and complement the mandatory activities listed above				
Activity	**Type**	**Duration / period**	**CFU[6]**	**Motivation for selection**
Communicating your results to your colleagues and the pubblic" (prof. Amedeo Balbi, Tor Vergata)	Course for PhD students	5 lectures in May (days TBD)	0.5	The lectures will cover different aspects of how to effectively communicate scientific results to colleagues (in particular in technical papers and seminars) and to the general public. These are fundamental skills related to research activity and hence are of particular interest for my career.
Total CFU				

RESEARCH ACTIVITY: 36 CFU	
Research area	Atmospheric remote sensing for planetary sciences
Research topic	NOMAD/TGO and PFS/MEX joint analysis for trace gases retrieval in the Martian atmosphere
Framework of the proposed research topic	Study and review of the instrumentations (NOMAD and PFS), of the available data and of their calibration state. Study of the retrieval techniques using a Bayesian approach and of the issues of atmospheric sounding. Development of informatic tools in IDL to extract NOMAD data and HITRAN spectral database data: the latter will bring to build an absorption coefficient database that will be used to create synthetic spectra needed to perform the retrievals. First retrievals with NOMAD data will be performed during the first year.
Research environment	The whole activity is performed in collaboration with the PFS and NOMAD PI team at the Institute of Planetology (IAPS-INAF) in ARTOV, via Fosso del Cavaliere 100, Rome. Together with my tutor at DIET department Prof. Roberto Seu, Dr. Marco Giuranna at IAPS will supervise the development of my research activity.

FACULTY MENTOR (TUTOR OR SUPERVISOR)	
Prof.	Roberto Seu
Supervisor signature for approval	

Signature of Doctoral student



Date13/02/2019

[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.