UNIVERSITÀ DEGLI STUDI FIRENZE

AREA
SERVIZI ALLA DIDATTICA
Dottorato

ANNEX 1 to the Ph.D. Call for admission to the Doctoral Programmes

Cycle 33rd – Academic Year 2017/2018

Summary

BIOMEDICAL AREA

DOCTORAL PROGRAMME IN DRUG RESEARCH AND INNOVATIVE TREATMENTS

Coordinator Prof. Carla Ghelardini

Administrative office: Department of Neuroscience, Psychology, Drug Research and Child Health (NEUROFARBA)

Curricula:

1) Pharmaceutical Sciences
2) Pharmacology, Toxicology and Innovative Treatments

No. of Positions: 8

Scholarships: 6
5 University of Florence
1 University Hospital Meyer

Positions with no scholarship: 2

Evaluation of applicants:
applicants will be selected by written and oral examination (cfr. Article 12, paragraph 1, sub-paragraph a) of Doctoral Regulation n. 670 of July 4th 2013).
With regards to the written examination the applicants will be asked to discuss a particular theme choosing one of the texts proposed.

Themes for the examinations relating to the curriculum of the Pharmaceutical Sciences:
The **written examination** will be characterised by the completion of an essay on design and synthesis, or molecular modelling or analysis or pharmaceutical technology, of pharmacologically active molecules of natural or synthetic origin.
The **oral examination** will be centred on the discussion of the theme chosen by the applicant as well as the discussion of any research project that the applicant may present at the moment of the oral examination.

Themes for the examinations relating to the curriculum in Pharmacology, Toxicology and Innovative Treatments:
The **written examination** will be characterised by the completion of an essay on general pharmacology.
The **oral examination** will focus on the discussion of the theme chosen by the applicant, as well as the discussion of any research project that the applicant may present at the moment of the oral examination.

Foreign language in which the examinations can be done: **English.**

Documents to be attached to the application form:

- research project (optional).

TUSCAN Ph.D. IN NEUROSCIENCES

Coordinator Prof. Felicita Pedata

Regione Toscana Pegaso Project – Partner Universities: University of Florence, University of Pisa, University of Siena.

Administrative office: Department of Neuroscience, Psychology, Medicine and Child Health (NEUROFARBA)

No. of Positions: 12

Scholarships: 9

5 University of Florence

4 Regione Toscana Pegaso Scholarships 2017

one of which is a position reserved to the following specific research topic: "Technological innovation in vitreoretinal surgery and retinal prosthesis implant".

Positions with no scholarship: 3

Pegaso Scholarships 2017 holders are due to perform a mandatory study/research period abroad of at least 12 months (not necessarily uninterrupted).

Evaluation of applicants:

Applicants will be selected by oral examination (cfr. Article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013). The oral test will be as well intended to verify candidates knowledge of the English language (level B2 or higher). Selection of applicants will follow a two-step evaluation (see scheme below).

Step 1) Preselection for admission to the oral examination:

The Committee will evaluate:

1) CV (European format) with indication of qualifications (e.g. awards, certificates of research experience and/or attendance of courses relevant to Neuroscience) and all publications of the applicant.

2) Publications by the applicant attached to the application. Publications will contribute for a maximum of 3 (three) points. Technical reports and Specialization thesis are not evaluated and should not be uploaded.

3) Research project in English. In this phase the project will be evaluated for its coherence with the Doctorate in Neurosciences and for its feasibility, in general and within the Tuscan PhD in Neurosciences Program. (Note: the project presented will not necessarily be accepted as the thesis project for the applicant, should he/she be accepted in the PhD Program).

Applicants receiving a score of at least 30/40 will be admitted to the oral examination.

Step 2) Oral examination:

The **oral examination** will focus on a discussion of the research project presented.
Good knowledge of spoken and written English is required.
The examination can be taken in **English** or **Italian.**

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

Applicants receiving a score of at least 50/80 in the oral examination will enter the final ranking list.

Evaluation steps:

Parameter	Maximal score
Preselection:	
Curriculum vitae, qualifications, publications, Research Project redaction	40/120
Applicants obtaining a score of at least 30/40 in the evaluation of CV, publications and redaction of the research project will be admitted to the oral examination	
Oral examination: discussion of the research project to assess applicant's aptitude for research	80/120
The oral examination is passed with a score of at least 50/80	

The list of candidates admitted to the oral test will be published online at the following website page

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"

Note on applications for the "specific research topic scholarship":

Research Project:
In the application forms, the candidate should indicate whether he/she wants to participate to the selection for the regular Scholarships, the "specific research topic" Scholarship, or both. In the latter case, the candidate may submit two different research projects indicating, in the file name of the additional one, "specific research topic scholarship".

Documents to be attached to the application:

- CV (European format) with indication of qualifications and all publications of the applicant.
- Publications by the applicant submitted for evaluation in step 1.
- Research project in English (six pages maximum including references).
- Pegaso Scholarships 2017 – application for specific research topics **Annex A** (rtf - pdf)

Filename of files to be uploaded should include the applicant's surname and name

DOCTORAL PROGRAMME IN BIOMEDICAL SCIENCES

Coordinator: Prof. Massimo Stefani

Administrative office: Department of Experimental and Clinical Biomedical Sciences

Curricula:

1. Human Morphology and Morphogenesis
2. Functional Biology of Biomolecules and Biosystems
3. Physiological and Nutritional Sciences
4. Experimental Phatology
5. Endocrinological, Molecular and Regenerative Biotechnologies
6. Biomedical Sciences of Developmental Age

Number of positions: 8

Scholarships: 6 University of Florence

Positions with no scholarship: 2

Evaluation of applicants:

applicants will be selected following oral examination and evaluation of *curriculum vitae*, publications and other qualification documents, as well as the research project, according to the following scheme (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

Scoring criteria:

parameter	minimum score	maximum score
curriculum vitae, publications and other qualification documents (if any)	15/120	20/120
research project	25/120	40/120
oral examination: discussion of the project and publications (if any)	40/120	60/120
To be admitted to oral examination, each applicant must reach a minimum score of 40 in the curriculum/publication/project parameters. *Eligibility is achieved with a minimum score of 80/120*		

The list of candidates admitted to the oral test will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"

Documents to be attached to the application form:

- *curriculum vitae et studiorum*;
- publications and other qualification documents (if any);
- research project, **written in English** and of **maximum 12,000 characters** including spaces, which must include summary, introduction, methodology, expected results and references. The project must refer **specifically to one or more** of the working **themes** listed below.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

Themes to which the research projects of the applicants must be linked:

Curriculum	**Theme**
Human Morphology and Morphogenesis	1) Systematic and topographic anatomy 2) Applied anatomy: diagnostic imaging and semeiotics 3) Morpho-functional histology and cytology 4) Embryology and organogenesis 5) Histo-chemistry
Functional Biology of Biomolecules and Biosystems	1) Protein biophysics 2) Cell biology of amyloids 3) Biophysics of lipid bilayers and biomembranes 4) Yeast proteomics 5) Anti-aggregation power of natural compounds
Physiological and Nutritional Sciences	1) Muscle biophysics 2) Neurophysiology 3) Pathophysiology of nutrition 4) Adaptation to muscle activity and sport
Experimental Pathology	1) Cellular and molecular mechanisms of cancer onset and progression 2) Cancer stem cells: characterization and targeting 3) Innovative approaches to cancer diagnosis and prognosis 4) Mechanisms of microbial patogenicity 5) Antimicrobial drugs: mechanisms of action and resistance 6) Molecular and cellular mechanisms in ageing and longevity
Endocrinological, Molecular and Regenerative Biotechnologies	1) Physiopathology of the male reproductive system and accessory glands 2) Genetic aspects of male infertility 3) Control mechanisms of human spermatogenesis 4) DNA fragmentation in human spermatozoa: biochemical mechanisms and clinical meaning and significance 5) Adrenal physiopathology 6) Physiopathology of fat tissue
Biomedical Sciences of Developmental Age	1) Clinical biochemistry 2) Pediatrics 3) Hygiene and Public Health 4) Orthodontics 5) Preventive medicine

DOCTORAL PROGRAMME IN CLINICAL SCIENCES

Coordinator Prof. Marco Matucci Cerinic

Administrative office: Department of Experimental and Clinical Medicine

Curricula:

1) Clinical Pathophysiology and of Aging and Nursing Sciences
2) Clinical and Experimental Medicine
3) Pathology and Clinic of the Locomotor Apparatus and the Calcified Tissues
4) Anaesthetic and Surgical Sciences
5) Psychology and Pain Management

Number of positions: 9

S**cholarships: 7**

6 University of Florence

1 Tuscany Transplants Organization (OTT) - University Hospital Careggi- Theme: "Identification of strategies to implement education and research in transplantation and organ donation".

Positions with no scholarship: 2

Evaluation of applicants:

Applicants will be selected by written and oral examination with evaluation of their curriculum and any additional qualification documents (article 12, paragraph 1, sub-paragraph b) of Doctoral Regulation n. 670 of July 4th 2013).

The evaluations may be also made in the following foreign language: **English**.

Mandatory documents to be included with the application form:

- curriculum vitae et studiorum;
- references and other qualification documents (if any),i.e. honours, prizes, participation to boards etc;
- the research project (if any) which the applicant wishes to submit to the committee, **written in English** with a **maximum of 12,000 characters including spaces.** The project should be structured as follows**:** summary, introduction, methodology, expected results and references. The project must refer specifically to the subject of one of the curriculum which the candidate will choose. The project is therefore a document which will help the committee to evaluate the attitude of the applicant for research.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the PHD course they are interested in.

SCIENTIFIC AREA

DOCTORAL PROGRAMME IN PHYSICS AND ASTRONOMY

Coordinator Prof. Raffaello D'Alessandro

Administrative office: Department of Physics and Astronomy

No. of Positions: 13

Scholarships: 11

5 University of Florence

1 of which is reserved for those applicants who have obtained at a foreign University the degree necessary for admission to the Ph.D. school, according to art.1, paragraph 2, of the Ph.D. call

2 Istituto Nazionale di Fisica Nucleare (I.N.F.N.)

1 Istituto Nazionale di Astrofisica (I.N.A.F.) - Osservatorio Astrofisico di Arcetri
Theme "Studies on formation and evolution of galaxies and galaxy clusters, stellar formation, stellar clusters, and astrobiology"

1 Istituto Nazionale di Astrofisica (I.N.A.F.) - Osservatorio Astrofisico di Arcetri
Theme "Studies on stellar formation using submillimetre astronomy"

1 Department of Physics and Astronomy Funded by project PRIN 2015L33WAK
Theme: "Advanced Atomic Interferometer for Experiments on Gravity, Quantum Physics, and Geophysical Applications".

1 Department of Physics and Astronomy

Positions with no scholarships: 2

Evaluation of applicants:
applicants will be selected by oral exam, after evaluation of their curriculum, of their other academic or professional qualifications, of their research project, and of the two accompanying reference letters, using a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013)

Admission exam evaluation marks:

Titles and qualification documents	**maximum score**
CV, list of taken exams with grades and thesis title	34/120
Publications and qualification documents	6/120
Research project	8/120
Applicants who obtain a mark of at least 32/120 in the evaluation of the above parameters will be admitted to the oral exam	
Oral exam	**maximum score**
Oral exam: discussion of the research project, the qualification documents presented and publications	72/120
Successful applicants must obtain a mark of at least 48/120 in the oral exam	

The list of candidates admitted to the oral test will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"
The exam may be conducted in the following foreign language: **English**.

For applicants who are not resident in Italy, it will be possible to perform the oral exam remotely using Skype, but only if so requested at the time of the online application.

Documents to be attached to the application form:

- curriculum vitae et studiorum,
- declaration, in lieu of certification, of the list of taken exams with accompanying grades for the Bachelor of Science (B.Sc.) and for the Master of Science (M.Sc.) degrees (or equivalent), and the title of the thesis,
- list of publications,
- research project (max 2 pages),
- qualification documents,
- Candidates must specify in their applications the e-mail addresses of two University professors/researchers, one preferably the Supervisor of his/her Master Degree Thesis (or equivalent), willing to provide information about the training received and activities performed within a scientific field related to the PhD course of interest.

INTERNATIONAL DOCTORATE IN ATOMIC AND MOLECULAR PHOTONICS

Coordinator Prof. Francesco Saverio Cataliotti

Administrative office: Department of Physics and Astronomy

Partner Institutions: Universidad Complutense de Madrid, Imperial College of London

No. of Positions: 8

Scholarships: 6

1 University of Florence

4 European Laboratory for Non-linear Spectroscopy (LENS)

1 European Laboratory for Non-linear Spectroscopy (LENS) – Project: UE ERC Starting Grant n.337135 Q-SEnS2 – Theme: " Quantum Control of Spin Systems for Enhanced Sensing".

Positions with no scholarship: 2

Evaluation of applicants:
applicants will be selected by: a) oral examination, which will also include the discussion and evaluation of their research project; b) evaluation of their curriculum and of any other qualification document. The score system is specified below (article 12, paragraph 1, sub-paragraph c) of the Doctoral Regulation of July 4th 2013.
The oral examination will be carried out in **English**.

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

Scoring of applicants:

parameter	minimum score	maximum score
Oral examination	40/120	60/120
Research project	27/120	40/120
Curriculum vitae, qualification documents and publications (if any)	13/120	20/120
Eligibility is achieved with a minimum score of 80/120		

The list of candidates admitted to the oral test will be published online at the following website page

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"

Documents to be attached to the application form:

- research project, concerning a possible topic of research to be carried on in the doctorate period (two A4 pages);
- curriculum vitae;
- list of publications;
- any additional qualification document.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

The research project, the curriculum vitae and the qualification documents must be written in English.

During their three year PhD course the selected applicants will have to spend at least three months in foreign laboratories.

INTERNATIONAL DOCTORATE IN STRUCTURAL BIOLOGY

Coordinator Prof. Claudio Luchinat

Administrative office: Magnetic Resonance Center (CERM)

No. of Positions: 5

Scholarships: 4

1 University of Florence

3 Interuniversity Consortium for Magnetic Resonance of Metallo Proteins (CIRMMP)

Positions with no scholarship: 1

Evaluation of applicants:
applicants will be selected by oral examination, evaluation of their curriculum, of any other qualification document, and of their research project, through a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

The evaluation will be held in **English**.

Scoring of applicants:

parameter	Minimum score	maximum score
Curriculum vitae, any other qualification document and research project	40/120	60/120
Oral examination	40/120	60/120
Eligibility is achieved with a minimum score of 80/120		

The list of candidates admitted to the oral test will be published online at the following website page

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti

Documents to be attached to the application form:

- curriculum vitae;
- any additional qualification document and publications;
- research project.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers, willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

All the documentation requested must be written in **English** (on pain of exclusion).

The research project will be discussed and evaluated during the oral examination. The project must describe a possible research activity to develop in the three years of the doctorate.

During their three year PhD course the selected applicants can be asked to spend at least three months in foreign Research Institutes.

DOCTORAL PROGRAMME IN MATHEMATICS, COMPUTER SCIENCE, STATISTICS

Coordinator Prof. Paolo Salani

Administrative office: Department of Mathematics and Computer Science "U. Dini" (DIMAI)

Partner Institutions of the Consortium: University of Perugia, Istituto Nazionale di Alta Matematica"F.Severi" (INDAM)

Curricula:

1) Mathematics
2) Computer Science
3) Statistics

No. of Positions: 13

Scholarships: 11

6 University of Florence
3 University of Perugia
2 Istituto Nazionale di Alta Matematica"F. Severi" (INDAM)
3 of which are reserved to applicants who have obtained in a foreign University the degree that is necessary to be admitted to the Ph.D. courses, according to art.1, paragraph 2, of Ph.D Call.

Positions with no scholarship: 2

Evaluation of applicants for standard positions:
Applicants will be selected through written and oral examinations, along with the evaluation of the curriculum, of possible qualification documents and of the research project (article 12, paragraph 1, sub-paragraph b) of Doctoral Regulation of July 4th 2013).

Reserved Positions *according to art.1, paragraph 2, of Ph.D Call* **: evaluation of applicants.**
Applicants will participate to a competition based on the evaluation of their own curriculum, scientific qualifications and research project. The Admission Board may also request an oral examination (which can be organized via Skype, if required in the online application) of the eligible applicants. Applicants for these reserved positions will be ranked separately. The reserved positions not allocated will be made available as standard positions.

Reserved Positions (art.1, paragraph 2, of Ph.D Call): scoring of applicants

Parameter	**Maximum score**	**Minimum score for eligibility**
Curriculum vitae, qualification documents, research project,	60/120	40/120
Oral examination (if requested by the Board)	60/120	40/120

Documents to be attached to the application form by all applicants:

- curriculum vitae;
- any additional qualification document;
- research project.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

The research project, consisting of 5,000 characters maximum, will be discussed and evaluated during the oral examination, and will contribute to the evaluation of the aptness of the applicant for research.

Foreign language for the written examination: **English**.

DOCTORAL PROGRAMME IN CHEMICAL SCIENCES

Coordinator Prof. Piero Baglioni

Administrative office: Department of Chemistry "Ugo Schiff"

Curricula:

1) Chemistry
2) Science for the Conservation of Cultural Heritage

No. of Positions: 8

Scholarships: 6 University of Florence

Positions with no scholarship: 2

Evaluation of applicants:
applicants will be selected by evaluation of their curriculum, of qualification documents and of their research project and successive oral examination, through a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation of July 4th 2013).

Scoring of applicants:

parameter	minimum score	maximum score
Curriculum Vitae, student career, qualification documents and publications, research project	40/120	60/120
Applicants who obtain at least 40/120 marks in the evaluation of the above parameters will be admitted to the oral examination		
Oral examination: discussion of the research project, the qualification documents presented and publications	40/120	60/120
The oral examination will be successful for applicants who obtain at least 40/120 marks		

The list of candidates admitted to the oral test will be published online at the following website page

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti

Applicants who obtain at least 80/120 overall marks and 40/120 marks in each evaluation will be eligible to enter the Doctorate course according to the final ranking

Documents to be attached to the application form (candidate's surname must be cited in the files name):

- curriculum vitae;
- list of exams taken with the relative grades;
- list of any additional qualification document and scientific publications;
- a suitable research project written in English in no more than 12,000 characters including spaces, comprising abstract, introduction and references, in order to assess the applicant's aptitude to research;
- title and short summary (maximum five A4 sheets) of the Master thesis.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

The possession of these documents must be declared with a self-certification (D.P.R. n. 445/2000).

The oral examination may be given in **English**. If given in Italian, the oral examination will include an assessment of **English** language proficiency.

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

DOCTORAL PROGRAMME IN EARTH SCIENCES

Coordinator Prof. Lorella Francalanci

Regione Toscana Pegaso Project – Partner Universities: University of Florence, University of Pisa, University of Siena.

Administrative office: Department of Earth Sciences

No. of Positions: 14

Scholarships: 11

5 University of Florence

4 Regione Toscana Pegaso Scholarships 2017

two of which are positions reserved to the following specific research topics: **1)** "New monitoring tools for the increase of citizens security and resilience based on ground smart-sensors, UAV- and satellite-borne opto-electronic sensors"; **2)** "Geomaterials and their Applications in Cultural Heritage".

1 Istituto Nazionale di Geofisica e Vulcanologia (INGV) – Theme: "Geophysics and Volcanology".

1 Department of Earth Sciences – Theme: " Geophysics ".

Positions with no scholarship: 3

Pegaso Scholarships 2017 holders are due to perform a mandatory study/research period abroad of minimum 6 months and maximum 12 months (not necessarily uninterrupted).

Evaluation of applicants:
applicants will be selected by evaluation of their curriculum, of qualification documents and of their research project and successive oral examination, through a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation of July 4th 2013).
The oral test will be as well intended to verify candidate knowledge of the English language (level B2 or higher).

Scoring of applicants:

parameters	**Maximum score**
CV, list of taken exams with grades	20/120
Publications and qualification documents	10/120
Research project	30/120
Applicants who obtain at least 40/120 marks in the evaluation of the above parameters will be admitted to the oral examination	
Oral examination	**Maximum score**
Discussion of the project, publications and qualification documents (if any),assessment knowledge of the English Language	60/120
Eligibility is achieved with a minimum score of 80/120	

The list of candidates admitted to the oral test will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove e approvazione atti"

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

Research Project

The research project has to be presented in the field of the doctorate themes, maximum length of 12.000 characters (with spaces included), with an abstract, introduction and bibliography (the research project is requested with the aim to evaluate the general attitude of the candidate to the research work). The research project can be presented in English language. The candidate can choose 1) to present the same reaserch project for the general positions and a position reserved to a specific research topics, 2) to present two/three distinct projects for his/her possible application to the three ranking lists (i.e., one for the general positions and two for the positions reserved to the specific research topics). If the candidate wants to participate to different ranking lists, he/she has to specify in the project the referred research topic/s.

Note on applications for the "specific research topics scholarships"- Pegaso Scholarships 2017

For the assignment of the "specific research topics scholarships" the above-described procedures will be used, with the following changes:

- the research project has to be focused on the specific topics of the application scholarship.
- the oral examination will be particularly focused on the fields of the chosen scholarship, together with a discussion on the research project, both aimed to verify the candidate attitude to the research work on the particular argument of the referred scholarship.

Documets to be attached to the application form

- Transcript of records of your BSc and MSc degree;
- Curriculum vitae including a list of publications and qualification documents (if any);
- Research proposal;
- Pegaso Scholarships 2017 – application for specific research topics **(Annex B** rtf - pdf) - Letter of a professor/researcher willing to provide information about candidate training path and activities performed within a scientific field related to the Ph.D course he/she is interested in (optional).

SOCIAL SCIENCES AREA

DOCTORAL PROGRAMME IN POLITICAL AND SOCIAL CHANGE

Coordinator Prof. Marco Bontempi

Administrative office: Department of Political and Social Sciences

University in agreement: University of Torino – Department of Cultures, Politics and Society

No. of Positions: 7

Scholarships: 6
3 University of Florence
3 University of Torino

Positions with no scholarship: 1

Evaluation of applicants:
applicants will be selected by evaluation of their curriculum, of qualification documents and of their research project and successive oral examination, through a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation of July 4th 2013).

Scoring of applicants:

Parameters	Minimum score	Maximum score
Curriculum, pubblications, qualification documents	15/120	20/120
Thesis grade, abstract thesis, one thesis chapter	35/120	50/120
Applicants obtaining a score of at least 50/40 in the evaluation of the two above mentioned parameters will be admitted to the oral examination		
Oral examination: discussion of publications, qualification documents, research project, and discussion of the texts listed below	30/120	50/120
Eligibility is achieved with a minimum score of 80/120		

The list of candidates admitted to the oral test will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove e approvazione atti"

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

Oral examination
The oral examination consists on the discussion of publications, qualification documents, research project, as well as the discussion on the following texts:

M. Weber, *The Protestant Ethic and the Spirit of Capitalism*
M. Weber, *Politics as a Vocation*
J. Linz, *Democrazia e autoritarismo*
G. Poggi, *Development of the Modern State: A Sociological Introduction*
H. Arendt, *On Revolution*
K. Polanyi, *The Great Transformation*
R. Boudon, *Theories of Social Change: A Critical Appraisal*
P. Berger e T. Luckmann, *The Social Construction of Reality*
N. Elias e J. L. Scotson, *The Established and the Outsiders*
H. S. Becker, *Tricks of the Trade: How to Think About Your Research While You're Doing It*

Documents to be attached to the application form:

- curriculum vitae;
- list of any additional qualification document and scientific publication;
- abstract of the MSc dissertation in no more than 15,000 characters including spaces;
- Transcript of records of BSc and MSc degree with grades;
- one chapter of the MSc Degree dissertation;
- research project, in no more than 15,000 characters including spaces.

Optional documents:

- Copy of MSc dissertation in *.pdf* format;
- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

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DOCTORAL PROGRAMME IN LEGAL SCIENCES

Coordinator Prof. Alessandro Simoni

Administrative office: Department of Legal Sciences (DSG)

Curricula:

1) Comparative Law
2) Public Law – Town Planning Law and Environmental Law
3) Criminal Law and Criminal Procedure
4) Private Law
5) International and European Union law
6) Theory and History of Law – Theory and History of Human Rights (International) – **Authorities in agreement**: University of Paraná (Curitiba, Brazil); University Federal of Paraiba (Joao Pessoa, Brazil).

No. of Positions: 10

Scholarships:

7 University of Florence

1 Centro Studi per la Storia del Pensiero Giuridico Moderno

Concerning the international curriculum on Theory and History of Law – Theory and History of Human Rights: to spend one year in one of the universities with whom the agreement has been made: Federal University of Paranà (Curitiba, Brasil) and Federal University of Paraiba (Joao Pessoa, Brasil) is required.

Positions with no scholarship: 2

Evaluation of candidates:

Candidates will be selected by a written test (in the form of an essay), by oral examination, by evaluation of their curriculum, their other qualification documents and their research project. The essay will cover the topics of each curriculum belonging to the PhD program. Only candidates with a score of 40/60 and above will be admitted to the oral part. At the end of each oral session the examining commission will publicize the results. *[See Article 12, paragraph 1, sub-paragraph b) of Doctoral Regulation of 04 July 2013]*.

Scoring of candidates:

parameter	minimum score	maximum score
Oral examination, including the assessment of the knowledge of the foreign language, chosen from English, French, German and Spanish	20/60	30/60
Research project and any additional qualification documents	15/60	20/60
Curriculum vitae	5/60	10/60
Eligibility is achieved with a minimum total score of 80/120		

L'elenco degli ammessi alla prova orale sarà pubblicato al seguente indirizzo:

http://www.unifi.it/vp-11202-xxxiii.html alla voce " Commissioni, ammessi alle prove e approvazione atti"

Documents to be attached to the application form:

- curriculum vitae;
- any additional qualification document and scientific publication;
- abstract of the JD dissertation;

- research project, of at most 5 pages, indicating with sufficient precision the subject, the objectives and the methodology, which will be discussed during the oral examination.

TECHNOLOGICAL AREA

DOCTORAL PROGRAMME IN ARCHITECTURE

Coordinator Prof. Giuseppe De Luca

Sede amministrativa: Dipartimento di Architettura (DiDA)

Curricula:

1) Architectural and Urban Design
2) Architectural Technologies
3) History of Architecture and Cities
4) Design
5) Survey and Representation of Architecture and Environment
6) Structures and Conservation of Architecture and Cultural Heritage
7) Landscape Architecture
8) Urban and Regional Planning

No. of Positions: 12

Scholarships: 9 University of Florence

Positions with no scholarship: 3

Evaluation of applicants:

applicants will be selected following oral examination (even via Skype for students from abroad) and evaluation of *curriculum vitae*, publications and other qualification documents, as well as the research project, according to the following scheme (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

Scoring criteria:

parameter	minimum score	maximum score
curriculum vitae, publications and other qualification documents (if any)	10/120	20/120
research project	30/120	40/120
oral examination: discussion of the project and publications (if any)	40/120	60/120
Eligibility is achieved with a minimum score of 80/120		

L'elenco degli ammessi alla prova orale sarà pubblicato al seguente indirizzo:

http://www.unifi.it/vp-11202-xxxiii.html alla voce " Commissioni, ammessi alle prove e approvazione atti"

Documents to be attached to the application form:

- Research project
- curriculum vitae, related to training activities and research carried out by the candidate, of maximum two folders, as well as an indication of the foreign language chosen for verification
- Qualifications (if any).

Research Project
The application must be accompanied by a research project, organized according to the points listed as follow:

- applicant's name and surname
- title of the research project; curriculum (indicate only one of the eight present curriculum)
- summary (identification of the research problem, main expected results, originality - max 500 characters, spaces included)
- description of the research project (detailed description of the project with emphasis on the innovative aspects and scientific importance - min 5.000 / max 12.000 characters, (including spaces);

The project description should include:

- Organization of the scientific problem and connected questions, with reference to the state of art
- Objectives and expected results
- Methodology and activities (with an indication of the tools that you deem necessary for the performance, already owned or to be acquired);
- Cultural and social interest and in the scientific community (expected scientific impact)
- Bibliograph.

The request is made to evaluate the candidate's aptitude to propose a related search with the chosen curriculum for curriculum themes: http://www.dida.unifi.it/vp-352-dottorato-di-architettura.html
The project can be written in Italian or English.

DOCTORAL PROGRAMME IN SUSTAINABLE MANAGEMENT OF AGRICULTURAL RESOURCES, FORESTRY AND FOOD

Coordinator Prof. Susanna Nocentini

Administrative office: Department of Agricultural, Food and Forestry Systems (GESAAF)

Curricula:

1) Wine Economics and Rural Development (EVSR)
2) Economics, Forestry Planning and Wood Sciences (EPFSL)
3) Agro-Forest Engineering (IAF)
4) Science and Food Technology (STA)

No. of Positions: 5

Scholarships: 4 University of Florence

Positions with no scholarship: 1

Candidate selection

Applicants will be selected by : a) interview, which will include discussion of the research project; b) evaluation of the curriculum, scientific publications and other academic and scientific qualifications. The scoring system is shown below (*article 12, paragraph 1. c of the Doctoral Regulation of July 4th 2013*).

Documents to be submitted upon application:

- curriculum vitae (EU Format)
- scientific publications (if any) and other academic and scientific qualifications
- research project

Candidates may indicate the name and email address of two qualified experts in the field of the PhD, who will be asked to send reference letters.

Scoring system

	Minimum passing score	Maximum score
CV, pubblications and other qualifications	10/120	20/120
Research project	30/120	40/120
Interview	40/120	60/120

Research project

The research project, written in Italian or English, must refer to one of the research topics of the PhD program (http://www.gesaaf.unifi.it/vp-404-phd-program.html). The project should be organized in the following sections: title, research question and state of the art, aims, materials and methods, expected results, cited references. The project should not exceed 12000 characters including spaces (not including references, tables and figures).

Note: the project will not necessarily be the Ph.D thesis project of the candidate, should he/she be accepted in the program.

DOCTORAL PROGRAMME IN AGRICULTURAL AND ENVIRONMENTAL SCIENCES

Coordinator Prof. Giacomo Pietramellara

Administrative office: Department of Agrifood Production and Environmental Sciences (DISPAA)

No. of Positions: 8

Scholarships: 6 University of Florence

Positions with no scholarship: **2**

Evaluation of applicants :
applicants will be selected by oral examination including the evaluation of CV and presented research project (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

Scoring of applicants:

parameter	minimum score	maximum score
Curriculum vitae, any additional qualification documents	10/120	15/120
Research project	30/120	40/120
Oral Examination: argumentation of the research project and any additional qualification documents	40/120	65/120
Eligibility is achieved with a minimum total score of 80/120		

CV has to be presented in European format (Europass).
The research project should be attached to the application form and it should be made as the project pattern uploaded into the following departmental webpage (section "dottorato di ricerca"): http://www.dispaa.unifi.it/vp-26-dottorati.html. The research project should be focused on a possible research activity, which the applicant will be going to execute during the three-year doctoral program.
English language examination intended to assess the knowledge of a foreign language.

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

The admission examination can be taken in the following foreign language: **English**.

Documents to be attached to the application form:
- curriculum vitae;
- any additional qualification document and scientific publications;
- research project.

Research project
Research project has to be prepared in Italian or English in no more than 12 000 characters including spacing, and structured in introduction, state of the art, objectives, materials and methods with temporal distribution of the phases, expected results. For XXXIII cycle, several priorities of interest have been selected. The project must relate, and should make specific reference, to one of them listed below.
The violation of the above prescription causes the exclusion from the competition.

DOCTORAL PROGRAMME IN INFORMATION ENGINEERING

Coordinator Prof. Luigi Chisci

Administrative office: Department of Information Engineering (DINFO)

Curricula:

1) Control, Optimization and Complex Systems
2) Electronics, Electromagnetism and Electrical Systems
3) Computer Engineering
4) Telecommunications and Telematics

No. of Positions: 9

Scholarships: **6 University of Florence**

Positions with no scholarship: 3

Evaluation of applicants:

applicants will be selected following oral examination and evaluation of *curriculum vitae*, publications and other qualification documents, as well as the research proposal, according to the following scheme (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

Scoring of applicants:

parameter	minimum score	maximum score
Curriculum vitae, qualification documents and publications (if any)	27/120	40/120
Research proposal	27/120	40/120
Applicants who obtain at least 27/120 marks in the evaluation of the two above parameters will be admitted to the oral examination		
Interview (including a discussion of the research proposal)	26/120	40/120
Eligibility is achieved with a minimum score of 80/120		

L'elenco degli ammessi alla prova orale sarà pubblicato al seguente indirizzo:

http://www.unifi.it/vp-11202-xxxiii.html alla voce " Commissioni, ammessi alle prove e approvazione atti"

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

Documents to be enclosed with the application form:

- Curriculum vitae including a list of publications and of the other qualification documents (if any);
- Title and grades of Bachelor and Master Thesis,
- List of exams of Bachelor and Master Degrees with grades (documents should be either in Italian or in English);
- Publications and qualification documents (if any);
- Research proposal.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

The proposal must be in *.pdf* format, written either in Italian or in English.
The proposal should describe a three years project having a high potential for novel scientific contributions in the broad field of Information Engineering, but also in other fields provided that methodologies and/or technologies of Information Engineering are exploited.
This proposal must include the specific reference to the curriculum and the chosen area of study, as specified in the table reported below:

Curriculum	Areas
Control, Optimization and Complex Systems	AREA 1 – CONTROL SYSTEMS: concerns analysis, modelling and synthesis of high-performance (possibly networked and hence subject to cyber attacks) automatic control, supervision and monitoring systems for processes that are only partially known, possibly distributed in space and subject to constraints, such as those encountered in industrial applications, robotics, bio-engineering, aerospace, electrical systems, etc. AREA 2 – OPTIMIZATION: concerns the study of Operations Research models and their applications, as well as the development and the analysis of efficient optimization algorithms for the solution of complex problems. The optimization applications are found both in the field of automation systems as well as in the productive world, from logistics to transportation, to the supply-chain, in the networks of electrical energy management ("smart grids") even in stochastic contexts and multiple decision-makers (game theory). AREA 3 – COMPLEX SYSTEMS: this research area is suitable for applicants with a strong background in Physics, Chemistry, Mathematics or Engineering who are willing to carry out research work of cross-disciplinary type. Training aims to deepen the more formal aspects of the analysis of complex systems. The research topic can concern methodological aspects, from dynamical systems to stochastic processes, including complex networks and their applications, from computer engineering to life science.
Electronics, Electromagnetism and Electrical Systems	AREA 1 – HIGH-FREQUENCY ELECTRONICS: concerns the analysis and design of electronic devices and systems at high frequency (from radio frequency to millimetre waves). AREA 2 – DIGITAL ELECTRONIC SYSTEMS: concerns the analysis and design of electronic systems based on advanced digital components, with applications from biomedical to radar fields. AREA 3 – ELECTROMAGNETISM: concerns the use and development of numerical techniques for the analysis and design of radiant systems and passive devices at high frequency, from some GHz up to optical frequencies. AREA 4 – ELECTRICAL SYSTEMS: concerns the critical and comparative analysis of control techniques for electrical drives with the development of innovative algorithms, the automation of power systems, with particular reference to the "power quality" in distribution networks, to the "smart-metering" and fault diagnosis in electrical systems.
Computer Engineering	AREA 1 – METHODS AND TECHNOLOGIES OF SOFTWARE: concerns methods of design, examination and evaluation of complex software systems, with further details on formal methods and advanced SW architectures. AREA 2 – PATTERN RECOGNITION AND COMPUTER VISION: concerns multimedia processing, classification and media search from databases and Internet, solutions for human-machine interaction, smart environments. AREA 3 – ARTIFICIAL INTELLIGENCE AND BIOINFORMATICS: is mainly focused on machine learning and its applications to bioinformatics. AREA 4 – DISTRIBUTED SYSTEMS AND DATA ENGINEERING: it concerns the study of distributed, parallel and complex processing systems wherein distributed architecture, performance and data complexity issues are integral part of the problem, such as for instance in applications for big data, smart cities, smart clouds, internet-of-things, smart manufacturing, etc..
Telecommunications and Telematics	AREA 1 – ALGORITHMS AND TECHNOLOGIES FOR SIGNAL PROCESSING: concerns processing methods and techniques of mono/multidimensional signals for the extraction of information and the efficiency of their representation in transmission and storage. AREA 2 – TRANSMISSION SYSTEMS: concerns methods and techniques for efficient

	generation, transmission and disclosure of information through future terrestrial and satellite transmission channels. AREA 3 – TELECOMMUNICATION NETWORKS: concerns methods and techniques for efficient transfer of information from source to destination through complex and advanced communication networks and related communication network applications. AREA 4 – TELEMATICS AND INFORMATION SOCIETY: this cross-disciplinary area involves the applications of ICT technologies considered as key-enabling in different scientific and application domains. It requires a multi-disciplinary background in order to cope with the large variety of services and applications of telematics. The domains of interest include: telecommunications, communication, political and socio-economic sciences including all areas of the "Societal Challenges" of the European programme H2020.

DOCTORAL PROGRAMME IN INDUSTRIAL ENGINEERING

Coordinator Prof. Giampaolo Manfrida

Regione Toscana Pegaso Project – Partner Universities: University of Florence, University of Pisa, University of Siena.

Administrative office: Department of Industrial Engineering Florence (DIEF)

Curricula:

1) Energy and Innovative Industrial&Environmental Technologies
2) Design and development of Industrial Products and Processes
3) Industrial Engineering and Reliability
4) Science and Engineering of Materials

No. of Positions: 22

Scholarships: 17

5 University of Florence

4 Regione Toscana Pegaso Scholarships 2017

one of which is a position reserved to the following specific research topic: **1)** "System for energy saving in industrial processes, residential applications, smart grid and thermal energy storage".

1 Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (INSTM) and Department of Industrial Engineering Florence (DIEF) – Theme: "Nanostructured magnetic materials: development and applications".

1 Meccanica 42 s.r.l.

6 Department of Industrial Engineering Florence (DIEF)

Positions with no scholarship: 5

Pegaso Scholarships 2017 holders are due to perform a mandatory study/research period abroad of at least 6 months (not necessarily uninterrupted).

Evaluation of applicants::

applicants will be selected by oral examination, evaluation of their curriculum, of their other academic or professional qualifications and of their research project through a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013). The oral test will be as well intended to verify candidates knowledge of the English language (level B2 or higher).

Scoring of applicants:

Parameter	minimum score	maximum score
Evaluation of the curriculum vitae, evaluation of other academic or professional qualifications and publications (if any)	12/120	18/120
Evaluation of the research project	28/120	42/120
Oral examination: discussion of the project and publications (if any)	40/120	60/120
Eligibility is achieved with a minimum score of 80/120		

The list of candidates admitted to the oral test will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove e approvazione atti"

The applicant will be excluded from the evaluation, if one of three minimum scores will not be obtained.

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

Documents to be attached to the application form:

- curriculum vitae;
- any additional qualification documents and scientific publications;
- research project.
- Pegaso Scholarships 2017 – application for specific research topics **(Annex C** rtf - pdf)
- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

Research project

It must be written in Italian or English in NO MORE than 12,000 characters including spacing, abstract, introduction and references (exceeding it the applicant can be excluded from the evaluation).
The project must relate, and should make specific reference, to one of the working themes listed below.
The violation of the above prescription causes the exclusion from the competition.
The candidate can submit only one research project for standard or reserved position but it should be related to the topic of the reserved position, otherwise two project should be presented.

Note on applications for the reserved position "specific research topic scholarship" - Pegaso Scholarships 2017

The proposed research project should be related to the topics of: System for energy saving in industrial processes, residential applications, smart grid or thermal energy storage.
The oral examination also include discussion on the above topics related the "specific research".

Themes of Doctoral Program:

- Development of innovative techniques for the structural optimization of turbomachinery components
- Vehicle dynamics optimization with focus on automatic drive, intelligent diagnostics and vehicle-track interaction
- Development and testing of control strategies for underwater mobile robots to perform monitoring missions or intervention activities
- Aeromechanical design study of turbomachinery blades
- Aerodynamics, design and performance prediction of multistage turbomachinery
- Aerodynamics, design and performance prediction of aero gas turbines
- Advanced fluid dynamics modeling of low-pressure steam turbine stages
- Liquid fuel spray, evaporation and mixing in aeroengine combustion process
- Thermo-fluid-dynamics investigations of combustion systems and auxiliary components in gas and steam turbines
- Experimental analysis of combustor/turbine interactions in gas turbine
- Fuel flexibility with variable composition effects in gas turbine combustion process
- Aeroacoustic noise in aero engines - abatement with passive or active devices
- Heat recovery and energy conversion from low-temperature conditions
- Conversion and upgrading of lipidic feedstocks into biofuels and bioproducts
- Thermochemical conversion of biomass to energy and bioproducts
- Development of numerical and experimental approaches for efficiency improvement and exhaust emission control in Internal Combustion Engines
- Bioenergy, bioproducts from organic fraction waste
- Acoustic analysis for reciprocating compressor plants
- New perspectives in motorcycle safety
- Development of tools and methods for the additive manufacturing-oriented design in the pediatric

field

- Biomechanical and biophysical effects of low-intensity ultrasound therapy of cancer cells
- Studies on the route guidance strategies of assisted driving vehicles with particular reference to man-machine interaction
- Nanostructured magnetic materials: development and applications
- 100% renewable energy systems and technologies
- Modeling of efficient perovskite solar cells: an integrated life cycle assessment and electronic structure calculations approach for the environmental assessment of innovative PV systems
- Healthcare system engineering
- Numerical Optimization methods for machine learning with applications to Industrial Engineering
- Development of damage, diagnostic and prognostic models for complex systems and critical components. Development of stress dependent reliability models and seeking of correlation among design parameters and reliability performance
- Analysis and application of rational predictive fault and performance models for the implementation of a predictive diagnostic system with the aim of expanding the on-line and off-line analysis capabilities of systems and components of industrial plants, preventing possible inefficiency causes to increase availability
- Measuring the performance of field service delivery through machine learning algorithms
- Dynamic analysis of energy conversion plants for flexibility improvement
- Integrated renewable system, their specific issues for smart city application.

DOCTORAL PROGRAMME IN SMART COMPUTING

Coordinator: Prof. Paolo Frasconi

Regione Toscana Pegaso Project — Partners: University of Florence, University of Pisa, University of Siena, Fondazione Bruno Kessler (FBK) - Trento.

Administrative office: Department of Information Engineering (DINFO)

No. of positions: 16

Positions with a scholarship: 13

5 Financed by the **University of Florence**

4 Financed by **Regione Toscana** under the Pegaso Scholarships 2017 project.

Three of these positions are reserved to the following specific research topics: 1) "Automatic analysis of biomedical images with deep learning"; 2) "BigData analytics in Online Social Networks, to characterize and support Smart User Communities"; 3) "Methods for quantitative solution of stochastic models for the diagnosis of the current state, the prediction of evolution over time, and the scheduling of control actions for uncertain and partially observable systems";

3 Financed by **Fondazione Bruno Kessler (FBK) –Trento:** These positions are reserved to the following specific research topics: 4) "Building Quality Event-centric Knowledge Graphs from Text"; 5) "Complex Multilayer Networks; 6) "Deep Learning for Massive Omics Data".

1 Financed by **QuestIT** - with the following specific research topic: 7) **"**Natural language processing with emphasis on the applications of conversational agents".

Positions with no scholarship: 3

Pegaso Scholarships 2017 holders are required to spend at least 6 months (not necessarily consecutive) of study/research abroad.

Evaluation of applicants:

Applicants will be ranked according to several parameters (evaluation of *curriculum vitae*, publications and other qualification documents, research project, interview), as detailed in the scheme below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013). The interview will be in English, (at least Level B2).

Parameter	Minimum score	Maximum score
Curriculum vitae; qualification documents	27/120	40/120
Research proposal	27/120	40/120
Applicants scoring at least 54/120 on the above parameters will be shortlisted for interview		
Interview (including a discussion of the research proposal) in English language	26/120	40/120
Candidates with an overall score below 80/120 cannot be admitted to the program		

The shortlist of candidates admitted to the interview will be published online at:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove e approvazione atti"

Foreign residents are allowed to use Skype for the interview. If you wish to take advantage of this opportunity, please check this option when completing the online application.

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Documents to be enclosed with your application:

A) Curriculum vitae (including a list of publications);

B) Transcript of records of your MSc degree;
C) Research proposal;
D) Doctoral Programme Pegaso 2017 – application for specific research topics **(Annex D** rtf - pdf).

Optional documents:

- PDF copy of your MSc thesis (if available);
- Any other qualification documents useful to support your application.
- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in

All documents (except the research proposal, see below) should be in Italian or in English.

Research Project
The research proposal should be written in English and should be submitted as a PDF file. The length may not exceed 12,000 characters. The research proposal should describe a three years project having a high potential for a novel scientific contribution in any topic related to smart computing.

- Artificial Intelligence
- Computer Networking
- Computer Vision
- Computer Architectures
- Conversational Agents
- Data Analysis and Social Network Data Analysis
- Fog/Edge computing in IoT
- Embedded and Cyber-physical Systems
- Machine Learning
- Neuroinformatics
- Pervasive Sensing & Computing
- Quantitative evaluation and verification of concurrent systems
- Security and Privacy in Smart Systems
- Software architectures and engineering methods

The research proposal needs not to be directly related to one of the reserved research topics (see below) for which you may want to apply. In facts, this proposal will not be even used to bound you to do research in any particular area, it just serves the purpose of assessing your technical writing skills, your ability to envision sensible long-term research goals, and your ability to plan and evaluate research activities.

Note on applications for the "specific research topic scholarship":
A subset of the available positions will be reserved to the specific research topics listed below. To be considered for one of these positions, please list them in the PDF file item D) in the "list of documents to be enclosed" above. Since we strive to fill as many of these positions as possible, by applying for one or more reserved positions you may significantly increase your chances of being accepted in the program. You may apply for as many reserved positions as you wish. During the interview, there will be one additional test for each reserved positions you have applied for. Passing the test is a necessary (but not sufficient) condition for obtaining the corresponding reserved position. Failing one or more of these tests will not affect the overall score nor will reduce your chances of being accepted for the remaining (non-reserved) positions.

There are additional thematic positions (not reserved) listed at the end of this document. These positions do not require a specific test.

1. Automatic analysis of biomedical images with deep learning

The automation of biomedical image analysis is a challenging research goal of artificial intelligence. Researchers are aiming to design tools that can support physicians and biologists in high-level activities that are currently being conducted in a completely manual way. For example, we would like to design a software that, by reading a magnetic resonance imaging of the brain, can suggest the presence of tumors or estimate the progress of typical Alzheimer's abnormalities. Research in this area has produced important developments, but the performance of available tools is still not good enough to allow their use in normal clinical activity.

An important advancement in this direction could come from deep neural networks, a field of artificial intelligence whose techniques have recently hit impressive results in numerous computer applications, including artificial vision. The success is confirmed by the activity of startups and large companies (including Google, Microsoft, IBM) that have already made huge investments and have developed the first innovative products based in deep learning. This PhD project aims to apply deep learning to biomedical imaging analysis, thus extending and improving current methods. The work is also expected to produce more general advancements in deep learning models.

The position will be supervised in Siena by Prof. Franco Scarselli

2. BigData analytics in Online Social Networks to characterize and support Smart User Communities

The position focuses on large-scale data analysis of Online Social Networks data for the characterisation and support of Smart Communities. In particular, the work will be focused on Smart Communities within Smart Cities, thus user communities in a well-defined geographic context. Such communities can be stable over time (such as communities of resident citizens), or transient and dynamic (such as community of tourists or temporary visitors of the city). The study carried out under the PhD will characterize these communities, and design methodologies and technologies for smart community services and applications. The study will use data available from the major Online Social Networks platforms, such as Twitter, Facebook and Instagram. The collected data will be used to study the structure of social user communities, and their evolution over time. These structures will be represented as graphs, and their features will be studied in depth. It is known in the literature that such structural models are fundamental determinants of the human social behaviour, and therefore it is important to be able to model them appropriately. In particular, we will consider as a reference also models of human social structures derived in sociology and anthropology, to describe human relationships in general contexts not necessarily linked to OSNs. Appropriate quantitative indices will be defined, which will enable us to evaluate the characteristics of user communities on OSNs based on these reference models. These indices will be correlated with "traditional" quantitative indicators, obtained from demographic studies and not automatically calculated by OSN data, such as indicators of well-being and sociality. One of the purposes will be to define methodologies and techniques to use OSNs as a "social microscope" for the study of urban smart communities based on these large amounts of data. These structural indexes will also be correlated with the patterns of information exchange on OSNs, so as to establish a link between the structural properties and properties related to the contents exchanged over OSNs. Finally, based on these tools and monitoring methodologies, the PhD may also focus on defining novel services targeted at such communities. Examples in this regard are dedicated tools to facilitate socialisation and sharing of information within these communities, tools for discovering possible social disadvantages, tools for the enjoyment of (e.g., cultural) assets and services offered by the city.

The position will be supervised in Pisa by Andrea Passarella

3. Methods for quantitative solution of stochastic models for the diagnosis of the current state, the prediction of evolution over time, and the scheduling of control actions for uncertain and partially observable systems

Methods and tools for modeling and quantitative evaluation of stochastic systems find wide application in the agenda of Industry 4.0, notably in diagnosis and just-in-time maintenance, in runtime adaptation of systems and processes, in smart integration along supply and production chains. In these scenarios, stochastic models provide a means to jointly capture contextual knowledge about the structure of the controlled system together with the statistics of observed data gathered by a growing variety of sensors and metering tools.

This research program will develop quantitative modeling formalisms, solution techniques, and tools for concurrent real time systems with stochastic durations, possibly combining non-deterministic choices and partially observable behavior. The research will specifically address and integrate the problems of diagnosis of the current state, prediction of the evolution form each plausible state, and scheduling of time and type of actions that optimize some predefined reward. In so doing, the research will combine the theoretical and

practical perspectives, including theoretical development of new methods, implementation of software tools, and experimentation in cases of technology transfer.
Ideal candidates should have or expect to obtain a MSc or equivalent degree in Computer Science or Engineering. The following qualities are desirable: strong interests in one or more of the involved research areas (applications and theory of stochastic modeling and quantitative evaluation, analysis and design of real-time systems, formal methods for safety critical systems, methods of software engineering; solid mathematical ground; strong skill in software development; good written and spoken communication skills in Italian or English.

- The position will be supervised in Florence by Prof. Enrico Vicario.

4. Building Quality Event-centric Knowledge Graphs from Text

Aim of this PhD Studentship is to undertake research in the area of knowledge extraction from text. This is a challenging interdisciplinary research area at the crossroad of Natural Language Processing (NLP), Knowledge Representation and reasoning (KRR), and Semantic Web (SW).
Recent approaches for knowledge extraction from text (e.g., [1], [2]) have focused on the extraction of event knowledge from resources such as news articles, Wikipedia pages, blog posts, etc. These approaches build on NLP pipelines consisting of tools performing several tasks (e.g,, Named Entity Recognition and Classification, Entity Linking, Semantic Role Labeling). The output of these NLP tools is then processed to distill the event knowledge which is represented in a graph, where nodes uniquely identify entities, events, and situations of the world, and arcs represent semantic relations between them (e.g., the participation of an entity in an event with its role). Events play a central role in the resulting knowledge graph: beside enabling to relate entities, they capture changes in the world as reported in news articles, blog posts, etc, a complementary information to the static encyclopedic content typically covered by traditional knowledge bases.
While achieving increasingly good performances, state-of-the-art approaches suffer of some limitations. First, as the various modules composing the NLP pipelines works independently and returns (only) the best solution for their task, combining their output may produce contradictory information for the same piece of text: for instance, for the same textual span, a tool may extract reference to an entity of the 21st century, but another may ground the content in the first century B.C..
Second, these approaches usually translate the natural language sentences into an event-centric representation (explicit knowledge), but they usually fall short in distilling the (implicit) knowledge following from what written in those sentences, a cognitive process that humans typically perform when interpreting a text: when interpreting a text: for instance, if the text says that someone was released from jail, we can infer that the person was sentenced to imprisonment beforehand.
The PhD project will focus on developing and implementing techniques to distill quality, i.e. complete and coherent, event-centric knowledge graphs from large collections of texts, and to infer consequences of what explicitly mentioned in them.
More precisely, the work will address two complementary aspects: (1) on the one side, to develop advanced techniques to distill knowledge from the output of the NLP tools used, considering -globally- the results of all the processing performed on a single sentence or document, so to improve the quality and coherence of the resulting event-centric knowledge graph; (2) on the other side, to develop novel techniques that use the extracted knowledge to derive additional facts and consequences, not explicitly mentioned in the source text (e.g., events that should have occurred because of other events, but are not mentioned in the source text).
The developed techniques will be based on background knowledge models, built either as the result of the ontological analysis of the content produced by knowledge extraction frameworks (e.g., compatibility between complementary annotations such as entity linking and semantic role labelling, consequences / prerequisites / correlations between event types) or learned from available annotated resources. Alternative approaches (e.g., combinatorial optimization techniques, logical reasoning, machine learning) will be investigated.
Candidates should have a high-score MSc Degree in Computer Science, ICT or Mathematics. Previous (basic) knowledge of Semantic Web, Knowledge Representation and Natural Language Processing is required. Candidates should have solid programming skills, in particular of JAVA language. Candidates should be willing to study new, challenging research topics and technologies, be committed to work in a research-driven environment, and have a problem solving attitude.
The position will be supervised in Trento by Dr. Marco Rospocher.

[1] Building Event-Centric Knowledge Graphs from News (Marco Rospocher, Marieke van Erp, Piek Vossen, Antske Fokkens, Itziar Aldabe, German Rigau, Aitor Soroa, Thomas Ploeger, Tessel Bogaard), In Web Semantics: Science, Services and Agents on the World Wide Web, volume 37--38, 2016.
[2] Frame-Based Ontology Population with PIKES (Francesco Corcoglioniti, Marco Rospocher, Alessio Palmero Aprosio), In IEEE Transactions on Knowledge and Data Engineering, volume 28, 2016.

5. Complex Multilayer Networks

In this thesis, the candidate will develop network-oriented dimensionality reduction techniques that will allow large-scale data analysis, with applications to interdependent systems exhibiting the same complexity, including technological, biological and social ones. This will be implemented in a framework able to cope with complex models and data structures, in particular those describing time-varying multilayer systems, e.g., like the human brain or the activity in online social networks, and the analysis of interdependent multilayer networks, a scenario typical in systems biology.
The position will be supervised in Trento by Drs. Giuseppe Jurman and Manlio De Domenico.

6. Deep Learning for Massive Omics Data

The aim of this thesis project is to develop a novel integration between bioinformatics and deep learning over massive omics data of interest for precision medicine, with a focus on defining adapted structural elements that can better describe regulatory processes, in typical and disease conditions, also through generative models. The deep learning solution will be designed to upscale in GPU cloud services to comply with massive data from large scale datasets. In particular, the project will be connected to SEQC2 the international FDA-led consortium effort to develop best practices for whole genome sequencing and target gene sequencing technologies that will support regulatory science research and precision medicine.
The position will be supervised in Trento by Drs. Cesare Furlanello and Giuseppe Jurman.

7. Natural language processing with emphasis on the applications of conversational agents.

Conversational agents are on the road to become ubiquitous. Yet, as one can daily experiment, state of the art technologies offered by companies in the field, are still in their infancy. Scientists are still struggling for the discovering of a unified computational theory to achieve the level of understanding human conversations. This research activity is expected to face this challenge by using methodologies that are at the cross-road of machine learning, speech, and natural language processing. We expect to achieve experimental evidence of language acquisition skills, as well as knowledge extraction from data to support inferential processes. In particular, this research aims at showing that we can in fact support simple conversations on the basis of massive exposition to ordinary linguistic environments. This requires the conception of appropriate focus of attention mechanisms to filter out knowledge that cannot be acquired at certain stages of the agent development.
The position will be supervised in Siena by Prof. Marco Maggini and Dr. Ernesto Di Iorio.

Thematic positions (not reserved)
These positions do not require a specific test.

1. Deep neural networks

Deep neural networks (DNNs) are a class of machine learning models, which have recently scored impressive results on complex applications: e.g., image recognition, speech recognition, and bioinformatics. Such a success has attracted the interest of large companies (e.g., Facebook, Google, Microsoft), which use DNN models in their technologies. The idea underlying DNNs consists in solving a problem by constructing a hierarchy of representations of the input data. A learning architecture composed by several layers of processing units allows to transform the raw input data into an abstract high-level representation of the problem, which can be used to take a decision on the problem itself. However, despite this success, the fundamental properties of DNNs are not well understood, yet. Moreover, there hardly exist insights on when and why DNN architectures succeed so that the design of the DNN architectures is currently based on an expensive trial-and-error procedure driven by human expertise. This PhD project aims to study DNN fundamental properties. Such a goal can be reached by a mixed theoretical and experimental approach. With the theoretical activity, the role played by DNN characteristics (modularization, replication, and so on) in complex architectures can be formally investigated, either by extending the standard theoretical results coming from artificial neural network theory or deriving new results. With the experimental activity,

different DNN architectures can be evaluated in order to disclose how the performance of a neural network is affected by the mentioned characteristics. Application domains for such an experimentation include, for example, image recognition and bioinformatics.
The position will be supervised in Siena by Prof. Franco Scarselli.
Deep representation adaptation for identification problems.
Visual identification problems like small-gallery face recognition and person re-identification involve recognizing a person, captured by one or more cameras, over a range of candidates represented as a gallery of already-labeled subjects. This gallery may contain imagery of known subjects from one or more sensors. These problems are distinguished by the need to recognize very many targets on the basis of very small gallery image sets exploitable for training. We are seeking highly motivated candidates to investigate methods to overcome scarcity of data for representation learning and to realize the recently-demonstrated potential of deep Convolutional Neural Networks (CNNs) for small-gallery identification problems like person and face re-identification.
Ideal candidates should have or expect to obtain a MSc or equivalent degree in Computer Science, Physics, Statistics, or closely related disciplines. The following qualities are desirable: strong interests in one or more of the involved research areas (machine learning, data analytics, computer vision, video surveillance, face recognition, person re-identification); excellent record of academic and/or professional achievement; strong mathematical and programming skills; good written and spoken communication skills in Italian or English.
Successful candidates will be supervised in Florence by Prof. Andrew D. Bagdanov.

2. Design and Evaluation of Protocols for the Industrial Internet of Things

In near future, billions of smart objects will be connected to the Internet, paving the way for a large number of innovative services in different application areas. In many IoT domains (e.g., industrial and healthcare fields), applications have stringent requirements in terms of communication reliability, timeliness, scalability, and energy efficiency. To address the needs of such critical applications, the IEEE has released the 802.15.4e standard that extends the original 802.15.4 standard. The integration of IEEE 802.15.4e networks into existing IPv6 infrastructures, although crucial, is still an open issue. To this aim, the IETF has recently set up the 6TiSCH initiative to address this problem.
The main goal of this research activity is to investigate the integration of 802.15.4e MAC protocols with upper-layer IoT protocols (e.g, Routing Protocol for Low-Power and Lossy Networks (RPL)) to identify underlying challenges and propose possible solutions. This activity will be carried out through simulation and measurements in a real testbed.
Successful candidates will be supervised by Giuseppe Anastasi and Carlo Vallati, and are expected to collaborate with the CREWMAN Lab at Missouri University of Science & Technology and/or the Smart Computing Lab at the Hong Kong Polytechnic University.
Ideal candidates should have or expect to obtain a MSc, or equivalent degree, in Computer Science or Computer Engineering. The following qualities are desirable: strong interests in the specific research area; excellent record of academic and/or professional achievement; strong programming skills; good written and spoken communication skills in Italian or English.
The position wil be supervised in Pisa by Prof. Giuseppe Anastasi

3. High-dimensional Hyperparameter Optimization

Almost all available machine learning algorithms depend on hyperparameters that need to be adjusted before starting the learning procedure. Some of these hyperparameters control the complexity of the hypothesis space, some control the loss function and the regularizers, some other control the optimization procedure employed to fit the parameters. Sophisticated architectures such as those used in deep learning often depend on a large number of hyperparameters that cannot be practically tuned by hand.

This research program, following preliminary results in [1], will be focused on gradient-based hyperparameter optimization techniques with several concurring goals: (1) improving the algorithmic efficiency of the available procedures, both in terms of running time and memory requirements to achieve scalability with the number of hyperparameters, model size, and dataset size; (2) devising novel algorithms by taking advantage of high-dimensional hyperparameter optimization (for example in semi-supervised learning); (3) studying the statistical learning theory associated with high-dimensional hyperparameter optimization.

Candidates should have a high-score MSc Degree in Computer Science, Mathematics or related disciplines. Previous knowledge of machine learning methodologies and programming environments such as TensorFlow would be an advantage. Candidates should have solid programming skills.
The position will be supervised by Prof. Paolo Frasconi with potential for collaboration with Istituto Italiano di Tecnologia (IIT) and University College London.
[1] L. Franceschi, M. Donini, P. Frasconi, and M. Pontil (2017). Forward and Reverse Gradient-Based Hyperparameter Optimization. Proc. of ICML 2017. https://arxiv.org/abs/1703.01785.

4. Reconfigurable-Computing

The most appealing advance in computing platforms is currently represented by systems-on-chip that include both powerful CPUs, specific accelerators like GPUs and customizable accelerators named FPGAs.
This means that hardware has become as flexible as software (named reconfigurable-computing) and a big opportunity to accelerate specific functions from cryptography to deep learning and opening the doors for more performance combined with more energy efficiency.
Based on the experience of previous and current large European Projects (HiPEAC, SARC, ERA, TERAFLUX, AXIOM) we aim to design next generation computing platforms that can best suite for the needs of a range of applications in the smart-computing domains. Keywords: reconfigurable-computing, multicore, embedded systems, distributed systems.
The position will be supervised in Siena by Prof. Roberto Giorgi

5. Mining Handwritten Documents

The processing of historical handwritten documents has signification interest for both cultural and commercial applications. Besides progresses in handwriting recognition, the information extraction from large collections of handwritten documents is still a challenging problem. Successful applications require the development of techniques for the automatic identification and understanding of document structures from large collections as well as for the recognition of the handwritten information.
We are seeking one or two highly motivated candidates for working on this topic. This will require the use of traditional document image analysis techniques together with machine learning approaches.
Ideal candidates should have or expect to obtain an MSc or equivalent degree in Computer Science, Physics, Statistics, or closely related disciplines. The following qualities are desirable: strong interest in one or more of the involved research areas (document analysis, handwriting recognition, machine learning); excellent record of academic and/or professional achievements; strong mathematical and programming skills; good written and spoken communication skills in Italian or English.
The position will be supervised in Florence by Prof. Simone Marinai.

6. Cybersecurity Solutions for the Internet of Things

In the Internet of Things (IoT) vision, the Internet will be populated mostly by things, rather than people. The information systems will be seamlessly integrated with smart objects, i.e., common objects empowered with elaboration, communication, and cooperation capabilities. IoT solutions are expected to have a broad scope of application in many aspects of our life, from ehealth to home automation, from automotive to smart city. Considering the sensivity of the managed data, and the importance of the delivered services, protecting IoT systems from unauthorized individuals that want to steal information or disrupt regular functions is a top priority in their design. Many aspects and mechanisms have to be protected, including communication (DTLS, secure CoAP, secure MQTT), routing (secure RPL), real-time transport (SRTP), etc.
The goal of the proposed research activity is to investigate the security of existing IoT protocols and propose new solutions to address security problems in IoT. These solutions will involve classic security concepts (symmetric cryptography, asymmetric cryptography, elliptic-curve cryptography) as well as new cutting-edge paradigms (attribute-based encryption, blockchain technology, distance-bounding protocols, secure localization).
Successful candidates will be supervised by Gianluca Dini and Pericle Perazzo. Ideal candidates should have or expect to obtain a MSc, or equivalent degree, in Computer Science or Computer Engineering. The following qualities are desirable: strong interests in the specific research area; excellent record of academic and/or professional achievement; strong programming skills; good written and spoken communication skills in Italian or English.
The position will be supervised in Pisa by Prof. Gianluca Dini.

7. Human Movement Analysis

Analysis of the movement of the human body is central in problems like human action recognition, human behavior understanding, human-object and human-human interaction, avatar animation, emotion detection, gait recognition, etc. A recent trend in this area is that of investigating such aspects using RGB-D sensors that jointly capture photometric and depth data (the body skeleton is typically also available from these data). Extracting representations of such dynamic sequences of RGB-D frames often results in descriptors with an underlying structure, which lay in a non-Euclidean space.

In this PhD theme proposal, we aim to investigate methods for representing human movements in RGB-D sequences. In particular, we are interested in matrix manifold solutions that shown the potential to effectively manage the non-linearity of such data. In addition, such geometric data are large and complex, and are natural targets for machine learning techniques. In many applications, Deep neural networks have been recently proven to be powerful tools, but these tools have been most successful on data with an underlying Euclidean or grid-like structure, and in cases where the invariances of these structures are built into networks used to model them. We also aim to investigate emerging techniques attempting to generalize (structured) deep neural models to non-Euclidean domains such as graphs and manifolds.

Ideal candidates should have or expect to obtain a MSc or equivalent degree in Computer Science, Mathematics, Physics or closely related disciplines. The following qualities are desirable: strong interests in one or more of the involved research areas (machine learning, computer vision, high performance computing); excellent record of academic and/or professional achievement; strong mathematical and programming skills; good written and spoken communication skills in Italian or English (B2 level required).

The position will be supervised in Florence by Prof. Pietro Pala and Prof. Stefano Berretti, with potential for collaboration with the University of Lille.

8. Online 3D Human Models Reconstruction from RGB-D Cameras for Recognition Applications

Thanks to the introduction of low cost RGB-D cameras, generic still or dynamic scenes can be monitored for the extraction of depth and RGB data streams at video rates. Hence, traditional video-based approaches to the analysis of the observed scenes can be complemented with the analysis of 3D data representing the geometry of the scenes. However, 3D data acquired by such devices are usually of low-resolution, and can be not adequate for fine level analysis. In this theme proposal, we aim primarily at investigating how to exploit the temporal redundancy of depth data to reconstruct 3D face and body models, either static or dynamic, of the imaged subjects at a higher resolution. The ultimate goal is to enable the study and design of more effective and efficient solutions for person recognition, re-identification and activity understanding, also in active vision scenarios. Since the time efficiency is a crucial aspect for many of these applications, we will target solutions that take advantage of GPU computation.

Ideal candidates should have or expect to obtain a MSc or equivalent degree in Computer Science, Mathematics, Physics or closely related disciplines. The following qualities are desirable: strong interests in one or more of the involved research areas (machine learning, computer vision, high performance computing); excellent record of academic and/or professional achievement; strong mathematical and programming skills; good written and spoken communication skills in Italian or English (B2 level required).

The position will be supervised in Florence by Prof. Pietro Pala and Prof. Stefano Berretti.

INTERNATIONAL DOCTORATE IN CIVIL AND ENVIRONMENTAL ENGINEERING

Coordinator Prof. Fabio Castelli

Pegaso Project Regione Toscana – Partner Institutions: University of Florence, University of Pisa

University in agreement: University of Perugia, Technical University of Braunschweig (Germany)

Administrative office: Department of Civil and Environmental Engineering (DICEA)

Curricula:

1) Solid, Fluid and Materials Mechanics
2) Construction Design, Verification and Control
3) Environment, Resources and Security

For further details on the international joint degrees and the description of the curricula and the co-financing grants view the Ph.D. programme website: http://www.ddicea.unifi.it/mdswitch.html

No. of Positions: 14

Scholarships: 11

5 University of Florence
3 University of Perugia
3 Regione Toscana Pegaso Scholarships 2017
one of which is a position reserved to the following specific research topic: "Assessment, reduction, prediction and management of flood risk in art cities".

Positions with no scholarship: 3

Minimum length of stay at a foreign institution: a minimum of total 9 month period of stay for research activity is required, either at TU- Braunschweig or other foreign university with a co-tutelle agreement to be signed within the first year of the course.
Pegaso Scholarships 2017 holders are due to perform a mandatory study/research period abroad of minimum 6 months and maximum 12 months (not necessarily uninterrupted).

Evaluation of applicants :
Oral examination, evaluation of the curriculum, of any other qualification document and of the research project (article 12, paragraph 1, sub-paragraph c) of Regulation, Doctoral Regulation n. 670 of July 4th 2013). The research project submitted with the application will be discussed with the candidate during the oral examination. The candidate's engineering background, necessary for the proposed research project, will be also verified during the oral examination. The oral test will be as well intended to verify candidates knowledge of the English language (level B2 or higher).

Scoring of applicants:

Parameter	minimum score	maximum score
Oral examination	50/120	70/120
Curriculum vitae, qualification documents and publications	10/120	20/120
Research project	20/120	30/120
Eligibility is achieved with a minimum score of 80/120		

The list of candidates admitted to the oral test will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if required in the online application.

Note on applications for the "specific research topics scholarships"- Pegaso Scholarships 2017

In order to apply for the scholarship on the flood risk, the submitted research project should be related to that specific topic. In that case, the research project will be valid for application to general scholarship as well.

Documents to be attached to the application form:

- curriculum vitae;
- any additional qualification documents and scientific publications;
- research project, within the theme of the Ph.D., which must be written in English up to a maximum of three pages and will refer to at least one of curricula;
- Pegaso Scholarships 2017 – application for specific research topics **(Annex E** rtf - pdf)
-
- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

HUMANITIES AREA

DOCTORAL PROGRAMME IN PHILOLOGY, ITALIAN LITERATURE, LINGUISTICS

Coordinator Prof. Donatella Coppini

Administrative office: Dipartimento di Lettere e Filosofia - Department of Humanities (DILEF)

Curricula:

1) Italian Studies (International) – Partner Institutions: Rheinische Friedrich-Wilhelms Universität, Bonn, Germany; Université Paris IV Sorbonne, France
2) Linguistics (International) – Partner Institution: Rheinische Friedrich-Wilhelms Universität Bonn, Germany
3) History, Tradition and Textual Criticism of Medieval and Renaissance Texts

No. of Positions: 6

Scholarships: 4 University of Florence

Positions with no scholarship: **2**

Evaluation of applicants :
applicants will be selected by written examination, oral examination, evaluation of their curriculum, of their other qualification documents and of their research project (article 12, paragraph 1, sub-paragraph b) of Doctoral Regulation n. 670 of July 4th 2013).

Documents to be attached to the application form:

- abstract of Master thesis (or equivalent degree) including supervisor's name and evaluation;
- curriculum vitae;
- transcript of records;
- any scientific qualification document which the applicant considers useful to discuss during the oral examination;
- research project which the applicant intends to carry out during the Ph.D. programme

The written examination will consist in the analysis of a literary text or the discussion of a subject related to the themes of the three Curricula. In particular it will focus:

- on the interpretation and commentary to a text or illustration of a fundamental theme of Italian Literature from its origins to the contemporary (**Italian Studies**);
- on a theme featuring one of the following areas: historical linguistics, theoretical linguistics, corpus linguistics, Italian linguistics and communication theory (**Linguistics**);
- on the illustration of themes, texts or palaeographic documents related to the Middle Ages and the Renaissance (**History, Tradition and Textual Criticism of Medieval and Renaissance Texts**).

The oral examination consists in a discussion on the research project and on the scientific qualification documents presented by the applicant, and in the assessment of the knowledge of a foreign language (Knowledge of Latin is compulsory for the curriculum in History, Tradition and Textual Criticism of Medieval and Renaissance Texts).

Foreign applicants (non EU citizen) with no scholarship
Foreign applicants (non EU citizen) with no scholarship will be selected by written and oral examinations like Italian and EU applicants.

Foreign applicants (non EU citizen) with scholarship
They must apply by the deadline and keep the procedures required in the call for admissions. After their university degree has been recognized equivalent to European degrees they will be called for an evaluation interview. During the interview they have to demonstrate an excellent knowledge of Italian language, and will be asked about their studies in the areas connected with the doctoral programme and requested to introduce the research project they proposed.
For applicants who are not resident in Italy, it will be possible to take the oral examination via Skype, if required in the online application.

As regards international curricula:

Stay abroad of doctoral candidates for research purposes: Minimum stay of three months.

The list of candidates admitted to the oral examination will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"

DOCTORAL PROGRAMME IN PHILOSOPHY

Coordinator: Prof. Adriano Fabris

University in agreement: University of Pisa

Administrative office: Department of Literature and Philosophy (DILEF)

Curricula:

1) History of Philosophy
2) Logic, Philosophy of Science, and History of Science
3) Ethics, Politics, and Religions
4) Theoretical Philosophy, Aesthetics, and Philosophy of Language

No. of Positions: 8

Scholarships: 6
3 University of Florence
3 University of Pisa

Positions with no scholarship: 2

Evaluation of applicants:

applicants will be selected following oral examination and evaluation of *curriculum vitae et studiorum*, publications and other qualification documents, the research project, according to the following scheme (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

Scoring criteria:

Parameter	**Minimum score**	**Maximum score**
Curriculum vitae et studiorum, publications and other qualification documents (if any)	27/120	40/120
Research project	27/120	40/120
Applicants obtaining a score of at least 27/120 in the evaluation of each of the two above parameters, hence an overall score of at least 54/120, will be admitted to the oral examination		
Oral examination: discussion of the research project, publications and other qualification documents (if any)	26/120	40/120
Applicants obtaining a score of at least 26/120 in the oral examination, hence a minimum overall score of 80/120, will be eligible for a PhD scholarship		

The list of candidates admitted to the oral examination will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"

The oral examination will focus on a discussion of publications, additional qualification documents (if any), and the research project. The applicant's philosophical and historico-philosophical skills, both in general and in relation to the research project, will also be evaluated.

The oral examination may be taken either in Italian or English. If taken in Italian, it will include an assessment of the applicant's competence in the English language; if taken in English, it will include an assessment of the applicant's competence in the Italian language. Applicants may request that their competence in other languages be evaluated in addition.

For applicants who are not resident in Italy, it will be possible to take the oral examination by Skype, if requested in the online application.

Documents to be attached to the application form (either in Italian or in English):

- *Curriculum vitae et studiorum*, including certification of linguistic competences, list of publications, and other qualification documents.
- Transcript of records of BA/BSc and MA/MSc degrees;
- Title and abstract of the MA/MSc thesis (maximum 5,000 characters including spaces) ;
- A chapter of the MA/MSc thesis or any other writing sample, either published or unpublished (maximum 45,000 characters including spaces);
- A research project (not binding in case of successful application) consistent with one of the curricula of the PhD programme and explicitly referring to it. The project (maximum 25,000 characters including spaces) will specify a research topic, make clear its originality, and concisely set out the current state of the art on the subject (with adequate bibliographical references) and the lines of inquiry which the candidate believes they could fruitfully pursue during the three years of Ph.D.
- Candidates are allowed to specify in their applications the e-mail addresses of two scholars who are willing to provide a letter of reference.

DOCTORAL PROGRAMME IN COMPARATIVE LANGUAGES, LITERATURE AND CULTURE

Coordinator Prof. Maria Rita Manzini

Administrative Office: Department of Languages, Literature and Intercultural Studies

Curricula:

1) German Studies Florence-Bonn (International) – Partner Institutions: Rheinische Friedrich-Wilhelms University, Bonn, Germany
2) Founding Myths of Europe in the Arts and Literature (International) – Partner Institutions: Rheinische Friedrich-Wilhelms University, Bonn, Germany; University of Paris IV, Sorbonne, France
3) Language, Literature and Philology: Intercultural perspectives
4) Linguistics and Oriental Studies

No. of Positions: 6

Scholarships: 4 University of Florence

Positions with no scholarship: 2

Evaluation of applicants :
oral examination, evaluation of the curriculum, of any other qualification document and of the research project through a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

parameters	Minimum score	Maximum score
Curriculum vitae et studiorum, publications and other qualification documents (if any)	20/120	30/120
Research project	20/120	30/120
Oral examination: discussion of the research project, publications and other qualification documents (if any)	40/120	60/120
Applicants obtaining a score of at least 40/120 in the evaluation of the curriculum/publication/qualification documents/research project, will be admitted to the oral examination.		
Eligibility is achieved with a minimum score of 80/120		

The list of candidates admitted to the oral examination will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti"

The admission examination may be taken in one of the following foreign languages: *German, French, English, Spanish.*

Each applicant shall demonstrate competence, besides from the language in the area of their specialisation, in one or two foreign languages to be chosen between German, French, English, Spanish.

Documents to be attached to the application form:

- curriculum vitae. The CV must include abstracts of the Degree theses defended (Bachelor degree, Master degree, or other of maximum one page per abstract), as well as an abstract of eventual publications (maximum 250 words per article), stressing the original aspects of the various works.
- research project, of maximum five pages, defining the discipline in which they intend to specialise and written in Italian or in one of the foreign languages: German, French, English and Spanish. The project and the curriculum will be discussed during the oral examination.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

As regards international curricula:
Stay abroad of doctoral candidates for research purposes: Minimum stay of three months.

Curriculum	Themes
German Studies Florence-Bonn (International) **Partner Institution**: Rheinische Friedrich-Wilhelms University, (Bonn)	1) Classical-romantic culture and its reception 2) 19th century German literature between Realism and Nihilism 3) Themes and currents of 20th century German Literature 4) Italo-German studies 5) Theory and history of translation and publishing techniques 6) Gender studies 7) Historico-literary anthropology 8) Aesthetics and poetics of modernity 9) Theory and science of literature **10)** Literature and arts
Founding Myths of Europe in the Arts and Literature (International) **Partner Institution**: University of Sorbonne Paris IV, Rheinische Friedrich-Wilhelms University, (Bonn)	1) Modernity and new myths 2) Classical antiquity, Italian Renaissance and European culture 3) Mythical figures of European culture 4) Studies on 18th century Europe 5) Literature and arts 6) Aestethics and poetics of modernity **7)** Classical-romantic culture and its reception
Language, Literature and Philology: Intercultural Perspectives	Areas of research: Estonian, Germanic Philology, Finnish, English, Comparative Literature, Portuguese, Romanian, Scandinavian, Spanish, Turkish, Hungarian. The Topic for the seminars and lectures for the XXXIII cycle will be: "The Other Places: Reality, Imagination, Writing".
Linguistics and Oriental Studies	1. Linguistic theory. Analysis of natural languages: phonetics, phonology, morphology, syntax, semantics, pragmatics. Psycholinguistics and neurolingustics. 2. Linguistic variation. Dialectology, sociolinguistics. Second language acquisition. Multilingualism, language contact. Linguistic change. Translation. *Corpora* and automated processing. The lexicon and specialised languages. **3.** Philological and linguistic analysis of texts, with particular attention to oriental languages. Analysis and interpretation of documents and texts in modern and ancient languages. Textual genres.

DOCTORAL PROGRAMME IN EDUCATION SCIENCES AND PSYCHOLOGY

Coordinator Prof. Simonetta Ulivieri

Administrative Office: Department of Education and Psychology

Curricula:

1) Theory and History of Educational Processes
2) Quality of Knowledge and Knowledge of the Differences
3) Research Methodologies for Educational Services
4) Sciences of Psychological Development and Education, Social Psychology, Psychology of Organisation and Labour

No. of Positions: 6

Scholarships: 4 University of Florence

Positions with no scholarship: **2**

Evaluation of applicants:
written examination, oral examination with evaluation of the curriculum, of any other qualification document and of the research project *(article 12, paragraph 1, sub-paragraph b) of Doctoral Regulation n. 670 of July 4th 2013).*

The written examination may be taken in Italian or in English. If the written examination will be taken in Italian language, the written examination will include an assessment of English language; if the oral examination will be taken in English language, the written examination will include an assessment of Italian language.

Documents to be attached to the application form:

- CV with scientific qualifications (in Italian and in English);
- any additional educational and professional qualification document;
- publications (if any);
- research project with bibliographic equipment (max 10 pages in A4 format and fonts 12 or 14 pt) (in Italian and in English).

The research project will be discussed and valued during the oral examination; it will be necessary to the evaluation of applicant's disposition to the research in pedagogical and/or psychological fields.

DOCTORAL PROGRAMME IN HISTORY OF ART AND PERFORMING ARTS

Coordinator Prof. Andrea De Marchi

Regione Toscana Pegaso Project – Partner Universities: University of Florence, University of Pisa, University of Siena.

Administrative Office: Department of History, Archaeology, Geography, Fine & Performing Arts (SAGAS).

Curricula:

1) History of Arts
2) History of Performing Arts

No. of Positions: 12

Scholarships: 9

5 University of Florence

4 Regione Toscana Pegaso Scholarships 2017

two of which are reserved to the following research topics: **1)** "Study, conservation, rescue and restoration of art-historical artefacts, or related to the activities in the fields of spectacle, music, cinema, television and multimedia."; **2)** "Digitation of archives, implementation of databases and catalogs related to the art-historical heritage and historical forms of spectacle, *rendering* and virtual reconstructions on a historical and philological basis – of the spatial contexts of monuments, collections, performing arts, through innovative digital and audiovisual technologies, with a special attention to the communication potentialities of the materials thus elaborated".

Positions without scholarship: **3**

Pegaso Scholarships 2017 holders are expected to spend a mandatory research period abroad, between a minimum of 6 months and a maximum 12 months (not necessarily uninterrupted).

Description:

This Ph.D. programme is aimed at those who propose to carry out research in the field of History of Art and Performing Arts, with particular reference to the Tuscan region, its historical patrimony, as well as its development prospects and its relation to the wider international context. The History of Art curriculum is rooted in the established critical traditions and skills necessary for the identification of the contexts of production and reception essential for the understanding of artworks, studied as both intellectual and material products and in the variety of their meanings, from the Middle Ages to the contemporary period. It avails itself of philological and historiographical research, and fosters a range of methodological approaches, from archival work up to the most recent methodological trends of the discipline. The privileged areas of study are: cultural transfers, extended to an international perspective; aspects of commissioning and collecting; organisation of museums and exhibitions; modes of reception in relation to artistic literature as well as to the history of criticism; modes of production and irradiation of the minor arts. The History of Performing Arts curriculum is based on a solid historical tradition which analyses the language of the arts (theatre, music, cinema and video, history of the actor) in accordance with the most innovative methodological trends in historical and theoretical research (including the aspects of reception). The privileged fields of research are the origins of the spectacle (the birth of the opera, the creation of theatrical scenery, the notion of *Teatro all'italiana*, the spreading of professional acting, the production system, the socio-political outcome); the study of archival sources (including multimedia) and scholarship of theatrical as well as of musical and audiovisual nature; the widespread dissemination of historical theatres; cinema in Tuscany; the network of theatrical, musical and cinematographic institutions; the study of actors and singers; video art, new media,

the relation between cinema and art; the analysis of drama (also contemporary); the critical and historiographical tradition.

Evaluation of applicants :
Applicants will be selected by written examination, oral examination, the evaluation of their curriculum vitae and other qualification documents and for their research project (article 12, paragraph 1, sub-paragraph b) of Doctoral Regulation n. 670 of July 4th 2013). The oral test will also verify the knowledge of the English language (level B2 or higher). For each Pegaso 2017 scholarship research topic, specific evaluation procedures will be implemented by the Commission, which will avail itself of external experts. For these positions two different rankings are also foreseen.
Applicants receiving a rate of at least 40/60 in the written examination will be admitted to the oral examination.
Eligibility is achieved with a minimum rate of 80/120.

Themes of the examination:

Written examination:
subjects, topics and methodologies typical of the areas of research pertaining to the Ph.D programme. The outlines proposed by the Committee will allow a development in line with the specific curriculum, history of art or performing arts, chosen by each applicant.

Oral examination:
- Evaluation of the curriculum vitae;
- Interview aimed at verifying the applicant's competence in the field, the contents, suitability, and modalities of the proposed research project;
- Assessment of the applicant's knowledge of English and of a second language.

Notes on applications for "specific research topics scholarships"- Pegaso Scholarships 2017
The competition consists of a written test to assess the candidate's knowledge in the scientific and methodological field related to the specific research topics of Pegaso Scholarships 2017, and of an oral examination.
For each Pegaso Scholarship research topic, a specific written test is required in addition to the written test for the ordinary positions (scholarships without specific research topics). All the written tests will be held consecutively to ensure the participation of all candidates.

Research Project
The candidate may submit the same research project both for the ordinary positions and for one of the Pagaso Scholarship specific research topics, or rather the candidate may submit two or three different research projects to participate to the competition for the three rankings.
In the application the candidate must clearly specify to which research topics and with which research project he/she is applying.

Documents to be attached to the application form:

- Copy of thesis (Master or equivalent degree) in *.pdf* format;
- Curriculum vitae (education and training, professional experience, qualification documents and publications relating to the fields of the Ph.D. programme, skills and competences relevant to the evaluation);
- Research proposal consistent with the themes of the Ph.D. programme. This research proposal, presented in a text of 10,000 characters (including spacing), must specify the topic of research, outline its place with respect to the state of art, clarify its originality and indicate how the research will unfold throughout the three years of the Ph.D.
- Pegaso Scholarships 2017 – application for specific research topics **(Annex F** rtf - pdf)

DOCTORAL PROGRAMME IN HISTORICAL STUDIES

Coordinator Prof. Andrea Zorzi

Administrative office: Department of History, Archeology, Geography, Fine & Performing Arts (SAGAS)

Branch office University in agreement: University of Siena

Curricula:

1) History and Civilisation of the Ancient World and the Near East
2) Medieval History
3) Modern History
4) Contemporary History
5) Book Sciences, Institutions and Archives

No. of Positions: 9

Scholarships: 9
6 University of Florence
3 University of Siena

Positions with no scholarship are not foreseen

Evaluation of applicants :
oral examination, evaluation of the curriculum, of any other qualification document and of the research project through a score system as specified below (article 12, paragraph 1, sub-paragraph c) of Doctoral Regulation n. 670 of July 4th 2013).

Scoring of applicants:

Parameter	minimum score	maximum score
Curriculum vitae, qualification documents and publications (if any)	5/120	20/120
Research project	35/120	40/120
Oral examination: discussion of the project in order to evaluate the applicant's attitude towards the research	40/120	60/120
Eligibility is achieved with a minimum score of 80/120		

The list of candidates admitted to the oral test will be published online at the following website page:

http://www.unifi.it/vp-11202-xxxiii.html - Section: " Commissioni, ammessi alle prove a approvazione atti

All applicants, who obtain at least 40 points in the evaluation of the curriculum vitae, qualification documents and the preparation of the project, are admitted to the oral examination. The oral examination is passed with a minimum score of 40 points.
The research project will be discussed and evaluated during the oral examination.

During the oral examination the general and specific competence on the historical and historiographical period and on the themes of the research will also be examinated.
During the oral examination an evaluation on the knowledge of English will be held for the applicants who have graduated in Italian Universities, and of the Italian language (Standard Level B2) for applicants graduated in non-Italian Universities.

Documents to be attached to the application form:

- degree certificate (Master or equivalent);
- list of exams taken with the relative grades;
- curriculum vitae (education and training, professional experience, qualification documents and publications relating to the areas of the Ph.D., skills and competences relevant to the evaluation) with a list of all the additional qualification documents and any other scientific publications;
- copy of the degree thesis;
- research project, consistent with the curriculum of the Ph.D., to which explicit reference to one (or more) must be made. This project must be at least 8.000 and not more than 10.000 characters (excluding spacing). The project must specify the topic of the research, clarify the characteristics of originality and systematically indicate the state of the art on the argument (with adequate bibliographical references) and the areas for investigation which are considered to be usefully developed throughout the three years of the Ph.D.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.

The presentation of the following documents is requested for applicants graduated in non-Italian Universities:

- university certificates in original language and translated into Italian or English;
- curriculum vitae in Italian or English;
- a copy of the thesis (or equivalent) with abstract in Italian or English;
- research project in Italian or English;
- certification of good knowledge of Italian (Level Standard B2);
- any certification of the award of a scholarship by a foreign State or within specific international mobility programmes.

- Candidates are allowed to specify in their applications the e-mail addresses of two university professors/researchers willing to provide information about candidates training path and activities performed within a scientific field related to the Ph.D course they are interested in.