ANNEX 2 (ALLEGATO 2)  
RESEARCH TOPICS

Scholarship code: ARCH 1

Language of the Phd Program: English

PhD Course and curriculum: PhD Course in Architecture Design Planning, Curriculum: sustainable Planning, cultural Heritage, built Environment (PhD ADP, Curr. PHE)
Leader of the Phd Course: prof. Gerardo DOTI
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project: Mental Health Spaces after the “Basaglia Law”: knowledge, recovery, enhancement (Spazi e servizi per la salute mentale dopo la Legge Basaglia: conoscenza, recupero, valorizzazione)

A systematic investigation on the fate of the former asylums after the entry into force of the Law 180/1978 known as the “Basaglia law” has yet to be developed. The research project assumes an openly interdisciplinary development, combining knowledge relating to at least three areas of scientific and disciplinary interest: the history and restoration of architecture, health law and pharmacotherapy. Through a focused choice of case studies, the study will investigate the shape of the relationships between former psychiatric complexes and cities over the last fifty years. The historical reconstruction will have to emphasize: a) the ways in which large psychiatric complexes have acted as conditioning factors of transformative processes at urban and territorial scales; b) the reuse and enhancement strategies, only theorized or implemented with different tools, of the former asylums; c) the relationship between preservation hypotheses and urban dynamics in the considered period; d) the difficult balance between architectural-monumental values and social history, collective history and that of individuals.

Supervisor: Gerardo DOTI

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Patrimonio Culturale”, CUP J11J23001300006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).
ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level.

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
● 2 Year:
  o 40 ECTS in research activity (with a yearly evaluation)
  o 10 ECTS in mandatory SAS Activities to acquire transferable skills
  o 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

● 3 Year:
  o 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  o 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  o Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  o Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.

Scholarship code: ARCH 2

Language of the Phd Program: English, Italian

PhD Course and curriculum: PhD Course in Architecture Design Planning, Curriculum: Innovation Design (PhD ADP, Curr. ID)
Leader of the Phd Course: prof. Gerardo Doti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project: The digital transition of the public administration in the adoption of advanced digitalization processes of the territory (innovation design / la transizione della pubblica amministrazione nell’adozione di processi di digitalizzazione avanzati del territorio)

The research project concerns the activation, implementation and advancement of methodological and technological solutions of open, integrable, scalable city models based on the application of GIS (Geographic Information System) and BIM (Building Information Model) operating technologies. The main objective of the research is represented by the evolution of the digitization processes necessary for the management and
automated control of building projects, public works, infrastructures and services in city redevelopment and regeneration projects.

Supervisor: Giuseppe Losco
Co-supervisors: Monica Rossi, Milena Coccia

Scholarship funded under: NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Pubblica Amministrazione”, CUP J11J23001310006

*With the contribution of the Municipality of Ascoli Piceno*

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

*Special requirements, additional to “standard” ones:*
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  - Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.
Scholarship code: ARCH 3

Language of the Phd Program: English

PhD Course and curriculum: PhD Course in Architecture Design Planning, Curriculum: Architecture: Theories and Design (PhD ADP, Curr. ATD)

Leader of the Phd Course: Prof. Gerardo Doti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino – School of Architecture and Design

Research Topic and project: ENERGY LANDSCAPES. Solar photovoltaic systems: tools and methods of analysis and design

The research aims to develop a theoretical-design study of energy production infrastructure as new formal elements of the contemporary anthropogeographic landscape.

The focus will be on the territory, in an inter-scalar mode (from geographical to architectural), where renewed tools and methods of analysis and design related to the development of today’s energy issues will be tested, with a focus on photovoltaic and agrovoltaic systems, arriving at new landscape prefigurations in terms of formal structures, contextual relations, and environmental re-balancing. The field of application of the research will be the mid-Adriatic territory and in particular the valley areas compromised by recent construction.

Supervisor: Prof. Luigi Coccia

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001320006

With the contribution of “Studio Ing. Migliori Gabriele – VAT n° 00892890674”

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DSNH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months

Scholarship code: ARCH 4

Language of the PhD Program: English

PhD Course and curriculum: PhD Course in Architecture Design Planning, Curriculum: Innovation Design (PhD ADP, Curr. ID)
Leader of the PhD Course: prof. Gerardo Doti
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project: AUGMENTED CONCRETE. Design of discrete building systems with recycled concrete material through 3D printing process
The general context of the research is the application of circular processes to the construction sector, with particular reference to the concrete supply chain. In particular, the research investigates the application of 3D printing of concrete, using recycled aggregates from demolition processes or rubble in contexts affected by catastrophic events. The research envisages an experimental application phase aimed at the full-scale prototyping of a block construction system, in recycled concrete, with high anti-seismic performance.

Supervisor: Roberto Ruggiero

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001320006
With the contribution of CENTAUROS srl – VAT n° 02033720430

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level
● 1 Year:
  o 40 ECTS in research activity (with a yearly evaluation)
  o 10 ECTS in mandatory SAS Activities to acquire transferable skills
  o 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

● 2 Year:
  o 40 ECTS in research activity (with a yearly evaluation)
  o 10 ECTS in mandatory SAS Activities to acquire transferable skills
  o 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

● 3 Year:
  o 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  o 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
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  o Mandatory period in the Company that cofunds the scholarship: up to 18 months.

Scholarship code: CHEM 1

Language of the PhD Program: English

PhD Course and curriculum: CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY
Curriculum: Pharmaceutical, Nutraceutical and Food Sciences
Leader of the PhD Course: Prof. Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project: preclinical and clinical development of innovative methods for safety and efficacy testing of cosmetic products

The proposed research project focuses on the development of new methods of preclinical and clinical testing for the evaluation of the efficacy and safety of cosmetic products and for the support of cosmetic claims. The research proposal responds to new emerging needs in the field of quality of life and environment. Cosmetic products, indeed, were identified as factors influencing ecological footprint, consumer wellbeing and safety;
therefore, new methods for the rigorous evaluation of cosmetic ingredients and formulas in terms of safety, efficacy and environmental friendliness are becoming more and more important. The project implements the development of in vitro testing methodologies, using cells studies, ex-vivo tests on explanted tissues and finally also clinical testing on healthy volunteers. The completion of the present research project will lead to the availability of new tools for the assessment of cosmetic quality to the ultimate goal of preserving personal health and the environment.

**Supervisor:** Prof. Roberta Censi

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “ricerca PNRR”, CUP J11J23001330006

**Duration:** 3 years  
**Provisional starting date:** 1st December 2023 (in any case, no later than December the 31st, 2023).

**ECTS credits (within 3 years): 180**  
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

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  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**  
  - 40 ECTS in research activity (with a yearly evaluation)  
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills  
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**  
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
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- Respect of the DSNH principle and horizontal principles of the Program
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- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
Scholarship code: CHEM 2

Language of the PhD Program: English

PhD Course and curriculum: CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY, Curriculum CHEMICAL SCIENCES
Leader of the PhD Course: SAURO VITTORI
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project: multidisciplinary approach for the study of organic materials applied to cultural heritage: functional characteristics for conservation after application, artificial aging and in the presence of environmental pollutants in the context of the monitoring of some precious wooden statues in the Marche Region (approccio multisciplinare per lo studio di materiali organici applicati ai beni culturali: caratteristiche funzionali alla conservazione dopo l’applicazione, l’invecchiamento artificiale e in presenza di inquinanti ambientali nell’ambito del monitoraggio di alcune statue lignee di pregio nelle Marche)

This PhD project proposes to study the behavior of some organic materials used in the world of cultural heritage, both in their intrinsic functionality (such as pigments, dyes, binders pictorial), both as additives or protective in conservation and restoration. In particular, we want to pose focus on commercial products currently used in art and restoration (acrylic, vinyl, tempera paints and oils available in the fine arts, consolidating, protective, etc.), but also on materials of natural origin, easy availability and transformation, of waste or in any case low-cost applicable in cultural heritage and in their conservation, according to a circular economy approach. Through the implementation of accelerated artificial ageing, we therefore intend to study the chemical-physical degradation of these type of materials through the identification of chemical markers capable of check a preventive monitoring for the purposes of both the conservation of the pictorial drafts and their effectiveness and stability of the restoration work performed.

Supervisor: CRISTINA CIMARELLI
Co-supervisor (where applicable): SERENA GABRIELLI

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Patrimonio Culturale”, CUP J11J23001340006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
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  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
● 10 ECTS in mandatory SAS Activities to acquire transferable skills
● 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

● 3 Year:
  o 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  o 10 ECTS in mandatory SAS Activities to acquire transferable skills

The curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  o Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  o Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.

Scholarship code: CHEM 3

Language of the PhD Program: English

PhD Course and curriculum: PhD Course: Chemical and Pharmaceutical Sciences and Biotechnology Curriculum: Chemical Sciences
Leader of the PhD Course: Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project: The focus will be the study of the waste material that is obtained from the production of monovarietal extra virgin olive oils from Marche region (Italy) which, from previous studies, resulted to have peculiar content of bioactive substances (https://doi.org/10.3390/antiox9040330). The market of monovarietal oils is growing, therefore the waste obtained from these productions is increasingly available and represents a reliable source of specific bioactive substances, depending on the variety. These waste materials will be investigated for the content of bioactive substances and for their possible employ in the production of nutraceuticals and/or functional foods. The PhD student will spend a period in CEBAS-CSIC (Murcia, Spain), to carry out metabolomics studies to analyze the profile of bioactive compounds of food and/or food waste under investigation, the stability of these compounds in gastrointestinal conditions and the possible impact of these compounds on the gut microbiota.

Supervisor: Dennis Fiorini (Unicam, Camerino, Italy)
Co-supervisor: Carlos J. García Hérnandez-Gil (CEBAS-CSIC, Murcia, Spain)
Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “ricerca PNRR”, CUP J11J23001330006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

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  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12

Scholarship code: CHEM 4

Language of the PhD Program: English
PhD Course and curriculum: PhD Course in Chemical and Pharmaceutical Sciences and Biotechnology
Curriculum Chemical Sciences
Leader of the PhD Course: Prof. Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino
Research Topic and project: **Development of novel metal-based catalysts for the oxidation of hydrocarbon substrates**

The research topic of the research project aims at the development of new metal complexes with catalytic activity in the activation of saturated and unsaturated hydrocarbon molecules for their oxidative transformation into functionalized substances with high added value (fine chemicals), to reduce the waste products of chemical and pharmaceutical industry with a view to a circular economy and sustainable economic growth.

**Supervisor:** Prof. Riccardo Pettinari  
**Co-supervisor:** Prof. Fabio Marchetti

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “ricerca PNRR”, CUP J11J23001330006

**Duration:** 3 years  
**Provisional starting date:** 1st December 2023 (in any case, no later than December the 31st, 2023).

**ECTS credits (within 3 years): 180**  
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**  
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
Scholarship code: CHEM 5

Language of the Phd Program: English

PhD Course and curriculum: Chemical and Pharmaceutical Sciences and Biotechnology, Curriculum: Chemical Sciences
Leader of the Phd Course: Prof. Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project: Electrochemical Hydrogen production at metal electrodes
The project concerns the study of electrochemical hydrogen production and storage at different metal electrodes. In particular, several arrangements of metal electrodes based on alloys, multilayers, nanoparticles will be checked. The different electrodes will be characterized for their chemical-physical properties by XRD, SEM/EDX, elemental composition...

Supervisor: Prof. Mario Berrettoni
Co-supervisor: Prof. Maura Pellei

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001350006
With the contribution of FINTEL ENERGY GROUP SpA

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses
    3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses
    3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months

Scholarship code: CHEM 6

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY – Curriculum Pharmaceutical, Nutraceutical and Food Sciences**

Leader of the Phd Course: Sauro Vittori

Lead Partner of the PhD Program: University of Camerino

Operative site of the Phd Student: University of Camerino

Research Topic and project: **Innovative and green procedures and solvents for the recycle and the depolymerization of polymer matrices**.

In this PhD project, the candidate will face up to the recovery/recycle of PET (polyethylene terephthalate) and Nylon (polyamides, both 6 and 66) polymers. Two distinct but connected ways of recycle will be treated: the separation and recover of the whole polymer with the same characteristics of the starting material; the depolymerization of the matrix leading to the monomers, from which novel suitable polymers for different purposes can be obtained. All the procedures to be developed are solvent-based and eco-friendly ones.

Supervisor: Dr Matteo Tiecco

Co-supervisor: Prof. Serena Gabrielli

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001350006

With the contribution of REDANTEA S.R.L. – VAT N° / registration n°: 11053240963

Duration: 3 years

Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
40 ECTS in research activity (with a yearly evaluation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills
- 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

3 Year:
- 50 ECTS in research activity (writing and defend the Doctoral dissertation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months

**Scholarship code:** CHEM 7

**Language of the Phd Program:** English

**PhD Course and curriculum:** CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY – Curriculum Pharmaceutical, Nutraceutical and Food Sciences

**Leader of the Phd Course:** Sauro Vittori

**Lead Partner of the PhD Program:** University of Camerino

**Operative site of the Phd Student:** University of Camerino

**Research Topic and project:** Study of the constituents of beverages obtained with various extractive methods for their optimization (Studio dei costituenti di bevande ottenute con vari metodi estrattivi per l'ottimizzazione degli stessi)

The present research project considers the extraction of coffee, which is one of the most consumed products in the world and whose preparation is considered an art rather than a mere procedure. The research activity doctoral course will consist, by way of example but not limited to, in the study of the content of coffee and other drinks obtained with similar extraction processes (tea, infusions, etc.) with methods various types of analytical instruments (HPLC, GC, coupled to various detectors, including spectrometers of mass; UV-Vis spectrophotometers; PH meters; etc.), as well as the preparation of said beverages with various methods, also innovative, by varying the experimental conditions and the parameters of the systems extractives.

It may be useful/necessary to perform sensory analysis, comparing the drinks obtained under different conditions and with different systems.

**Supervisor:** Prof. Sauro Vittori
Duration: 3 years
Provisional starting date: 1\textsuperscript{st} December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months

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**Scholarship code: CHEM 8**

Language of the PhD Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY, Curriculum CHEMICAL SCIENCES**
Leader of the PhD Course: Prof. Sauro Vittori
Lead Partner of the PhD Program: University of Camerino

Operative sites of the PhD Student: University of Camerino (ChIP) - Istituto Superiore di Sanità

Research Topic and project: **Innovative systems for drug delivery in oncology**
The main goal is the development of an anticancer strategy based on copper, silver, gold and other transition metal coordination compounds as efficient chemotherapeutics. Different classes of coordination compounds will be designed, synthesized and tested, in order to select the best candidates in terms of molecular stability, water solubility and anticancer efficacy. The most promising metal complexes will be conjugated to gold nanoparticles of different shapes and sizes, already functionalized with a selection of organic molecules in order to chemisorb the coordination compounds. The most promising nanodrugs will be tested for their ability to efficiently release the coordination compounds by photoactivation. The best candidates as anticancer drugs will be biologically characterized, in terms of biosafety and efficiency against a selection of cancer cells. The present studies will allow to innovatively contribute to the state-of-the-art research in the field of metal drugs and related nanoparticles for treatment of cancer.

Supervisor: Maura Pellei  
Co-supervisors: Carlo Santini, Annarita Stringaro

Scholarship funded under an Agreement signed in 2023 by both UNICAM and Istituto Superiore di Sanità (ISS)

Duration: 3 years  
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180  
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:  
Mandatory Period of research mobility abroad: at least 6 months  
Further mandatory period of research and training mobility for the scope of the research topic, in Italy and at ISS: to be defined
Scholarship code: CHEM 9

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY, Curriculum CHEMICAL SCIENCES**
Leader of the Phd Course: Prof. Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative sites of the Phd Student: University of Camerino (ChIP) - Istituto Superiore di Sanità

Research Topic and project: **Innovative systems for drug delivery in oncology**
The main goal is the development of an anticancer strategy based on copper, silver, gold and other transition metal coordination compounds as efficient chemotherapeutics. Different classes of coordination compounds will be designed, synthesized and tested, in order to select the best candidates in terms of molecular stability, water solubility and anticancer efficacy. The most promising metal complexes will be conjugated to gold nanoparticles of different shapes and sizes, already functionalized with a selection of organic molecules in order to chemisorb the coordination compounds. The most promising nanodrugs will be tested for their ability to efficiently release the coordination compounds by photoactivation. The best candidates as anticancer drugs will be biologically characterized, in terms of biosafety and efficiency against a selection of cancer cells. The present studies will allow to innovatively contribute to the state-of-the-art research in the field of metal drugs and related nanoparticles for treatment of cancer.

Supervisor: Carlo Santini
Co-supervisors: Maura Pellei, Annarita Stringaro

Scholarship funded under an Agreement signed in 2023 by both UNICAM and Istituto Superiore di Sanità (ISS)

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic, in Italy and at ISS: to be defined

Scholarship code: CHEM 10

Language of the Phd Program: English

PhD Course and curriculum: CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY, curriculum: Pharmaceutical, Nutraceutical and Food Sciences
Leader of the Phd Course: Prof. Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project: PRIN 2022 Prot. 2022KC3X9L - title: Nucleotide-based tools to inhibit nanoRNA degradation in cells: is REXO2 a novel target in cancer therapy?

Prostate cancer (PC) is the third leading cause of cancer-related mortality in European men. PC cells show specific patterns of metabolic modifications involving mitochondria. Mitochondrial functionality requires proper MtRNA homeostasis, including the nanoRNAse activity of REXO2, able to degrade 2-5 nt RNA fragments. PC cells display an increased REXO2 expression as prognostic unfavourable marker. Although there are structural and functional information on REXO2, its role in cancer and more specifically in PC have not been investigated.

The project is focused on the synthesis and biologically evaluation of nucleotide-based molecules able to specifically inhibit REXO2 with the aim to interfere with cancer cell proliferation.

The research activities will be undertaken at the School of Pharmacy in the Chemistry Interdisciplinary Project (ChIP)'s recently built laboratories in the context of a highly active research environment.

Supervisor: Loredana Cappellacci

Scholarship co-funded under PRIN 2022, project n. 2022KC3X9L – Italian Ministry of University and Research

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.
Mandatory Period of research mobility abroad: at least 6 months

*Note: this scholarship will be available only in case that funding to the PRIN 2022 project is actually assigned and provided to UNICAM.*

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**Scholarship code: CHEM 11**

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**, curriculum **Pharmaceutical, Nutraceutical and Food Sciences**
Leader of the Phd Course: Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic: Medicinal Chemistry; Title: **development of ligands active on purinergic system**
The research topic is focused on design and development of new molecules as ligands of purinergic system involved in neuroinflammation and neurodegeneration, as potential antitumor and enzyme inhibitors. The new synthesized molecules will be evaluated in in vitro and ex vivo studies in specific cell lines or in animal tissues.
In addition, their absorption and ability to be transported into the central nervous system will be estimated by everted intestinal sac or CaCo2 cells and blood brain barrier crossing assay, respectively.

Supervisor: Gabriella Marucci
Co-supervisor: Diego Dal Ben

Scholarship co-funded under PRIN 2022, project n° 20225LKPYA - Italian Ministry of University and Research - Team Leader for UNICAM: Diego Dal Ben. Title of the project: Development of a COmbined P2X4/P2X7 targeting strategy to manage Inflammatory Bowel Diseases: a translational study (COPe-IBD). PI: Elena Adinolfi (Univ. Ferrara). RU Unicam: Diego Dal Ben. CUP Master: F53D23005260006. CUP Diego Dal Ben: J53D23008910006.

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

Note: this scholarship will be available only in case that funding to the PRIN 2022 project is actually assigned and provided to UNICAM.

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**Scholarship code: CHEM 12**

Language of the PhD Program: English

PhD Course and curriculum: **Chemical and Pharmaceutical Sciences and Biotechnology**, curriculum Pharmaceutical, Nutraceutical and Food Sciences

Leader of the PhD Course: Prof. Sauro Vittori

Lead Partner of the PhD Program: University of Camerino

Operative site of the PhD Student: University of Camerino

Research Topic and project: **Role of miRNA in substance abuse disorders**

MicroRNAs (miRNAs) are short RNA molecules that regulate gene expression and influence physiological and pathological mechanisms. miRNAs have been implicated in the control of numerous important biological processes. For example, miRNAs are critical in brain development and functions and control dendritic growth and their dysfunction has been implicated in numerous psychiatric disorders and also in drug addiction-related behaviors. We will conduct molecular, functional and behavioral analysis in vitro and in vivo to further elucidate the role of miRNA in substance abuse. miRNA could be and important pharmacological target to treat substance use disorders and associated comorbid psychiatric disorders such as anxiety.

Supervisor: Massimo Ubaldi

Scholarship co-funded under PRIN 2022 – Italian Ministry of University and Research – project title: "miRNA 137 as a mediator of adolescent alcohol drinking and comorbid disorders caused by prenatal alcohol exposure“ (project number 2022X9X5MS)

Duration: 3 years

Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level.
1 Year:
- 40 ECTS in research activity (with a yearly evaluation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills
- 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

2 Year:
- 40 ECTS in research activity (with a yearly evaluation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills
- 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

3 Year:
- 50 ECTS in research activity (writing and defend the Doctoral dissertation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills

The curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

Note: this scholarship will be available only in case that funding to the PRIN 2022 project is actually assigned and provided to UNICAM.

Position code: CHEM 13

Type of Position: without scholarship

Language of the Phd Program: English

PhD Course and curriculum: CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY, Curriculum CHEMICAL SCIENCES
Leader of the Phd Course: Prof. Sauro Vittori
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino (ChIP)

Research Topic and project: Biomass-derived biopolymers for pharmaceutical and biomedical applications

With the development of sustainable materials, biomass-derived biopolymers have attracted significant research interest because of their excellent performance, cost-effectiveness, and environmental friendliness. The main goal of the present doctoral topic is the development of green and efficacious methods for the extraction of biopolymers (polysaccharides and proteins) derived from biomasses (algae, bran, crustaceans, cocoons, etc.), their chemical derivatization to introduce advanced functionalities. In silico studies will help in verifying the biopolymer conformation in light of its potential use in delivery drugs and natural active principles. Full physicochemical characterization of the new biopolymer will be possible through advanced techniques such as MALDI TOF MS. Finally, the new biopolymer will be applied in the formulation of various drug delivery systems, such as nanoparticle formulation for drug delivery and targeting, hydrogels for sustained drug, topical formulations, wound dressing, etc.

Supervisor: Roberta Censi
Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

*Note: this topic will be available only in case that Ministerial requirements for the activation of positions without scholarship are met.*

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**Scholarship code: COMP 1**

Language of the Phd Program: English

PhD Course and curriculum: PhD Course in *Computer Science and Mathematics*
Leader of the Phd Course: prof. Andrea Polini
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project: *Models and calculation systems for automatic tests* (Modelli e sistemi di calcolo per test automatici)

The research project intends to develop models for automatic quality tests in an industrial environment. To this end, various measurement techniques will be analysed, the related error theory and information extraction with Machine Learning techniques. Furthermore, we intend to develop calculation codes to concretely test and validate these methodologies with case studies provided by real industrial applications.

Supervisor: Egidi Nadaniela
Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001360006
With the contribution of 2T srl – VAT n° 02066870433

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months.

**Scholarship code: COMP 2**

Language of the Phd Program: English

PhD Course and curriculum: **Computer Science and Mathematics**
Leader of the Phd Course: Prof. Andrea Polini
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino
Research Topic and project: The Language of Dreams: a mobile-web interface for linguistic analysis of dream content

The objective of the three-year PhD research project is to define an unconventional pipeline based on advanced data science methods to be applied to the set of dream reports and to provide an open access, expandable and high quality IT framework suitable to support each stage of data processing. The ultimate goal is to make the dream repository and data management framework available for future basic and translational applications.

Supervisor and co-supervisor: Michele Bellesi, Emanuela Merelli

Scholarship co-funded under PRIN 2022 – Italian Ministry of University and research – Project title: “The Language Of Dreams: the relationship between sleep mentation, neurophysiology, and neurological disorders”

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

Note: this scholarship will be available only in case that funding to the PRIN 2022 project is actually assigned and provided to UNICAM.

Scholarship code: COMP 3

Language of the Phd Program: English

PhD Course and curriculum: Computer Science and Mathematics
Leader of the Phd Course: Prof. Andrea Polini
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino
Research Topic and project: **INTERPRETABILITY AND EXPLAINABILITY IN MACHINE LEARNING**

In an era where Machine Learning techniques are gaining ground, it is very important to focus on the trust that Artificial Intelligence tools inspire in users. Most of the algorithms developed in Machine Learning are systems whose operations are not visible to the user and usually reach conclusions or decisions without providing any explanations as to how they were reached. For these reasons, research is focusing on making these tools understandable from a human point of view.

Supervisor: Renato De Leone

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

**ECTS credits (within 3 years): 180**

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

**Scholarship code: COMP 4**

Language of the Phd Program: English

PhD Course and curriculum: **Computer Science and Mathematics**
Leader of the Phd Course: Prof. Andrea Polini

Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project: **System definition, implementation, and analysis of collaborative process-driven and space-aware systems (Definizione, implementazione, e analisi di sistemi collaborativi process-driven e space-aware)**
This project consists in the definition, implementation and analysis of process-driven collaborative systems, where multiple software and non-software entities (e.g. people, robots, IoT devices, ...) interact with each other and with the space around them.

The intent is to define conceptual models, process notations with precise semantics operational, development tools and techniques capable of defining at an appropriate level of abstraction such scenarios and enable their execution in simulated and real environments. No less important will be the study and the definition of analysis techniques capable of identifying syntactic and semantic errors such systems both in the modeling of the system, during execution and afterwards.

Supervisor: Barbara Re

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ;
    3 ECTS for participation in seminars and events
- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ;
    3 ECTS for participation in seminars and events
- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

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**Position code: COMP 5**
Type of position: supernumerary – international mobility PhD Position

Language of the PhD Program: English

PhD Course and curriculum: **Computer Science and Mathematics**
Leader of the PhD Course: Prof. Andrea Polini

Lead Partner of the PhD Program: University of Camerino
Operative sites of the PhD Student: University of Camerino –Italy; FHNW University of Applied Sciences and Arts, Northwestern Switzerland

Research Topic and project: **Enhancing chatbots toward digital humans**
While chatbots usually have a messenger-like interfaces, digital humans are computer-generated models
that can be designed, animated, and moved like real humans in the digital world. They can expand chatbots by giving them a human face. They can be applied in scenarios, in which a personal relationship between user and system might be useful, e.g. in healthcare or education. The creation of digital humans usually includes the creation of a graphical model of a person, the conversation with a chatbot and the animation of the model such that it is in line with the speech act of the conversation.

Supervisor: Knut Hinkelmann (FHNW)

Position managed under an agreement signed in 2022 between UNICAM and FHNW University of Applied Sciences and Arts, Northwestern Switzerland, for research in the field of “Business Information Systems”.

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 weeks each year at FHNW (and at least 6 weeks each year at UNICAM)
Further aspects related to this topic must comply with the Agreement the position is based on.

**Position code: COMP 6**
Type of position: supernumerary – international mobility PhD Position

Language of the PhD Program: English

PhD Course and curriculum: **Computer Science and Mathematics**
Leader of the PhD Course: Prof. Andrea Polini
Lead Partner of the PhD Program: University of Camerino
Operative sites of the PhD Student: University of Camerino – Italy; FHNW University of Applied Sciences and Arts, Northwestern Switzerland

Research Topic and project: **Enhancing chatbots toward digital humans**
While chatbots usually have a messenger-like interfaces, digital humans are computer-generated models that can be designed, animated, and moved like real humans in the digital world. They can expand chatbots by giving them a human face. They can be applied in scenarios, in which a personal relationship between user and system might be useful, e.g. in healthcare or education. The creation of digital humans usually includes the creation of a graphical model of a person, the conversation with a chatbot and the animation of the model such that it is in line with the speech act of the conversation.

Supervisor: Knut Hinkelmann (FHNW)

Position managed under an agreement signed in between UNICAM and FHNW University of Applied Sciences and Arts, Northwestern Switzerland, for research in the field of “Business Information Systems”.

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 weeks each year at FHNW (and at least 6 weeks each year at UNICAM)
Further aspects related to this topic must comply with the Agreement the position is based on.

Scholarship code: LEGAL 1

Language of the Phd Program: English/Italian

PhD Course and curriculum: Legal and Social Sciences, curriculum: Fundamental Rights in the Global Society
Leader of the Phd Course: Prof. Carlotta Latini
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project: **In the interest of future generations: principles and techniques for assessing sustainability in state and European Union law** (Nell’interesse delle generazioni future: principi e tecniche di valutazione della sostenibilità nel diritto interno e dell’Unione Europea)

Topics keywords: constitutional law, comparative public law, EU law, environmental law, sustainability, environmental sustainability assessment, environmental impact assessment, citizenship, participation

Supervisor: Prof. Paolo Bianchi

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Pubblica Amministrazione”, CUP J11J23001380006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  - Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.
Scholarship code: LEGAL 2

Language of the PhD Program: English

PhD Course and curriculum: Legal And Social Sciences; curriculum: Fundamental Rights in the Global Society
Leader of the PhD Course: Carlotta Latini
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project: Youth Participation in Decision-making Processes
The project intends to contribute to the investigation of the theme of youth participation in decision-making processes, still not adequately studied, both from the side of theoretical reflection and in terms of institutional tools.

Supervisor: Tatiana Guarnier

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Pubblica Amministrazione”, CUP J11J23001380006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
Respect of deadlines and guidelines set by the MUR
Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  - Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.

Scholarship code: LEGAL 3

Language of the Phd Program: English

PhD Course and curriculum: Legal and Social Sciences, curriculum: Civil Law and Constitutional Legality
Leader of the Phd Course: Carlotta Latini
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project: Artificial Intelligence and Civil Liability.
One of the new frontiers of civil liability is connected to the subject of so-called artificial intelligence and the hypotheses of liability for damage caused by an accident in which a digital agent is involved. In particular, the possible solutions indicated address the establishment of a compulsory insurance scheme for specific categories, to be borne by producers and owners for damages possibly caused by digital agents. In the areas described, a serious and in-depth path of reflection should be launched, leveraging a virtuous model capable of adopting a system of social security, which, however, requires the achievement of certain essential social and cultural conditions. Fundamental is the contribution of comparative law, with a view to looking beyond national borders, in search of different models of juridicality capable of offering adequate and rational regulatory solutions. The research project aims to contribute to providing a scientific basis and common path of reflection on the issues outlined, with a view to offering concrete answers to open questions. The issue of civil liability for damage caused by activities carried out by artificial agents is also a fundamental issue at European level, due to the need to guarantee the same level of efficiency, transparency and consistency in the implementation of legal rules. Fundamental to this topic is the deepening of European AI policy based on the idea that it is necessary to promote responsible development of technological progress responsible development of technological progress.

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Pubblica Amministrazione”, CUP J11J23001380006

Supervisor: Maria Paola Mantovani

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level
  ● 1 Year:
- 40 ECTS in research activity (with a yearly evaluation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills
- 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  - Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.

Scholarship code: LEGAL 4

Language of the Phd Program: English

PhD Course and curriculum: Legal and Social Sciences - Civil Law and Constitutional Legality
Leader of the Phd Course: Carlotta Larini
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project: Artificial intelligence law economics - Intelligenza artificiale diritto economia (iade)
A first topic of investigation is therefore the balance between the rights connected to human enhancement fruit of the use of A.I. and the limits that the legal system can or must place on the potential of A.I.
A second topic of analysis is the relationship between AI, Big Data and the protection of personal and informational data information in a general sense.
The A.I. it also manages patrimonial and contractual aspects; A.I. controls some important legal activities through the use of machine learning. For the potential large diffusion, the A.I. should be mentioned independently used in vehicles self-driving.
Topics of reflection related to A.I. in the above areas are related to important related aspects the responsibility and distribution of risk for any damage caused by the managed machines of the A.I.

Supervisor: Francesco Rizzo

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Pubblica Amministrazione”, CUP J11J23001380006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

*Special requirements, additional to “standard” ones:*
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  - Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.

The Phd Student must collaborate also in
- Publications
- Conferences
- Advice
Scholarship code: LEGAL 5

Language of the Phd Program: English

PhD Course and curriculum: **Legal and social Sciences – curriculum: Fundamental Rights in the Global Society**
Leader of the Phd Course: Prof. Carlotta Latini
Lead Partner of the PhD Program: University of Camerino
Operative sites of the Phd Student: University of Camerino - Italy; University of Extremadura –Spain (within the limits set by the funding Program)

Research Topic and project: **Algorithmic legality and automated administrative decisions**
The research project starts from the necessary reconsideration of some fundamental principles and institutes of administrative law such as the principle of legality, the rules of the administrative procedure, the exercise of discretionary power and the related judicial review. The research on algorithmic legality has only been defined in some European national legal systems and in different ways. In Italy the general rule is not sufficient to guarantee the substantial legitimacy of the administrative action: it is necessary to verify the impact of automated administrative decisions with reference to compliance with some general principles such as those of publicity and transparency, of impartiality and of the human in the loop (i.e. the non-exclusivity of the algorithmic decision, for which in any case there is a human contribution in the decision-making process capable of controlling, validating or denying the automated decision in the motivation phase).

Supervisor: Prof. Sara Spuntarelli

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Pubblica Amministrazione”, CUP J11J23001380006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
The curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  - Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months, no more than 12.

Scholarship code: LEGAL 6

Language of the Phd Program: English

PhD Course and curriculum: **Legal and Social Sciences, curriculum Civil Law and Constitutional Legality**
Leader of the Phd Course: Carlotta Latini
Lead Partner of the PhD Program: University of CAMERINO
Operative site of the Phd Student: University of CAMERINO

Research Topic and project: **The ownership of churches and other places of worship from the perspective of constitutional legality: historical roots and current issues.**

Globalisation and migration flows have led to the emergence of multicultural and multireligious societies, in which it is increasingly necessary to harmonize the constitutional principle of religious freedom (which Art. 19 recognizes for everyone, thus including non-EU citizens and illegal immigrants) with the practical aspects of the ownership of places of worship, in this new general framework in which new religious denominations require new places of worship, while those of religious denominations with the strongest historical roots are often part of property complexes with complex regulatory developments, which must be monitored and reorganized in the light of the combined provisions of Articles 7, 8, 19 and 20 of the Constitution with Article 831 of the Civil Code.

Supervisor: Stefano Testa Bappenheim

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001370006

With the contribution of Studio Legale Vannicelli Cinquemani Celletti & Malossini

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**

The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months

The PhD Student must collaborate also in

- Publications
- Conferences
- Advice

**Scholarship code: LIFE 1**

Language of the PhD Program: English

PhD Course: *Life and Health Sciences. Curriculum: NUTRITION, FOOD AND HEALTH*

Leader of the PhD Course: Attilio Fabbretti

Lead Partner of the PhD Program: University of Camerino

Operative site of the PhD Student: University of Camerino

Research Topic and project:
**Title**: *Nutrigenomics and sustainability: how to preserve human and environmental health.*
**Description:** The project aims to study how sustainable food can modulate nutrigenomic responses to maintain human health and well-being. In particular, the nutrigenomic properties of plant food extracts will be studied on cell lines in order to evaluate the ability of bioactive compounds to regulate gene expression, DNA methylation and the activity of enzymes involved in DNA methylation (DNMTs) and demethylation (TET proteins).

Supervisor: Prof. Rosita Gabbianelli  
Co-supervisor: Dr. Laura Bordoni

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Ricerca PNRR”, CUP J11J23001390006

Duration: 3 years  
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

**ECTS credits (within 3 years): 180**

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level:

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
Scholarship code: LIFE 2

Language of the Phd Program: English

PhD Course: Life and Health Sciences. Curriculum: ONE HEALTH
Leader of the Phd Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project:
Title: Health monitoring program and pathological findings on sea turtles in the Adriatic Sea, with particular regard to the presence of microplastics in the gastrointestinal contents and tissues.

Description: Caretta caretta represents the most abundant sea turtle species in the Mediterranean and the population found in this sea, almost totally separated from the great oceans, has specific demographic and genetic characteristics. In the three years of this project, a systematic examination of all the Caretta caretta turtles that will be found dead along the Adriatic or sent from recovery centers will be carried out, applying systematic and standardized post-mortem investigations to evaluate the causes of death. In particular, the presence of macro- and microplastics in the gastrointestinal tract and in the different tissue districts will be evaluated. Microplastics are now omnipresent pollutants in the marine environment and represent a problem for animal and human health. Examination of the toxicological profile for microplastics is challenging due to their large variety of physicochemical properties and toxicological behaviour. In addition to their concentration, other parameters such as the type of polymer, size, shape and color are important to consider when evaluating their potential toxicity. Microplastics can adsorb pollutants such as polycyclic aromatic hydrocarbons (PAHs) or metals on their surface and may contain plastic additives that add to their toxicity. It will be interesting to evaluate the impact of these pollutants in species with a very long life expectancy and natural predators, therefore subject to bioaccumulation.

Supervisor: Prof. Giacomo Rossi

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “Ricerca PNRR”, CUP J11J23001390006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12

**Scholarship code: LIFE 3**

Language of the PhD Program: English

**PhD Course:** Life and Health Sciences. Curriculum: ONE HEALTH
Leader of the PhD Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

**Research Topic and project:**
**Title:** Use of a sucralfate topical formulation for wound healing in species of veterinary interest.
**Description:** The proposed research project aims to evaluate the use of a topical prescription of sucralfate as a promoter of healing of cutaneous wounds in an experimental wound model, translational with respect to other animal species and humans. The proposal fits well with the strategy adopted by UNICAM in the field of scientific research, especially within the framework of national and European policies on technological development. The proposed research project will allow to accelerate acquisitions in the field of translational biomedical sciences, since animals can represent preclinical models for humans, as well as to improve the level of public health, medical education and clinical care. Analyzed from a One Health perspective, the research implements and emphasizes the close interdependence between both human and veterinary public health disciplines, in order to address new and old health problems more effectively by applying an innovative and integrated approach. This project aims to bridge the gap between the various areas of animal and human health by promoting multidisciplinary research to improve the health and welfare of all species.

Supervisor: Prof. Fulvio Laus

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001400006
With the contribution of TEKNOFARMA SRL – VAT n° 00779340017
Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months.

**Scholarship code: LIFE 4**

Language of the Phd Program: English

**PhD Course: Life and Health Sciences. Curriculum: ONE HEALTH**
Leader of the Phd Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino
Research Topic and project:

**Title:** Use of homotaurine as a nutritional supplement for the management of cognitive decline in elderly dogs

**Description:** The research project aims to evaluate the use of homotaurine as a mood enhancer in dogs suffering from cognitive dysfunction (recognized as the veterinary equivalent of Alzheimer’s disease). Homotaurine is a nutraceutical capable of modulating cholinergic transmission at the cortical level, improving mild cognitive deficits in patients, as well as reducing levels of circulating beta amyloid substance. From a translational point of view, very recent studies have identified in the elderly dog affected by Cognitive Dysfunction Syndrome, the most similar spontaneous model to humans as regards the development and progression of the disease. The possibility of confirming the mood enhancer effect of homotaurine is of strategic importance, by virtue of the aforementioned fact that the dog represents the most similar spontaneous model to humans for Alzheimer’s disease. The data obtained from this project could provide a valid and significant contribution to the reduction of expenditure on the national health system for health services and the supply of medicines related to the cognitive sphere and related depressive syndromes.

**Supervisor:** Dr. Andrea Marchegiani  
**Co-supervisor:** Dr. Alessandro Di Cerbo

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001400006  
With the contribution of FB MARIA SRL – VAT n° IT02318210446

**Duration:** 3 years  
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

**ECTS credits (within 3 years): 180**

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**

The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
Mandatory period of research mobility abroad: at least 6 months, no more than 12
Mandatory period in the Company that cofunds the scholarship: up to 18 months.

Scholarship code: LIFE 5

Language of the PhD Program: English

PhD Course: Life and Health Sciences. Curriculum: MOLECULAR BIOLOGY AND CELLULAR BIOTECHNOLOGY
Leader of the PhD Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project:
Title: The gut microbiota in the first 1000 days of life: study of early probiotic supplementation for a healthy neurodevelopment in child.

Description: The project aims to study the role of gut-brain axis during the first decades of human life. The research will focus on the correlation within a healthy neurodevelopment in child and the potential activity of specific probiotic strains used during pregnancy and/or in the very early days of life as valuable mean for a healthy infant brain development. The probiotic supplementation will be also studied as prevention approach in specific neurodevelopment disorders.

Supervisor: Professor Stefania Silvi

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001400006
With the contribution of Synbiotec srl – VAT n° 01543880437

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months.

**Scholarship code: LIFE 6**

Language of the Phd Program: English

PhD Course: *Life and Health Sciences. Curriculum: NUTRITION FOOD AND HEALTH*
Leader of the Phd Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project:
**Title:** Plant-based beverages: new trends in the coffee industry

**Description:** The project aims to characterize, from a nutritional and biochemical point of view coffee-based drinks prepared by replacing cow’s milk with plant-based beverages exploitable for those subjects affected by cow’s milk protein allergy (CMPA) or lactose intolerance. Moreover, recently there is a greater awareness of the consumers towards vegetable food sources, thus the market has developed alternative plant-based beverages such as soy, oats, almonds, and millet beverages to replace cow’s milk. Since vegetable drinks are extremely different from each other in terms of composition, the resulting coffee-based beverage obtained using plant-based drinks may have different nutritional properties and therefore different impacts on human health. In this regard, particular attention will be also paid to the digestibility of these preparations.

Supervisor and co-supervisor: Silvia Vincenzetti, Valeria Polzonetti

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001400006
With the contribution of SIMONELLI Group, Fiscal Code 01951160439

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).
ECTS credits (within 3 years): 180

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

*Special requirements, additional to “standard” ones:*

The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months.

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**Scholarship code: LIFE 7**

Language of the PhD Program: English

**PhD Course:** LIFE AND HEALTH SCIENCES. **Curriculum:** MOLECULAR BIOLOGY AND CELLULAR BIOTECHNOLOGY

Leader of the PhD Course: Attilio Fabbretti

Lead Partner of the PhD Program: University of Camerino

Operative site of the PhD Student: University of Camerino

**Research Topic and project:**

**Title:** "Exploring Mitochondria-Lysosomes contact sites dynamics in glioma: novel targets for new biomedical strategies"

**Description:**

Mitochondrial and lysosomal functions are intricately related and critical for maintaining cellular homeostasis, as highlighted by multiple diseases linked to dysfunction of both organelles. Recent studies have revealed the existence of mitochondria–lysosomes (MT–LY) contact sites and suggested that these inter-organelle membrane contacts play an important role both in health and disease. These contact sites are important to regulate the dynamics of their network and the bidirectional exchange of ions and
metabolites (e.g., Ca2+, iron and lipids) between the two organelles. In this project, we aim to deeply explore whether and how perturbations of MT-LY contact sites can impact on up/downstream related cellular functions in physiological and pathological conditions (i.e., neurodegeneration and cancer). Briefly, the major aims of the project are: i) Characterization of MT-LY contact sites in glioma cell lines ii) Investigating TRPML1 role in the regulation of MT-LY contact sites III) Impact of nutrient availability and chemotherapy on MT-LY contacts and on TRPML1 mediated signaling.

Supervisor: Consuelo Amantini

Scholarship co-funded under PRIN2022 Prot. 20223ABZ82 — Italian Ministry of University and Research

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

Note: this scholarship will be available only in case that funding to the PRIN 2022 project is actually assigned and provided to UNICAM.

Scholarship code: LIFE 8

Language of the Phd Program: English

PhD Course: LIFE AND HEALTH SCIENCES. Curriculum: ONE HEALTH
Leader of the Phd Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino
Research Topic and project:

Title: **Plant diversity and assembly rules in changing forest ecosystems**

Description: Detecting and interpreting spatial relative associations of plant species combinations along a fine scale, will address species coexistence relationships inferring assembly rules within ecosystems and plant communities. The forest understorey, accounting for more than 90% of the plant diversity, can be used as a model to sample and measure plant combinations and describe assembly rules, under contrasting or gradient-organized tree stand structures. Information theory models by functions rooted on Shannon-Weiner probability, must be used and tested against null-models. Ecological trajectories can enlighten the response of the plant community in terms of compositional changes and behaviour, in relation with stand descriptors and ecological heterogeneity, aimed to characterize old-growth forests and stages of recovery.

Supervisor: Roberto Canullo
Co-supervisor: Giandiego Campetella, Sandor Bartha

Scholarship co-funded under Project 'ForChange' Consorzio REDI

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

**Scholarship code: LIFE 9**

Language of the Phd Program: English

PhD Course: **LIFE AND HEALTH SCIENCES. Curriculum: NUTRITION, FOOD AND HEALTH**
Leader of the Phd Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project:
Title: Evaluation of the ability to induce well-being and health by food and plant extracts and their constituents focusing on the human microbiota

Description: The project will study the antimicrobial, prebiotic and synbiotic activities, and properties of food and plant extracts on bacterial species belonging to skin or gut human microbiota. This will contribute to evaluate the impact of these active compounds (ingredients, extracts or whole food) on human health and well-being.

Supervisor: Professor Stefania Silvi

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

Position code: LIFE 10
Type of position: without scholarship

Language of the Phd Program: English

PhD Course: Life and Health Sciences. Curriculum: MOLECULAR BIOLOGY AND CELLULAR BIOTECHNOLOGY
Leader of the Phd Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project:
Title: Development of new technologies in Biological Science Education to favour the dissemination of molecular biology applications to the civil society

Description: This project is dedicated to teachers of sciences in the high schools, which take a temporary leave from the school to have a research experience. It is based on the Amgen Biotech Experience (ABE) that is an innovative science education program that empowers teachers to bring biotechnology to their classrooms to disseminate in the civil society the importance of biotechnological applications in health improvement. ABE is an international program with 25 partners, distributed in three continents (https://www.amgenbiotechexperience.com/). It is coordinated by the EDC (Education Development Center) from Boston (USA) and supported by the AMGEN Foundation. The University of Camerino, from 2022 is a partner of ABE Italy, coordinated by the National Association of Natural Sciences Teachers (ANISN) (https://amgenbiotechexperience.net/it/ital/home).

The PhD candidates selected for this project will maturate experiences in the diffusion of the ABE programme, will follow the new technologies in education developed by ABE, with the objective to improve them with new ideas and applications, and will evaluate the impact of this programme in the society by the identification of new indicators.

Supervisor: Cristina Miceli
Co-supervisor: Dr. Daniela Amendola

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level
- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Mandatory Period of research mobility abroad: at least 6 months

Note: this topic will be available only in case that Ministerial requirements for the activation of positions without scholarship are met.
**Position code: LIFE 11**
Type of position: without scholarship

Language of the Phd Program: English

**PhD Course: LIFE AND HEALTH SCIENCES. Curriculum: ONE HEALTH**
Leader of the Phd Course: Attilio Fabbretti
Lead Partner of the PhD Program: University of Cmerino
Operative site of the Phd Student: University of Camerino

Research Topic and project:

**Title:** *Role of Angiotensin (1-7) and beta-alanine in the control and rebalancing of the RAAS system.*

**Description:** The research project concerns the study, on an animal model, of the effect of the administration of Angiotensin (1-7) and beta-alanine in the control and rebalancing of the RAAS system. ACE2 catalyzes the degradation of potentially harmful angiotensin-II into the vasodilator angiotensin with favorable antiarrhythmic and cardioprotective effects. SARS-COV2, by binding to ACE2 (and activating the RAAS) causes its functional reduction. This may lead to increased Angiotensin II activity at the expense of Angiotensin(1-7)/MasR, contributing to disease severity. The administration of Ang-(1-7) could restore this balance, helping to decrease pulmonary inflammation and cardio-vascular risks, thus decreasing the symptoms of the disease.

Supervisor: Prof. Giacomo Rossi

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

**ECTS credits (within 3 years): 180**
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level:

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Mandatory Period of research mobility abroad:** at least 6 months

*Note: this topic will be available only in case that Ministerial requirements for the activation of positions without scholarship are met.*
Scholarship code: PHYS_MAT_EARTH 1

Language of the PhD Program: English

PhD Course and curriculum: Physics, Earth and Materials Sciences, curriculum Materials Science
Leader of the PhD Course: Prof. Andrea Di Cicco
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project:
**Functionalized Borophene as a Clean Energy Transition material**

Low dimensional materials as the two-dimensional (2D) boron polymorphs are the subject of the present proposal for the formation of a PhD candidate. Such materials are being considered for several possible applications in high-performance electronic devices, flexible and transparent electrodes, superconductor, alkali metal ion batteries, and hydrogen storage devices. In this PhD project, the student will be involved in the growth of borophene on Al surfaces, by pyrolysis of B2H6 at temperature up to 850K. Aluminum surfaces or Ag surfaces, can stabilize boron atoms, which come naturally as electron deficient, by preventing their oxidation in a sort of sacrificial process. On the other hand, we shall observe the favoring of intercalation/adsorption of molecular H, able to link and release H2 molecules in an efficient and reversible way by means of less than 0.3 eV of adsorption energy. In particular, the activation and deactivation of the adsorption sites could be better controlled by decoration of transition metals (Ti) with the possibility to reach the predicted 10% of H2 gravimetric density. The project falls under pillar 1 of the strategic lines of our University particularly devoted to the quality of environment, health and wealth of the human being and in general heritage of the territory. Camerino University has been one of the promoters of the “Ecosystem Vitality”, very much focussed on this pillar. For what regards the Physics department, it will take part to the Spoke on Nanomaterials based in Nocera Umbra industrial hub for the application of graphene and related compounds in the same project.

Supervisor: Roberto Gunnella, Physics Division, SST, Unicam

Scholarship funded NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “ricerca PNRR”, CUP J11J23001420006

Duration: 3 years
Provisional starting date: **1st December 2023** (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
40 ECTS in research activity (with a yearly evaluation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills
- 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

3 Year:
- 50 ECTS in research activity (writing and defend the Doctoral dissertation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
  - Further mandatory period of research and training mobility for the scope of the research topic: at least 6 months (proposed Host Institution: University of Modena and Trieste), no more than 12.

Scholarship code: PHYS_MAT_EARTH 2

Language of the Phd Program: English

PhD Course and curriculum: Physics, Earth and Materials Sciences curriculum Materials Sciences
Leader of the Phd Course: prof. Andrea Di Cicco
Lead Partner of the PhD Program: University of Camerino

Research Topic and project: Models and algorithms for prediction and optimization in coffee transformation processes (modelli e algoritmi per la predizione e l’ottimizzazione nei processi di trasformazione del caffè)
This research project considers the extraction of coffee, which is one of the most widely consumed products in the world and whose preparation is considered an art rather than a simple procedure. Regarding the chemical field, a wide variety of work is available in the literature. In contrast, an accurate description of the physico-chemical extraction process has only recently matured, and consequently, results on the prediction of the coffee organoleptic properties and its optimisation are not available, except at a qualitative level. This research has the following objectives: to allow consumers to make taste and/or health choices on the beverage and to minimise the raw material used. The strategy is to propose and study appropriate fluid-dynamic models combined with Machine Learning techniques, and to test their implementation in real case studies. This project will provide results that can be directly exploited in the case studies considered and will develop mathematical predictive tools with a strong physico-chemical imprint, which may be useful in future studies of percolation in porous media.
Supervisor: Pierluigi Maponi

Scholarship funded under NGEU – PNRR, DM 117/2023, M4 C2 I3.3, CUP J11J23001410006
With the contribution of SIMONELLI Group, Fiscal code 01951160439

Duration: 3 years
Provisional starting date: 1\textsuperscript{st} December 2023 (in any case, no later than December the 31\textsuperscript{st}, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

**Special requirements, additional to “standard” ones:**
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 117/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory period of research mobility abroad: at least 6 months, no more than 12
  - Mandatory period in the Company that cofunds the scholarship: up to 18 months.
Scholarship code: PHYS_MAT_EARTH 3
Language of the PhD Program: English

PhD Course and curriculum: Physics, Earth and Materials Sciences, curriculum Earth
Leader of the PhD Course: Prof. Andrea Di Cicco
Lead Partner of the PhD Program: University of Camerino
Operative sites of the PhD Student: University of Camerino; INGV

Research Topic and project: Multidisciplinary approach to investigate the Schiappone (40ka) and Zaro (6.1-3.74 ka) eruptions at the Ischia volcano: implication on volcanic hazard and risk of the Neapolitan area.
Project description: The volcanic system of the island of Ischia is still active, as shown by the intense volcanism that occurred in historical times and by the widespread hydrothermal and seismic activity. Ischia island is high densely populated and it is also an important tourist destination, which makes the volcanic risk is very high. Furthermore, Ischia is an island near to the coast of the Italian peninsula, therefore a future eruption, even of a low magnitude, may have significant impacts on the metropolitan area of Naples.
The project aims to quantify: (i) the conditions and mechanisms that controls the formation of eruptible magmas and magma migration and beneath the active volcano of Ischia, (ii) how pre- and syn-eruptive conditions affect eruptive styles of this volcano. To this aim a multidisciplinary approach is proposed in this project combining observations of natural samples, experiments and modelling. The two case studies of this project are: the high-magnitude explosive eruption of Schiappone (40ka) and the small-magnitude effusive eruption of Zaro (4100-3740 BC). High pressure and high temperature experiments will be performed to reproduce the pre- and syn-eruptive conditions of these two eruptions; this will allow us to define timescales of magma dynamics within magma reservoir at pre-eruptive conditions and conduit dynamics at syn-eruptive conditions.

Supervisor: Fabio Arzilli
Co-supervisor: Ilenia Arienzo

Scholarship funded under an agreement signed in 2023 between UNICAM and INGV (Italian National Institute for Geophysics and Volcanology)

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level
- 1 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ; 3 ECTS for participation in seminars and events
- 2 Year:
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses ; 3 ECTS for participation in seminars and events
- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy), including the co-funding institution: at least 6 months

Scholarship code: PHYS_MAT_EARTH 4

Language of the Phd Program: English

PhD Course and curriculum: Physics, Earth and Materials Sciences, curriculum Physics
Leader of the PhD Course: Prof. Andrea Di Cicco
Lead Partner of the PhD Program: University of Camerino
Operative sites of the PhD Student: University of Camerino; INAF – Osservatorio Astronomico di Brera

Research Topic and project: Cosmology studies with the new instrumentation, projects and missions available to the communities, both operational and under construction (Studi di cosmologia con la nuova strumentazione, progetti e missioni a disposizione della comunità, sia operativi che in fase di costruzione) – research field: Cosmology

The research project, declined into two fellowships co-funded by the National Institute of Astrophysics of Brera, is situated in the realm of the large-scale dynamics of the observable universe. The main objective is to understand the physical properties of inflation, dark energy and dark matter, utilizing new data catalogs and emerging theoretical scenarios such as the recent black hole astronomy, which has recently gained significant attention in international physics. To develop this project, astrophysical and cosmological data from modern satellites will be employed. These data will be both analyzed (using Bayesian analysis) and modeled (using Monte Carlo simulations, machine learning, etc.) to create a modeling approach that suggests plausible candidates for dark energy and dark matter and identifies any discrepancies.
Thus, the project lies at the intersection of cosmology, quantum physics, and astroparticle and nuclear physics phenomenology. These themes align perfectly with the "Physics, Earth, and Material Sciences" doctoral program.

Supervisor: Orlando Luongo, Physics Division, SST, Unicam

Scholarship co-funded in the framework of an Agreement signed between UNICAM and INAF – Osservatorio Astronomico di Brera in 2023

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level
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  o 40 ECTS in research activity (with a yearly evaluation)
10 ECTS in mandatory SAS Activities to acquire transferable skills
10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 2 Year:
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  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- 3 Year:
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy), including the co-funding institution: at least 6 months

Scholarship code: PHYS_MAT_EARTH 5

Language of the Phd Program: English

PhD Course and curriculum: Physics, Earth and Materials Sciences, curriculum Physics
Leader of the Phd Course: Prof. Andrea Di Cicco
Lead Partner of the PhD Program: University of Camerino
Operative sites of the PhD Student: University of Camerino; INAF – Osservatorio Astronomico di Brera

Research Topic and project: Cosmology studies with the new instrumentation, projects and missions available to the communities, both operational and under construction (Studi di cosmologia con la nuova strumentazione, progetti e missioni a disposizione della comunità, sia operativi che in fase di costruzione) – research field: Cosmology

The research project, declined into two fellowships co-funded by the National Institute of Astrophysics of Brera, is situated in the realm of the large-scale dynamics of the observable universe. The main objective is to understand the physical properties of inflation, dark energy and dark matter, utilizing new data catalogs and emerging theoretical scenarios such as the recent black hole astronomy, which has recently gained significant attention in international physics. To develop this project, astrophysical and cosmological data from modern satellites will be employed. These data will be both analyzed (using Bayesian analysis) and modeled (using Monte Carlo simulations, machine learning, etc.) to create a modeling approach that suggests plausible candidates for dark energy and dark matter and identifies any discrepancies.

Thus, the project lies at the intersection of cosmology, quantum physics, and astroparticle and nuclear physics phenomenology. These themes align perfectly with the "Physics, Earth, and Material Sciences" doctoral program.

Supervisor: Orlando Luongo, Physics Division, SST, Unicam

Scholarship co-funded in the framework of an Agreement signed between UNICAM and INAF – Osservatorio Astronomico di Brera in 2023
Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (within 3 years): 180
The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
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- **3 Year:**
  - 50 ECTS in research activity (writing and defend the Doctoral dissertation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy), including the co-funding institution: at least 6 months
Further potential positions available in the framework of International mobility agreements with People’s Republic of China
(Phd Programs for each topic will be identified later)

**Positions codes: from “LIAOCHENG 1” to “LIAOCHENG 5”**
Type of positions: supernumerary – international mobility Phd Position

Up to a maximum of 5 scholarships reserved for Chinese citizens graduated from the Liaocheng University under the agreement signed between the University of Camerino and the Liaocheng University (China), for carrying out research preferably in the field of Physics, Chemistry, Mathematics, Biology, and Veterinary Medicine.

**Positions codes: from “ZHENGZHOU-A 1” to “ZHENGZHOU-A 6”**
Type of positions: supernumerary – international mobility Phd Position

Up to a maximum of 6 positions are reserved for Chinese citizens graduated from the Zhengzhou University of Light Industry under the agreement signed between the University of Camerino and the Zhengzhou University of Light Industry (China), for carrying out research preferably in the field of Food Sciences, Chemistry, Biology, and Design.

**Positions codes: from “ZHENGZHOU-B 1” to “ZHENGZHOU-B 5”**
Type of positions: supernumerary – international mobility Phd Position

Up to a maximum of 5 scholarships are reserved for Chinese citizens graduated from the Zhengzhou University of Light Industry under the agreement signed for the issue of double degrees between the University of Camerino and the Zhengzhou University of Light Industry (China), for carrying out research preferably in the field of Food Science and Engineering, Chemical Engineering and Technology, Light Industry Technology and Engineering, Software Engineering, Computer Science and Technology, Art Design, Resources and Environment, Biology and Medicine, Business Administration.

For all the topics related to Further potential positions available in the framework of International mobility agreements with People’s Republic of China the following rules apply:

**Duration:** 3 years
**Provisional starting date:** 1st December 2023 (in any case, no later than December the 31st, 2023).

**ECTS credits (within 3 years): 180**

The Doctoral program consists of 180 ECTS credits, distributed in the following way, in order to contribute to a better recognition of your title at a European and global level

- **1 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
  - 10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events
- **2 Year:**
  - 40 ECTS in research activity (with a yearly evaluation)
  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
10 ECTS in curricular related activities: 7 ECTS for participation in thematic option courses; 3 ECTS for participation in seminars and events

3 Year:
- 50 ECTS in research activity (writing and defend the Doctoral dissertation)
- 10 ECTS in mandatory SAS Activities to acquire transferable skills

The Curricular related activities (seminars and courses in specific topics of interest) are organized by the Scientific Board of the Doctoral course.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further aspects related to these topics must comply with the Agreements the positions are based on.
Positions and Scholarships Available in the Framework of Joint PhD Programmes Pursuant to Ministerial Decree No. 226/2021, Art.3 c.2.

Joint PhD Programme pursuant to Ministerial Decree No. 226/2021, Art.3 c.2. Agreement among University of Camerino, University of Pisa and University of Brescia: *Neglected and poverty-related parasitic diseases in a one health perspective*

**Scholarship code: NEPPARD 1**

Language of the Phd Program: English

PhD Course: *Neglected and Poverty-related Parasitic Diseases in a One Health perspective (NePParD)*

Leader of the PhD Course: Guido Favia

Lead Partner of the PhD Program: University of Camerino

Partner and operative site of the Phd Student: **University of Pisa**

Research Topic and project: *Integrated strategies for the control of malaria and neglected tropical diseases in Sub-Saharan Africa (Strategie integrate per il controllo della malaria e delle malattie tropicali neglette in Africa Sub-Saharan)*

The training project foresees in the first phase the collection and study of scientific evidence in support of integrated strategies for the control of malaria and neglected tropical diseases (NTDs) caused by parasites in Sub-Saharan Africa, with particular reference to geohelminthiasis, schistosomiasis and lymphatic filariasis. A second phase involves the development of a specific integrated control strategy in a One Health perspective. A third and final phase involves the implementation of an operational research project in an endemic country to evaluate the effectiveness and feasibility of such a strategy.

Supervisor and co-supervisor: Fabrizio Bruschi, Valentina Mangano

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “ricerca PNRR”, CUP J11J23001430006

Duration: 3 years

Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program.

**Special requirements, additional to “standard” ones:**

The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:

- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
Scholarship code: NEPPARD 2

Language of the PhD Program: English

PhD Course and curriculum: *Neglected and poverty-related parasitic diseases in a one health perspective*
Leader of the PhD Course: Guido Favia
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino

Research Topic and project:
*Unraveling the molecular basis of thermal adaptation in mosquito vectors.*
The project aims at understanding the mechanisms of adaptation in vector mosquitoes of numerous pathogens, etiological agents of many diseases, many of which are neglected and/or linked to poverty. All in a "One-Health" perspective.

Supervisor: Guido Favia
Co-supervisor: Maria Vittoria Mancini (Unipv)

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “ricerca PNRR”, CUP J11J23001430006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): consistent with the Plan of the Joint PhD Program

*Special requirements, additional to “standard” ones:*
The PhD Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DSNH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
Scholarship code: NEPPARD 3

Language of the Phd Program: English

PhD Course: **Neglected and Poverty-related Parasitic Diseases in a One Health perspective (NePParD)**
Leader of the Phd Course: Guido Favia
Lead Partner of the PhD Program: University of Camerino
Operative sites of the Phd Student: **University of Brescia** and selected sites in Africa (Mozambique and Ghana)

Research Topic and project: **Impact of a package of diagnostic tools, clinical algorithm, and training outpatient acute fever case management in rural Africa.**

The etiology of fever in rural areas of Africa, especially in children, is often unknown leading to empirical treatments that are often not based on robust epidemiological evidence. The risk of facilitating antimicrobial resistance by the inappropriate use of antibiotics is clear. At the same time, the availability of sophisticated diagnostic tools is more often limited, if not absent, in most african rural facilities. Among other causes, neglected tropical diseases - especially dengue, leishmaniasis and others - also play a significant role in causing fevers episodes. The proposed project aims to identify and validate a package of combined diagnostic interventions (including combined simple and rapid laboratory test panels and serosurveys) coupled with training of the clinical staff at rural facilities to better manage fever episodes in both children and adults in two different places in Africa in West Africa and South East Africa. Objective of the project will be to assess the reduction of antibiotic treatment based on simple diagnostic algorithm

Supervisor: Francesco Castelli

Scholarship funded under NGEU – PNRR, DM 118/2023, M4 C1 I4.1 “ricerca PNRR”, CUP J11J23001430006

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program.

**Special requirements, additional to “standard” ones:**
The Phd Student must collaborate in the reporting activities as scheduled in the Funding Program and meet any further requirements set by the MUR in the framework of the PNRR (Italian National Plan for Recovery and Resilience) – NGEU, and in particular under the Ministerial Decree n. 118/2023:
- Semestral reports through the MUR dedicated online portal
- Respect of the DNSH principle and horizontal principles of the Program
- Respect of deadlines and guidelines set by the MUR
- Mandatory periods in Italy and abroad:
  - Mandatory Period of research mobility abroad: at least 6 months, no more than 12
Scholarship code: NEPPARD 4
Type of position: doctoral thesis co-supervision – agreement between UNICAM and Jilin Agricultural University (JAU), PRC

Language of the Phd Program: English

PhD Course and curriculum: Neglected and poverty-related parasitic diseases in a one health perspective
Leader of the Phd Course: Guido Favia
Lead Partner of the PhD Program: University of Camerino
Operative sites of the Phd Student: University of Camerino, JAU

Research Topic and project: The impact of mosquito microbiota in insecticide resistance
Mosquito vectors transmit pathogens that kill hundreds of thousand people every year. In fact, many and different species of mosquitoes can transmit a variety of pathogens that can cause, among others, diseases such as Malaria, Dengue, Yellow Fever, West Nile disease, Chikungunya, Zika and some Filariasis. To date, in many regions in which mosquito borne diseases (MBDs) are endemic, a major obstacle to control these diseases is the development of mosquito resistance to insecticides, steadily increasing worldwide; in malaria vectors this is already causing loss of efficacy of insecticides spread and insecticidal nets in many different endemic regions. Important to say that over 2 billion pyrethroid-treated mosquito nets have been distributed in Africa, and that resistance to pyrethroids is now reported throughout sub-Saharan Africa. Transmission dynamics models indicate that even low levels of resistance would increase the incidence of malaria. The project aims to radically shift the level of knowledge of the role of the microbiota in the development of resistance to insecticides by mosquitoes, from the current purely descriptive level to a more strictly functional one, explaining and describing the metabolic and biomolecular mechanisms involved. Thus, combining metagenomics and selection studies with innovative structural and biochemical approaches to dissect mechanisms and metabolic pathways, the project aims to go beyond the state of the art by answering the following research questions: which bacteria contribute to mosquito insecticide susceptibility/resistance? How do they perform this function? Finally, how does insecticide resistance in turn affect symbionts, the interactions between them, and thus host biology?

Supervisor: Guido Favia
Co-supervisor: Irene Ricci

Scholarship funded under an agreement between UNICAM and Jilin Agricultural University (JAU)

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program.

Special requirements, additional to “standard” ones:
Further aspects related to this topic must comply with the Agreement the position is based on.
Joint PhD Programme pursuant to Ministerial Decree No. 226/2021, Art.3 c.2. Phd course under the framework of the REDI research Consortium (www.redi-research.eu/it/homepage/), among University of Camerino, Gran Sasso Science Institute, National Institute of Geophysics and Vulcanology-INGV, National Institute of Nuclear Physics-INFN:

**Natural hazards and disaster risk reduction**

*Note.* The number of topics is higher than the number of positions/scholarships currently available under this PhD Program. The topics may be used for both position with and without scholarships. Positions without scholarship will be available only in case that Ministerial requirements for the activation of positions without scholarship are met.

**Scholarship/position code: NHDRR 1**

Language of the Phd Program: English

PhD Course and curriculum: **Natural Hazards and Disaster Risk Reduction-NHDRR**

Leader of the Phd Course: Emanuele Tondi

Lead Partner of the PhD Program: University of Camerino (UNICAM)

Partners and possible operative sites of the Phd Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: **Analyzing and mapping multiple, potentially concurring natural hazards as a preliminary step for risk reduction.**

The project aims to produce new techniques of analysis and/or geo-referenced mapping of potentially concurring natural hazard factors (e.g., geophysical, hydrogeological and/or meteorological), their reciprocal interactions, and the impact of human activities.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate ([https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction](https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction)).

Scholarship funded under REDI Consortium [https://www.redi-research.eu/it/homepage/](https://www.redi-research.eu/it/homepage/)

Duration: 3 years

Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program. The Phd Student must participate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD Student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD Student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.

**Special requirements, additional to “standard” ones:**

Mandatory Period of research mobility abroad: at least 6 months

Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months
Scholarship/position code: NHDRR 2
Language of the Phd Program: English

PhD Course and curriculum: Natural Hazards and Disaster Risk Reduction-NHDRR
Leader of the Phd Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the Phd Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: Seismic risk reduction of buildings and infrastructures.
The project aims to provide new tools for the seismic risk reduction, including new methodologies to develop advanced and more refined response models of constructions, new technologies for the mitigation of the damage following earthquakes, and innovative monitoring techniques to reduce prediction uncertainties.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate (https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction).

Scholarship funded under REDI Consortium https://www.redi-research.eu/it/homepage/

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program.
The Phd Student must participate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months

Scholarship/position code: NHDRR 3
Language of the Phd Program: English

PhD Course and curriculum: Natural Hazards and Disaster Risk Reduction-NHDRR
Leader of the Phd Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the Phd Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: Empirical methods for the evaluation of shaking and risk scenarios of historical and recent earthquakes.
The purpose of the activity is to use different methods to calculate seismic hazard at the site, calibrated on instrumental and historical-macroseismic data. The candidate will evaluate the impact of different methods on risk evaluation for prevention, seismic codes and civil protection applications.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate (https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction).

Scholarship funded under REDI Consortium https://www.redi-research.eu/it/homepage/

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program.
The PhD student must participate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.

*Special requirements, additional to “standard” ones:*
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months

**Scholarship/position code: NHDRR 4**
Language of the Phd Program: English

PhD Course and curriculum: **Natural Hazards and Disaster Risk Reduction-NHDRR**
Leader of the Phd Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the Phd Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: **Facilities for laboratory dynamic testing aimed at studying seismic interaction between structures.**
The project aims at developing innovative lab facilities and test rigs capable of simulating the interaction between structures, substructures and soil by exploiting hybrid shaking table and pseudo dynamic equipment. The most promising systems could be realised to carry out experimental investigations in systems of importance for structural and geotechnical engineering.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate (https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction).

Scholarship funded under REDI Consortium https://www.redi-research.eu/it/homepage/

Duration: 3 years

65
Provisional starting date: 1\(^{st}\) December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program. The Phd Student must participate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.

*Special requirements, additional to “standard” ones:*
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months

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**Scholarship/position code: NHDRR 5**
Language of the Phd Program: English

PhD Course and curriculum: **Natural Hazards and Disaster Risk Reduction-NHDRR**
Leader of the Phd Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the Phd Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: **Socio-Economic Impacts of Natural Disasters.**
Socio-economic impacts of natural disasters are nowadays on the top of the policy agendas world-wide. Recent events such as COVID-19, socio-political tensions, man-made risks and climate change claim for a deep understanding of and innovative solutions to the socio-economic challenges in different countries, regions, territories and communities. The research track aims to analyze, both in the ex-ante and ex-post perspectives, the socio-economic impacts of natural disasters by integrating in the REDI multi-disciplinary context research and analyses tackling the socio-economic costs and impacts of disasters at territorial level and providing technical assistance and sound policy advice even in terms of the disaster risk management. Suitable candidates mainly have (but not only) a background in applied economics, regional economics and economic geography.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate ([https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction](https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction)).

Scholarship funded under REDI Consortium [https://www.redi-research.eu/it/homepage/](https://www.redi-research.eu/it/homepage/)

Duration: 3 years
Provisional starting date: 1\(^{st}\) December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program. The Phd Student must participate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.
Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months

Scholarship/position code: NHDRR 6
Language of the PhD Program: English

PhD Course and curriculum: Natural Hazards and Disaster Risk Reduction-NHDRR
Leader of the PhD Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the PhD Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: The participation of communities in the processes of post-disaster reconstruction and recovery.
The process of physical reconstruction of an area hit by a disaster should be consistent with the socioeconomic revival necessary to complete the recovery phase. All this concerns and relates closely with the needs of the affected communities. Defining ways of interaction among planners, economists and sociologists who interpret these needs, as well as the ways of interacting and engaging with the communities themselves, is a primary objective of this research topic.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate (https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction).

Scholarship funded under REDI Consortium https://www.redi-research.eu/it/homepage/

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint PhD Program.
The PhD Student must participate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months

Scholarship/position code: NHDRR 7
Language of the PhD Program: English

PhD Course and curriculum: Natural Hazards and Disaster Risk Reduction-NHDRR
Leader of the Phd Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the Phd Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: **The green and digital transitions in the framework of the Next generation EU: from strategies to action plans.**
In a moment of deep understanding and sharing of some European strategies towards the green and digital transitions, particularly useful are insights into the role that urban planning can have in interpreting those strategies and implementing coherent applications and projects.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate (https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction).

Scholarship funded under REDI Consortium https://www.redi-research.eu/it/homepage/

Duration: 3 years
Provisional starting date: 1\(^{st}\) December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint Phd Program.
The Phd Student must partecipate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.

**Special requirements, additional to “standard” ones:**
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months

Scholarship/position code: NHDRR 8
Language of the Phd Program: English

PhD Course and curriculum: **Natural Hazards and Disaster Risk Reduction-NHDRR**
Leader of the Phd Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the Phd Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: **The use of virtual representation for the enhancement of historic and artistic assets.**
The enhancement of historic and artistic assets, in particular those located in areas prone to natural disasters, requires fostering innovative ways of interaction with and enjoyment of those assets by their users, also through the possibilities offered today by virtual representation and augmented reality.
Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate (https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction).

Scholarship funded under REDI Consortium https://www.redi-research.eu/it/homepage/

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).

ECTS credits (3 years): Consistent with the Plan of the Joint PhD Program.
The PhD Student must participate to the workshop of the PhD Course organized by the scientific board twice a year. The PhD student is expected to present his/her project and to demonstrate progress and quality of the research project and an ability to present research. The PhD student will present in front of his/her supervisor and the department faculty, including fellow PhD students, will also be invited.

Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months

Scholarship/position code: NHDRR 9
Language of the PhD Program: English

PhD Course and curriculum: Natural Hazards and Disaster Risk Reduction-NHDRR
Leader of the PhD Course: Emanuele Tondi
Lead Partner of the PhD Program: University of Camerino (UNICAM)
Partners and possible operative sites of the PhD Student: University of Camerino, Gran Sasso Science Institute (GSSI), Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di Fisica Nucleare (INFN)

Research Topic and project: Risk communication for prevention and preparedness.
Preparedness as well as prevention actions for a natural event with possible catastrophic effects require correct information on natural hazards and their interaction with human activities. This research project aims to develop an effective approach to communication both in the pre- and post-event phase, when teams of planners and first responders must work together effectively and efficiently to address the myriad of problems that arise in these situations. Reliable communications are a key point to a successful emergency operation.

Supervisor: Supervisor and co-supervisor will be identified among the Scientific Board of the PhD Course on the basis of the specific project of the candidate (https://isas.unicam.it/scientific-board/scientific-board-natural-hazards-and-disaster-risk-reduction).

Scholarship funded under REDI Consortium https://www.redi-research.eu/it/homepage/

Duration: 3 years
Provisional starting date: 1st December 2023 (in any case, no later than December the 31st, 2023).
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Special requirements, additional to “standard” ones:
Mandatory Period of research mobility abroad: at least 6 months
Further mandatory period of research and training mobility for the scope of the research topic (in Italy): at least 6 months