OGGETTO: ERRATA CORRIGE. ANNEX 1 - BANDO DI CONCORSO PER L'AMMISSIONE AI CORSI DI DOTTORATO DI RICERCA (XLI CICLO a.a. 2025/2026), DR n. 268/2025 Prot. N. 0055786 del 08.07.2025

IL RETTORE

VISTO il regolamento in materia di dottorato di ricerca, emanato con DR n. 215/2025;

RICHIAMATO il bando di concorso per l'ammissione ai Corsi di Dottorato di Ricerca XLI (a.a. 2025/2026) DR n. 268/2025 Prot. N. 0055786 del 08.07.2025 e i relativi allegati;

CONSIDERATO che, successivamente alla pubblicazione del Bando, sono stati rilevati dei refusi nell'Allegato 1 (ANNEX 1) allo stesso, che si ritiene opportuno emendare;

RITENUTO OPPORTUNO rettificare l'ANNEX 1 al Bando di cui sopra, fermi restando i termini e le condizioni per la presentazione delle domande di ammissione originariamente previsti;

DECRETA

Art. 1 - Allegato 1 revisionato - Bando di ammissione Dottorato ciclo XLI

È rettificato e pubblicato, nella versione più aggiornata (data del protocollo), l'ANNEX 1 al BANDO DI CONCORSO PER L'AMMISSIONE AI CORSI DI DOTTORATO DI RICERCA (XLI CICLO a.a. 2025/2026), DR n. 268/2025 Prot. N. 0055786 del 08.07.2025.

Camerino, data del protocollo

Il Rettore

Prof. Graziano Leoni

LEONI GRAZIANO
11.07.2025
09:21:30 UTC

Università degli Studi di Camerino
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SUBJECT: AMENDMENT of the ANNEX 1 to the CALL FOR ADMISSION TO PhD PROGRAMMES (CYCLE 41, Academic Year 2025/2026) - Rector's Decree No. 268/2025 registration N. 0055786 del 08.07.2025

THE RECTOR

HAVING REGARD to the Regulations on PhD Programmes, issued with Rector's Decree No. 215/2025;

HAVING REGARD to the CALL FOR the ADMISSION TO PhD PROGRAMMES (CYCLE 41, Academic Year 2025/2026) Rector's Decree No. 268/2025 registration N. 0055786 del 08.07.2025, and its Attachments;

SEEN that, following the publication of the Call, some clerical errors were detected in the ANNEX 1 to the Call, which it is deemed appropriate to amend;

DEEMED APPROPRIATE to amend ANNEX 1 to the above-mentioned Call, without prejudice to the terms and conditions for the submission of applications originally envisaged;

DECREES

Article 1 - Revised Annex 1 to the Call for admission to the PhD Programmes cycle XLI

ANNEX 1 to the CALL FOR ADMISSION TO THE PHD PROGRAMMES (CYCLE 41 a.y. 2025/2026), DR n. 268/2025 registration N. 0055786 of 07.08.2025, is revised and published in the latest version (date of registration).

Camerino, date of registration

Il Rettore

Prof. Graziano Leoni

LEONI GRAZIANO
11.07.2025
09:21:31 UTC

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ANNEX 1

Scholarship code: ARCH1

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Architecture Design Planning**

Curriculum**: Architecture: Theories and Design**
Research field: **Rethinking architectural and territorial heritage: critical investigations and design experiments between abandoned places and cultural routes**

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 of Ascoli Piceno.

Research Topic and project:
Grand Tour Diversions. Redesigning tourist flows towards sustainable cultural itineraries: the case study of Matera and the Bradanica inland area
This research project, which is part of PRIN 2022 (Projects of Relevant National Interest) entitled "Grand Tour Diversions. Redesigning Tourism Flows towards Sustainable Cultural Itineraries", intends to investigate the condition of tourism exploitation of some symbolic places in Italy and at the same time the development opportunities of the contexts around them through innovative and sustainable cultural itineraries.
The 4 symbolic places of tourism, representative of the diversity and richness of the Italian territory as well as of the criticalities caused by overtourism: Venice with the city territory towards the Euganean Hills; Rome with the metropolitan area towards the Agro Romano and the Maremma laziale; Pescara "linear Adriatic city" with its hilly and mountainous landscape; and Matera with the Bradanica inner area towards Vulture, which is a particular case study and focus of the project and the Unicam UdR in relation to the PRIN.
Preserving and enhancing diversity is crucial in the age of mass tourism, a paradigm that has already highlighted conflicts between communities and heritages as well as the limits of a monoculture. This research, through the case studies, aims to study and overcome the criticalities of such tourist enclaves (in particular Venice, Rome and Matera), adopting a multidisciplinary view of the territory rather than just the heritage city.

Supervisor: Prof. Ettore Vadini

Scholarship co funded under the project: **CUP J53C24003550006 - Bando PRIN 2022 (D.D. n. 104, 02-02-2022) - Titled: Grand Tour Diversions. Redesigning Tourism Flows towards Sustainable Cultural Itineraries (Prot. 2022F7ZFPW). Avviso n. 1401 del 18-09-2024 Disposizioni per lo scorrimento delle graduatorie**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

The research intends to adopt the “Research by Design” approach, which also means building with local communities an educated and up-to-date vision of heritages, in an open and inclusive perspective, capable of combining different values and aspirations of the territories' inhabitants.

Objectives

– Identifying criticalities of tourist enclaves through comparative analysis of case studies (6M);
– Analysing projects that can rebalance the cultural offer and safeguard the needs of sustainable tourism (12M);
– Checking and describing the heritage and tourist flows between Matera (UNESCO city and ECOC 2019) and the Bradanica inner area up to Vulture, systemising cultural and landscape heritage (24M);
– Drawing up and describing projects at various scales for the sustainable development of the Bradanica inner area, between Matera city and Vulture mountain, where we find the Appia Regina Viarum (UNESCO heritage site), the archaeological park of Venosa, the Frederician city of Melfi and several abandoned villages of “Riforma Fondiaria” (36M);
– Experimenting with a replicable method.

Scholarship code: ARCH2

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Architecture Design Planning**

Curriculum**: Architecture: Theories and Design**

Research field: **Rethinking architectural and territorial heritage: critical investigations and design experiments between abandoned places and cultural routes**

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 of Ascoli Piceno.

Research Topic and project:
The Continuous Monument: Critical Investigations and Design Strategies for Rethinking Widespread Abandoned Architectural Heritage
The research follows two symmetrical paths: the first on a local scale, the second on an international scale. The first path explores the Marche region, an area rich in valuable buildings, many of which are currently abandoned. Here, the research aims to investigate the widespread heritage of decommissioned cultural assets, paying particular attention to their symbolic value — from rural churches to fortified villages, and even to places deemed significant "by tradition" that have fallen into ruin. Opposing purely quantitative approaches, the focus will be on the relationship between built structures, collective memory, and the territory, in order to highlight, as Tomaso Montanari stated with reference to Article 9 of the Italian Constitution, that "heritage is not the administrative sum of museums, individual artworks, and monuments, but a continuous sheath that clings to the landscape — that is, to the 'Nation's territory' — like skin to the flesh of a living body." However, the concept of Heritage inevitably transcends national concerns. Since the UNESCO General Conference adopted the "Convention Concerning the Protection of the World Cultural and Natural Heritage" in 1972, heritage has increasingly become a global issue, loaded with political and economic implications, where history meets geography and the two conceptually opposite notions of culture and nature intertwine. The second path of the research examines a significant selection of design strategies from international contexts — from Europe to Asia and South America. Emphasizing the radical nature of these approaches, this part of the study will explore cultural heritage not as a simple legacy of the past, but as a mechanism for recognizing symbolic heritage within a broader, continuous, and widespread system of values: in other words, as design projects that can help guide choices toward a more conscious future.

Supervisor: Prof. Gabriele Mastrigli
Co-supervisor: Prof. Enrica Petrucci

Scholarship co funded **by the School of Architecture and Design (UNICAM)**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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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- 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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

Objectives

– *Mapping and recognition of abandoned heritage in the Marche region*
To identify and catalog widespread architectural heritage in a state of abandonment throughout the Marche region, using a qualitative approach that highlights the symbolic and relational value of places, going beyond merely quantitative or functionalist logics.

– *Critical reassessment of the concept of heritage*
To critically analyze the notion of cultural heritage, understood not as a sum of isolated elements but as a continuous reality that envelops the territory and reflects collective identity, in line with a constitutional and civic vision of the landscape.

– *International comparative study of design strategies*
To investigate international case studies (Europe, Asia, South America) that propose radical and innovative approaches to the reactivation of abandoned cultural assets, in order to build a critical and operational foundation from which to draw conceptual and design tools.

– *Development of new design strategies*
To formulate visions and intervention scenarios that consider abandoned sites as active resources capable of generating cultural, social, and environmental value, and of guiding future territorial policies that are both conscious and sustainable.

Scholarship code: ARCH3

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Architecture Design Planning**

Curriculum**: Innovation Design**
Research field: **Design for product innovation, communication and cultural heritage**

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 of Ascoli Piceno.

Research Topic and project:
Television and Design: Mediating Italian Design Culture from Broadcasting to Digital Platforms

This research aims to analyze the methods, languages, narrative strategies, and representations through which design culture has been mediated and disseminated to the general public, from the inception of television broadcasting in Italy to the emergence of thematic channels and streaming platforms. The study intends to highlight how the evolution of television communication about design has not only reflected but actively contributed to transforming design's role in Italian society. The research objective is twofold: to examine how television language has influenced the public perception of design and Made in Italy, and to offer a new interpretative framework for understanding the complex relationship between television, design, and society in late twentieth-century Italy. The research program will begin with a systematic analysis of the RAI (Italian Broadcasting Corporation) archives and will subsequently extend to other archival resources, including international ones. By combining design history and communication design methodology applied to digital humanities and cultural heritage enhancement, the project will result in both a historical-critical study and the construction of a systematic archive - a database collecting and making accessible the main television programs that played a key role in spreading design culture in Italy.
The project aligns with research in communication design, new technologies, and cultural heritage through three interconnected dimensions: the study of television communication as a crucial tool for mediating design culture to the general public; the preservation of a rich corpus of television products and professional knowledge in audiovisual production, understood as intangible cultural heritage; and the creation of a digital archive as a tool for enhancing this historical heritage.

Supervisor: Prof. Federico Orfeo Oppedisano
Co-supervisor: Prof. Carlo Vinti

Scholarship co funded **by the School of Architecture and Design (UNICAM)**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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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- 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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

The research objectives are structured across three levels:

- *Analytical*
  - Map the evolution of Italian design representation on television (1954-present)
  - Identify and analyze narrative models and audiovisual languages adopted
  - Examine television's contribution to building the Made in Italy imagery
  - Study the transition from traditional broadcasting to digital platforms
- *Archival*
  - Structure an organic database of programs about Italian design
  - Preserve and index archival materials through digitization
  - Develop a taxonomy of content and communication strategies
- *Methodological*
  - Develop an interdisciplinary approach between design history and digital humanities
  - Create specific analytical tools for design-related audiovisual language
  - Implement digital solutions for archive accessibility

Scholarship code: ARCH4

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Architecture Design Planning**

Curriculum**: Innovation Design**
Research field: **Design for product innovation, communication and cultural heritage**

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 of Ascoli Piceno.

Research Topic and project:
Design for well-being: research and development of smart and gender-sensitive products and devices for sexual health

Design improves people's quality of life and responds to new emerging needs with innovative products capable of interpreting the cultural changes in our society. Individual and collective wellbeing, health and safety are priority objectives for advanced design research aimed at product innovation.

The research project aims to explore the area of sexual well-being, i.e. "a fundamental aspect of an individual's overall health that refers to a state of physical, emotional, mental and social well-being", as defined by the World Health Organization (WHO).

The design for sexual well-being and the sex toys industry, one of the world's major economic growth sectors, are slow to interpret the cultural changes taking place in our contemporary society and the growing demand for inclusiveness with respect to gender differences. In the global market, we find 80%-90% of sexual wellness products based on gender stereotypes and a limited view of sexuality. Recent sociological studies point to the need to create products that are aimed at people of all genders, sexual orientations, ages and abilities,

thus releasing “adult toys” from an exclusively heterosexual and cisgender audience. Such research emphasizes the importance of breaking with traditional stereotypes by offering customized solutions that improve the quality of sexual life of their users. Recently, design for sexual well-being has started a revolution through the use of new technologies and material innovation. The new generation of smart sexual health devices and products not only improve pleasure, but also contribute to mental and physical well-being, safety and sex education.

Supervisor: Prof. Lucia Pietroni
Scholarship co funded **by the School of Architecture and Design (UNICAM)**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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
- 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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

The research project proposes a new vision of sexual wellbeing products as intelligent devices for the health of individuals at physical, emotional, mental and social levels. The main objective, in line with the research strategies of the University of Camerino, in particular with the pillar ‘Health and Well-being’, is to develop innovative products for sexual well-being that adopt a ‘Gender-Sensitive’ approach, promoting greater inclusiveness in overcoming a gender-stereotyped vision and integrating new digital technologies to support a broad customization of products in response to the different needs of users. The research will be carried out in collaboration with institutional partners, such as the Carlo Molo Foundation, AIDASS and AIED, which promote sexual health, and with ICT and IoT companies that can contribute to the development of electronic components for the analysis and processing of biological parameters. The broader aim of the research project, and consequently the main socio-cultural impact expected, is to help raise awareness of the

importance of sexual well-being as a social emancipation and a fundamental component of the quality of health and human life.

Scholarship code: ARCH5

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Architecture Design Planning**

Curriculum**: Innovation Design**
Research field: **Design for product innovation, communication and cultural heritage**

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 of Ascoli Piceno.

Research Topic and project:
Digital innovation for circular design of building components and systems
Modern methods of Construction (MMC), Off-site building and Performance-based design are some of the terms of an evolved idea of approach to construction (and, therefore, to design in the building field) that today is showing its fruits in some industrially advanced contexts (Northern Europe, in particular). Determining a design culture with solid foundations in digital innovation, which can confront the opportunities provided by new industrial production models for construction, given environmental sustainability objectives, is today a challenge that is shared unanimously by the international scientific community.
In this context, the research proposal focuses on the possibility of developing a design methodology centred on the reuse of building materials, components and systems from selective demolition processes of existing buildings and artefacts, integrating different digital tools and environments such as, in particular, Building Information Modelling and Computational Design. From the construction of a state-of-the-art on circular design and building re-cycling methods, to the development of a real design workflow using interoperable digital tools, the research aims at defining a cultural framework and an operational way to the problem of circular construction, keeping faith with the principle of twins transition: the need for interconnection between ecological transition and digital transition.

Supervisor: Prof. Roberto Ruggiero
Scholarship co funded under the Agreement with **P.E.C.A. srl**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

ECTS credits (within 3 years): 180
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- 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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

The research could significantly impact sustainability and innovation in the building sector, as well as design culture in architecture. By promoting the reuse of selective demolition materials and integrating advanced digital tools, buildings' waste and ecological footprint could be drastically reduced, optimising the Life Cycle Assessment (LCA) process. Interoperability between Building Information Modelling and Computational Design could support more efficient and circular design processes, accelerating the sector's ecological and digital transition. Finally, defining a cultural and operational framework for circular construction could influence urban policies and regulations, contributing to more resilient and smarter cities.

Scholarship code: ARCH6

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Architecture Design Planning**

Curriculum**: sustainable Planning, cultural Heritage, built Environment**
Research field: **Territorial and landscape regeneration of inland areas: methods of knowing, development strategies and planning**

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 of Ascoli Piceno.

Research Topic and project:
Resilience and sustainability of inland areas in Italy and Japan: urban regeneration, densification, cohesion strategies, and synergy with coastal areas.
Leveraging on the existing collaborations between the Toyo University in Tokyo, the REDI consortium and UNICAM-SAAD on the issue of Inner Areas, the doctoral research project addresses resilience and

sustainability of Inner Areas in Italy and Japan, focusing on urban redevelopment plans that enhance the dense and compact urban fabric of historic towns of central Italy, reinterpreted in the light of the need to ensure safe, sustainable and resilient urban environments. To this end, interactions will be developed with the activities of the Landscape Observatory, already established by the Marche Region Authority, and the functional, biological, perceptual, and historical-cultural relations between Inner Areas and the coast will also be assessed.
The project aims to contribute to expanding and strengthening scientific research initiatives available to local communities in inland and coastal areas that are part of municipal territorial areas, supporting in particular decision-makers and administrators at various levels in making choices and implementing strategic programs and action plans that can relaunch regional development in a sustainable and resilient manner.

Supervisor: Prof. Massimo Sargolini
Co-supervisor: Prof. Ilenia Pierantoni
Scholarship co funded by **REDI Consortium** https://www.redi-research.eu/it/homepage/

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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:
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  - 10 ECTS in mandatory SAS Activities to acquire transferable skills
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- 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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

The objective will be to suggest innovative strategies and tools or plans:

– for the regeneration of small and medium-sized towns in inner areas, enhancing their relationships with the semi-natural spaces of the surrounding territory while simultaneously increasing safety levels to multihazard conditions;

– for the redevelopment of the compact urban fabric of the historical towns of Inner Areas, enhancing the building density and the quality of the urban environment while guaranteeing safety levels complying with the current standards set by the legislation in force;
– to adapt to the increasing danger of marine erosion and flooding in coastal areas, firstly by reducing exposure to water-related hazards and secondly by reducing vulnerability;
– on a supra-local scale, which can combine the two previous points in a coherent framework of regional programming and planning.

Scholarship code: ARCH7

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Architecture Design Planning**

Curriculum**: sustainable Planning, cultural Heritage, built Environment**
Research field: **Territorial and landscape regeneration of inland areas methods of knowing, development strategies, and planning**

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 of Ascoli Piceno.

Research Topic and project:
Climate-Adaptive and Bio-Positive Design of Urban Open Spaces: An Integrated Framework for Urban and Health Regeneration.
This doctoral research aims to develop and validate an integrated methodological framework for the climate-adaptive and bio-positive design of urban open spaces. The innovation lies in striving for a 'Nature Positive' approach, where the designed space actively enhances local biodiversity and the open space quality, generating measurable benefits for microclimatic comfort and urban health. The approach will combine advanced climate-functional analysis with the strategic implementation of Nature-Based Solutions (NBS), enhanced by innovative technologies and a quantitative assessment of health impacts.
The research will be structured in several phases:
1. Critical Analysis and Framework Development: In-depth review of literature and best practices. Development of an integrated conceptual and operational framework with key multi-domain indicators.
2. Multi-scale Analysis and Selection: Identify and characterise urban areas to select two significant case studies for in-depth analysis—preliminary climatic, ecological, health, and socio-demographic data collection for these contexts.
3. Modelling and Simulation: Advanced software is used to evaluate the effectiveness of different design configurations in improving comfort, air quality, water management, and the potential for health and biodiversity, with specific application to the case study contexts.
4. Case Study Deep Dive and Strategy Development: Two selected case studies will be thoroughly analysed. Based on this analysis and simulations, innovative strategies and specific design tools will be developed and proposed to maximise bio-positive, climate-adaptive, and pro-health performance in those contexts.
5. Validation and Systematisation into a Pattern Language for Bio-Positive Spaces: The framework and strategies will be validated, and the proposed design scenarios will be evaluated. The findings, identified

recurring problems, and effective solutions will be systematised and formalised into a "Pattern Language." This language will describe a series of patterns (recurring models of problems and proven solutions) that can be flexibly combined to guide the design of bio-positive, climate-adaptive, and healthy open spaces in diverse urban contexts.

Supervisor: Prof. Roberta Cocci Grifoni
Scholarship co funded under **CONSUL System S.p.A.**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

Detailed Specific Objectives:

– Define a robust set of multi-criteria indicators to assess urban open spaces' climatic, ecological, and health performance.
– Quantify the effectiveness of different combinations of NBS and technologies in mitigating the urban heat island, improving thermal comfort, and managing rainfall events.
– Establish quantitative correlations between specific open space design features and well- being/health indicators for vulnerable groups.
– Produce and structure an evidence-based Pattern Language, derived from the validated framework and the strategies developed in the case studies, as a flexible and generative tool for future design.

Scholarship code: CHEM0

Language of the Phd Program: Italian/English

PhD Course and curriculum: **Chemical and Pharmaceutical Sciences and Biotechnology**

Curriculum**: Chemical Sciences**
Research field: **INORGANIC CHEMISTRY - Design and synthesis of organic and hybrid porous materials for application in the fields of renewable energy and environmental pollution control**

Leader of the Phd Course: Prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino and Consiglio Nazionale delle Ricerche – Istituto di Chimica dei Composti Organometallici (CNR-ICCOM) ed Università di Firenze – Dipartimento di Chimica "Ugo Schiff" (DICUS), Sesto Fiorentino (Firenze)

Research Topic and project:
SYNTHESIS OF NEW POROUS MATERIALS FOR ENVIRONMENTAL AND CATALYTIC APPLICATIONS.
The proposed PhD thesis is focused on the design, synthesis and fundamental solid-state characterization (IR, TG-MS, PXRD, surface area and pore size distribution analysis) of porous organic (Covalent Triazine Frameworks, CTFs) and hybrid organic-inorganic [Metal-Organic Frameworks (MOFs), single-atom catalysts (SACs)] materials for application in three key research fields: (a) hydrogen production and C_1/C_2 added-value chemicals (CO, formic acid, methanol, ethanol) synthesis from electrocatalytic water (HER) and carbon dioxide (CO2RR) reduction; (b) CO_2, N_2O, SF_6 and fluorocarbons (CF_4, CH_2F_2, CF_3-CFH_2) capture to fight against the greenhouse effect and the ozone layer depletion; (c) luminescence sensing and adsorption of persistent organic pollutants (PFAS, pharmaceuticals like Ibuprofen or Diclofenac) in wastewaters. A priority of this PhD project, as central themes of Environmental Sustainable Chemistry, with the aim of promoting innovation, will be the approach with green methods and with new synthetic routes to obtain high production yields and a positive environmental impact.

Supervisor: Prof. Claudio Pettinari
Co-supervisors: Dr. Andrea Rossin, Dr. Giulia Tuci, Prof. Giuliano Giambastiani

Scholarship co funded by **INSTM**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic:

Previously acquired experience with synthetic work under inert atmosphere using Schlenk glassware and vacuum-N2 lines will be a plus, as well as organic synthesis skills (C-C coupling reactions, column chromatography, TLC). Additional knowledge of the most common solid-state characterization techniques (IR and multinuclear NMR Spectroscopy, methods for surface area and pore size distribution determination, TGA-MS analysis, powder X-ray diffraction fundamentals) will be very much appreciated.

Scholarship code: CHEM1

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Chemical Sciences**
Research field: **ORGANIC CHEMISTRY AND MATERIAL SCIENCE - Development of new synthetic protocols for the preparation of biologically active compounds and highly functionalized polymeric materials**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, ChIP Research Center

Research Topic and project:
Development of new synthetic protocols for the preparation of biologically active natural substances.
The project aims to contribute to the development of novel synthetic protocols with a low environmental impact, focusing on the reduction of waste generation, conservation of natural resources, and the promotion of a better quality of life and environmental sustainability. Specifically, the research will leverage innovative technologies such as flow chemistry (including photo-flow processes), microwave-assisted synthesis, the use of supported solid reagents, and the implementation of one-pot procedures. The doctoral candidate will develop new protocols for the synthesis and derivatization of biological active and pharmacologically relevant heterocyclic systems, as well as for the preparation of "small molecules" that serve as key intermediates in the construction.

Supervisor: Prof. Alessandro Palmieri

Scholarship co-funded **by Indena S.p.a.**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: CHEM2

Language of the Phd Program: Italian/English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Chemical Science**
Research field: **ORGANIC CHEMISTRY AND MATERIAL SCIENCE - Development of new synthetic protocols for the preparation of biologically active compounds and highly functionalized polymeric materials**

Leader of the Phd Course: Prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Science and Technology, Camerino

Research Topic and project:

High-performance adhesive materials development for particulate filters
This project develops the Hot Digital Filtration System (HDFS) for industrial applications, with a focus on high-temperature resistance and sustainability. It combines advanced filter media, such as glass fiber fabrics, with environmentally friendly bonding agents like biodegradable hot-melt adhesives from bio-based polymers (PHA, polyimides, etc.). The system features aluminium for structure and IoT sensors for predictive maintenance, aligning with Industry 5.0. It aims to enhance filtration efficiency, extend filter lifespan, and minimise environmental impact by utilising recycled and bio-based materials. Additives such as chitin and chitosan can enhance antimicrobial and flame-retardant properties. The approach promotes eco-friendly, scalable solutions for filter applications in the food industry and operating rooms, offering socio-economic benefits. The project aims to drive industry innovation, foster partnerships, and reshape the filter manufacturing landscape with sustainable, high-performance, and technologically advanced solutions.

Supervisor: Prof. Serena Gabrielli
Co-supervisor: Prof. Enrico Marcantoni

Scholarship co-funded **by SIFIM Srl**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: CHEM3

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Curriculum Chemical Sciences**
Research field: **PHYSICAL CHEMISTRY - Cathode materials for Na-ion batteries: interplay between chemical/structural/morphological properties and charge/discharge behavior.**

Leader of the Phd Course: **Prof. Claudio Pettinari**
Lead Partner of the PhD Program: **University of Camerino**
Operative site of the Phd Student: **University of Camerino, School of Science and Technology**

Research Topic and project:
Cathode materials for Na-ion batteries: interplay between chemical/structural/morphological properties and charge/discharge behavior.
The doctoral project focuses on the study of candidate cathode materials for sodium-ion batteries. The main focus will be on layered oxides of general formula NaxTMO2 (TM = transition metal) with different coordination types, mainly P2 or mixed P2/O3. However, also materials belonging to the classes of Prussian blu/Prussian white analogues and polyanionic materials will be explored. Thorough chemical, structural, morphological analysis, performed by advanced methodologies, will complement the electrochemical characterizations in order to shed light onto the relationships between structural/interfacial properties and thermodynamics/kinetics of charge/discharge processes. Particular attention will be dedicated to the development of sustainable methodologies for the synthesis of active materials and the preparation of electrodes.

Supervisor: **Prof. Francesco Nobili**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: CHEM4

Language of the Phd Program: Italian/English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Chemical Sciences**
Research field: **ENVIRONMENTAL CHEMISTRY - New perspectives of natural compounds and sustainable nanomaterials for environmental applications.**

Leader of the Phd Course: Prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Science and Technology

Research Topic and project:
A sustainable approach for environmental applications
This research proposal aims to use nanotechnology to eliminate and control environmental pollutants, purify them and prevent their spread, in order to achieve sustainable development.
Nanofiltration materials, nanophotocatalysts, magnetic nanoparticles and nanosensors are some of the methods that can be developed using nanotechnology for the treatment of water and wastewater, air and pollutant detection. Nanotechnology is of fundamental importance to the environment due to its ability to address many of the most pressing environmental challenges in an innovative and sustainable way.
A priority of this PhD project, as central themes of Environmental Chemistry, with the aim of promoting innovation, will be the approach with green methods and with new synthetic or biosynthetic routes, also using waste products or natural compounds, to obtain high production yields and a positive environmental impact.

Supervisor: Prof. Rita Giovannetti
Co-supervisor: Prof. Marco Zannotti

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: CHEM 5

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Pharmaceutical, Nutraceutical and Food Sciences**
Research field: **DRUG DELIVERY - Advanced Biomaterial-based Formulations for Targeted and Localized Therapies**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, Chemistry Interdisciplinary Project (ChIP), School of Pharmacy, Camerino.

Research Topic and project:
Development of Targeted Polymeric Nanocarriers for mRNA Delivery in Osteosarcoma

The present PhD project frames within the **MUR FISII-2023-02676 OsteoTher** project, which aims to develop innovative therapies for **osteosarcoma** by reprogramming the tumor microenvironment using **mRNA-loaded nanocarriers**. This is one of the four proposed PhD projects covering key areas from vector design to preclinical validation, combining approaches in **nanotechnology, immunotherapy, and tissue engineering**. This PhD project will focus on the design, synthesis, and characterization of biodegradable and biocompatible polymeric nanocarriers (NCs) for the delivery of in vitro transcribed (IVT) mRNA encoding M1-polarizing transcription factors. The candidate will optimize physicochemical properties, targeting ligands (e.g., CD-206

and CD-44 specific moieties), and release kinetics to ensure targeted and sustained delivery to tumor-associated macrophages (TAMs) within the osteosarcoma microenvironment.

Objectives:

- Develop and optimize nanocarriers tailored for selective TAM targeting in OS.
- Ensure efficient mRNA encapsulation, protection, and controlled release.

Expected Impact:

- Enable precision delivery of immunomodulatory mRNA to the tumor site.
- Lay the foundation for a modular mRNA-nanocarrier platform applicable to various solid tumors.

Supervisor: Prof. Roberta Censi
Co-supervisor: -

Scholarship co funded under **the project "Local nanoparticle-mediated drug delivery for effective osteosarcoma- targeted therapy*" (Acronimo:* OsteoTher)*, Codice: FIS2023-02676, CUP:* J53C25000560001*, finanziato con il contributo del Ministero dell'Università e della ricerca ai sensi del D.D. n. 1236 del 01/08/2023 – BANDO FIS 2"***

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 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**
Research field: **DRUG DELIVERY - Advanced Biomaterial-based Formulations for Targeted and Localized Therapies**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, Chemistry Interdisciplinary Project (ChIP), School of Pharmacy, Camerino.

Research Topic and project:
Reprogramming Tumor-Associated Macrophages via mRNA-Based Therapeutics

The present PhD project frames within the **MUR FISII-2023-02676 OsteoTher** project, which aims to develop innovative therapies for **osteosarcoma** by reprogramming the tumor microenvironment using **mRNA-loaded nanocarriers**. This is one of the four proposed PhD projects covering key areas from vector design to preclinical validation, combining approaches in **nanotechnology, immunotherapy, and tissue engineering**. This specific project will investigate the functional repolarization of tumor associated macrophages (TAMs) in osteosarcoma using mRNA-loaded nanocarriers. The student will study transcriptional and phenotypic changes in macrophages following delivery of M1-inducing mRNA constructs, both in vitro and in vivo. Emphasis will be placed on identifying optimal mRNA candidates and assessing the impact of TAM reprogramming on tumor growth, metastasis, and immune cell infiltration in osteosarcoma mouse models.
Objectives:

- Identify and validate effective mRNA constructs for TAM repolarization.
- Assess the immunological and anti-tumor consequences of TAM reprogramming.

Expected Impact:

- Generate proof-of-concept for mRNA-based immune re-education in osteosarcoma.
- Contribute to the development of immunotherapies targeting the tumor microenvironment.

Supervisor: Prof. Roberta Censi
Co-supervisor: Prof. Maria Giovanna Sabbieti, School of Biosciences and Veterinary Medicine, University of Camerino

Scholarship co funded under **the project "Local nanoparticle-mediated drug delivery for effective osteosarcoma- targeted therapy"** ***(Acronimo:*** **OsteoTher)*****, Codice: FIS2023-02676,***
CUP: **J53C25000560001*****, finanziato con il contributo del Ministero dell'Università e della ricerca ai sensi del D.D. n. 1236 del 01/08/2023 – BANDO FIS 2"***

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months abroad

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**
Research field: **DRUG DELIVERY - Advanced Biomaterial-based Formulations for Targeted and Localized Therapies**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino

Operative site of the Phd Student: University of Camerino, Chemistry Interdisciplinary Project (ChIP), School of Pharmacy, Camerino.

Research Topic and project:
3D Bioprinted and Electrospun Hydrogel Scaffolds for Localized Combination Therapy in Osteosarcoma

The present PhD project frames within the **MUR FISII-2023-02676 OsteoTher** project, which aims to develop innovative therapies for **osteosarcoma** by reprogramming the tumor microenvironment using **mRNA-loaded nanocarriers**. This is one of the four proposed PhD projects covering key areas from vector design to preclinical validation, combining approaches in **nanotechnology, immunotherapy, and tissue engineering**. This PhD project will develop advanced 3D bioprinted and electrospun hydrogel scaffolds embedded with mRNA-loaded nanocarriers for localized and sustained drug delivery in osteosarcoma. The student will explore scaffold architecture, material properties, and loading strategies to co-deliver mRNA and additional therapeutics. The goal is to create a customizable delivery platform for localized immunomodulation and improved treatment outcomes.

Objectives:

- Design and fabricate hydrogel scaffolds capable of dual or multi-agent release.
- Optimize delivery systems for prolonged activity within the tumor microenvironment.

Expected Impact:

- Enable localized, combination immunotherapy with reduced systemic toxicity.
- Advance personalized, tissue-engineered platforms for osteosarcoma treatment.

Supervisor: Prof. Roberta Censi
Co-supervisor: -

Scholarship co funded under **the project "Local nanoparticle-mediated drug delivery for effective osteosarcoma- targeted therapy*" (Acronimo:* OsteoTher*), Codice: FIS2023-02676, CUP:* J53C25000560001*, finanziato con il contributo del Ministero dell'Università e della ricerca ai sensi del D.D. n. 1236 del 01/08/2023 – BANDO FIS 2"***

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: CHEM 8

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Pharmaceutical, Nutraceutical and Food Sciences**
Research field: **DRUG DELIVERY - Advanced Biomaterial-based Formulations for Targeted and Localized Therapies**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, Chemistry Interdisciplinary Project (ChIP), School of Pharmacy, Camerino.

Research Topic and project:
Preclinical Evaluation of OsteoTher Platform in Osteosarcoma Models

The present PhD project frames within the **MUR FISII-2023-02676 OsteoTher** project, which aims to develop innovative therapies for **osteosarcoma** by reprogramming the tumor microenvironment using **mRNA-loaded nanocarriers**. This is one of the four proposed PhD projects covering key areas from vector design to preclinical validation, combining approaches in **nanotechnology, immunotherapy, and tissue engineering**. This project will focus on evaluating the therapeutic efficacy and immunological impact of the OsteoTher nanocarrier system in preclinical models of osteosarcoma. Using syngeneic and orthotopic mouse models, the student will assess tumor progression, tumor associated macrophages (TAM) polarization status, metastasis, and survival outcomes following treatment. The project will also investigate synergistic effects of combination therapies delivered via the OsteoTher platform.

Objectives:

- Assess the therapeutic benefits of mRNA-based nanocarriers in vivo.
- Examine tumor regression, immune activation, and metastasis control in osteosarcoma models.

Expected Impact:

- Deliver robust preclinical validation of the OsteoTher strategy.
- Provide critical data for potential translation into clinical trials.

Supervisor: Prof. Roberta Censi
Co-supervisor: Prof. Maria Giovanna Sabbieti, School of Biosciences and Veterinary Medicine, University of Camerino

Scholarship co funded under **the project "Local nanoparticle-mediated drug delivery for effective osteosarcoma- targeted therapy*" (Acronimo:* OsteoTher)*, Codice: FIS2023-02676, CUP:* J53C25000560001*, finanziato con il contributo del Ministero dell'Università e della ricerca ai sensi del D.D. n. 1236 del 01/08/2023 – BANDO FIS 2"***

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: CHEM 9

Language of the Phd Program: English

PhD Course and curriculum: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Pharmaceutical, Nutraceutical and Food Sciences**

Research field: **PHARMACEUTICAL BIOLOGY/GREEN CHEMISTRY - Recovery of agrifood by-products and wastes as sources of valuable compounds for nutraceutical and cosmeceutical applications**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, Chemistry Interdisciplinary Project (ChIP), School of Pharmacy, Camerino.

Research Topic and project:

An anti-obesity compound from the by-product of the industrial production of Marchigian Anisetta

Anisetta is a liqueur based on aniseed (Pimpinella anisum L., Apiaceae) typical of the Marchigian liqueur industry. Several companies in the Piceno area use aniseed from Castignano (Ascoli Piceno, Slow Food Presidium) with the aim to strengthen the local identity of their products. The production of Anisetta is based on the distillation of aniseed in alcohol. At the end of the distillation, approximately 90-95% of the aniseed biomass remains as a residue and, to date, has no specific use other than that of being disposed of in the organic waste. However, this waste is rich in triglycerides, mainly characterized by a rare monounsaturated fatty acid, i.e. petroselinic acid (C18:1, C18H34O2). This molecule is an important inhibitor of bacterial lipase and recent studies suggest it as a potential inhibitor of gastric lipase and therefore as a potential nutraceutical candidate for the prevention and treatment of obesity. The aim of this project is to develop a system for recovering petroselinic acid from the industrial waste of Anisetta production provided by the company Anisetta Rosati 1877® using innovative extraction and purification technologies. The nutraceutical potential of the compound in the treatment of obesity will be evaluated first in vitro on the nematode Caenorhabditis elegans fed a hyperglycemic diet. Subsequently, this compound will be tested in vivo on obese rats to evaluate its effect on food intake, regulation of body weight, triglyceride levels and blood glucose. Finally, both liquid and solid nutraceutical formulations will be developed to optimize the delivery of petroselinic acid.

Supervisor: Prof. Filippo Maggi

Co-supervisor: Prof. Carlo Cifani

Company: Anisetta Rosati

Scholarship funded **by the Marche Region under Innovative PhD research scholarships with an industrial characterization for the academic year 2025/2026 - PR Marche FSE+ 2021-2027 Asse 4 OS 4a DGR N. 532 del 11/04/2025**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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 for Scholarship funded by the Marche Region :

***Scholarships reserved for graduates residing or domiciled in the Marche region, unemployed/not working, in accordance with current regulations, who have not yet reached 36 years of age at the time of application The requirements above mentioned must be met by the candidates at the time of submission of the application for participation in this call for applications.

-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): period to be defined at the premises of the involved companies and Clusters of Marche Region

Further aspects related to this topic must comply with the project the position is based on.

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**
Research field: **PHARMACEUTICAL BIOLOGY/GREEN CHEMISTRY - Recovery of agrifood by-products and wastes as sources of valuable compounds for nutraceutical and cosmeceutical applications**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, ChIP (Chemistry Interdisciplinary Project), School of Pharmacy.

Research Topic and project:
Eco-sustainable processes for obtaining functional food from marine biomass.
Due to climate changes that are modifying the Mediterranean Sea conditions, the Italian and Marche coasts are becoming populated of tropical origin crustaceans and fish, which find a favorable environment for their development in terms of warm temperatures, abundance of prey and lack of predators. Among these species, an exemplary case is that of the blue crab. The abundant meat of this crustacean is edible and has a pleasant taste, therefore it is largely finding uses for food purposes, and is therefore fished or farmed and widely processed in the fishing industries. The large production linked to this crustacean, as well as that of other crustaceans, produces a large quantity of biomass waste, deriving from all directly non-edible parts such as carapaces, claws or shells. However, this biomass is rich in material that can be considered precious such as pre/postbiotics, vitamins, peptides, oligosaccharides, fats and more. In this PhD project, eco-sustainable extraction processes from biomass derived from crustaceans and algae are proposed in order to obtain functional foods. The processes will be based on "green" procedures such as the use of Deep Eutectic Solvents, supercritical CO_2 extractions, ultrasonication and all other processes that can guarantee a low environmental impact approach or that allow a circular approach for the valorization of waste products.

Supervisor: Prof. Matteo Tiecco
Co-supervisor: Prof. Giorgia Gioacchini

Scholarship under funded **by the Marche Region under Innovative PhD research scholarships with an industrial characterization for the academic year 2025/2026 - PR Marche FSE+ 2021-2027 Asse 4 OS 4a DGR N. 532 del 11/04/2025**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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 for Scholarship funded by the Marche Region :

***Scholarships reserved for graduates residing or domiciled in the Marche region, unemployed/not working, in accordance with current regulations, who have not yet reached 36 years of age at the time of application The requirements above mentioned must be met by the candidates at the time of submission of the application for participation in this call for applications.

-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): period to be defined at the premises of the involved companies and Clusters of Marche Region

Further aspects related to this topic must comply with the project the position is based on.

Scholarship code: CHEM 11

Language of the Phd Program: English

PhD Course: **CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY**

Curriculum**: Pharmaceutical, Nutraceutical and Food Sciences**
Research field: **FOOD CHEMISTRY - Circular economy in food and feed area. Food by-products and waste: extraction, characterization and processing of vegetable and seafood waste to obtain new added value products as ingredients for food, feed and cosmetic fields**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, ChIP, School of Pharmacy.

Research Topic and project:
MARine bioMass valorizAtion for fooD and fEed ingredients (MARMADE)
PhD candidate will work on Horizon project MARMADE (pjt n. 101213231 -HORIZON-JU-CBE-2024-RIA-05 - CUP J13C25000290006). This project aims to develop sustainable, high-value food and feed ingredients from marine biomass, focusing on crustacean residues (shrimp shells and blue crabs) and seaweed. The key objectives are to 1) establish efficient biorefinery processes for extracting ingredients (pre/postbiotics, vitamins, peptides, oligosaccharides, fats, emulsifiers, and digestibility enhancers); 2) develop innovative food and feed prototypes with improved nutritional and sensory properties; 3) ensure compliance with safety, sustainability, and regulatory standards, paving the way for future market uptake. In particular, PhD candidate will leverage advanced technologies, including Deep Eutectic Solvents (DESs), Supercritical CO2 extraction, dynamic high-pressure processing, to optimize extraction efficiency and maintain the purity of bio-based food and feed ingredients. MARMADE aligns with the RIA-05 topic addressing the need for sustainable, affordable bio-based food and feed ingredients. It supports the Circular Economy Action Plan

and Zero Pollution Action Plan objectives by valorising marine resources and reducing reliance on petrochemical-based ingredients. The project contributes to the Farm to Fork Strategy by enhancing the nutritional profiles of food products and aligns with the EU Bioeconomy Strategy by fostering bio-based cascading extraction processes. Additionally, MARMADE promotes environmental sustainability by integrating the Safe and Sustainable by Design (SSbD).

Supervisor: Prof. Sauro Vittori

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

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**
Research field: **FOOD CHEMISTRY - Circular economy in food and feed area. Food by-products and waste: extraction, characterization and processing of vegetable and seafood waste to obtain new added value products as ingredients for food, feed and cosmetic fields**

Leader of the Phd Course: prof. Claudio Pettinari
Lead Partner of the PhD Program: University of Camerino

Operative site of the PhD Student: University of Camerino, School of Pharmacy, Chemistry Interdisciplinary Project (ChIP)

Research Topic and project:
Tea waste as source of high value bioactives for nutraceutical and food industry
The aim of this research project is to develop the analysis, extraction and purification techniques to recover molecules and classes of functional substances from "tea waste" to be used in the nutraceutical and food industry, all in a sustainable way and with a view to the circular economy. Low environmental impact extraction techniques will be tested, such as Supercritical Fluid Extraction (SFE) which uses CO2 in the supercritical phase and Ultrasound Assisted Extraction (UAE) which exploits the cavitational effect generated by ultrasound. The characterization of recoverable biomolecules will be carried out using HPLC/GC chromatographic techniques coupled with mass spectrometry, including high-resolution (HRMS, Q-TOF) for the identification of untargeted compounds.
The recovery of functional substances from food waste will have a positive impact on research and development of new nutraceuticals and functional foods, giving value to a matrix that is normally discarded and giving rise to new areas and lines of research and business for the enterprises.

Supervisor: Prof. Gianni Sagratini
Co-supervisor: Dr. Cinzia Mannozzi

Scholarship co funded by NEW FLAVOURS S.R.L

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: COMP 1

Language of the Phd Program: Italian/English

PhD Course and curriculum: **COMPUTER SCIENCE AND MATHEMATICS**

Curriculum**: COMPUTER SCIENCE AND MATHEMATICS**
Research field: **Numerical Analysis**

Leader of the Phd Course: prof. Polini Andrea
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Science and Technology.

Research Topic and project:
Mathematical methods for differential equations (Project: Digital twin per la torrefazione del caffè)
This project is dedicated to the study of coffee roasting, which is the physical-chemical process underlying the preparation of coffee. The mathematical formulation of this process allows, starting from the coffee roasting conditions, to predict the chemical composition of roasted coffee and therefore its nutritional and organoleptic properties. In particular, the aim of the project is to study numerical techniques to describe the chemical-physical process of coffee roasting and to use these techniques to optimize the nutritional and organoleptic properties of coffee. The scientific research proposed in this project goes well beyond the state of the art and will allow the industrial partners involved to acquire a strategic positioning in the global panorama of the coffee industry.

Supervisor: Prof. Nadaniela Egidi
Co-supervisor: Josephin Giacomini

Scholarship funded by the Marche Region under Innovative PhD research scholarships with an industrial characterization for the academic year 2025/2026 - PR Marche FSE+ 2021-2027 Asse 4 OS 4a DGR N. 532 del 11/04/2025

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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 for Scholarship funded by the Marche Region :

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-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): period to be defined at the premises of the involved companies and Clusters of Marche Region

Further aspects related to this topic must comply with the project the position is based on.

Position code: COMP 2

Type of Position: without scholarship

Language of the PhD Program: English

PhD Course and curriculum: COMPUTER SCIENCE AND MATHEMATICS
Research field: **Artificial intelligence**

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

Title: *AI and Learning Analytics for Next-Generation Assessment in Higher Education*

Project Description:
This research proposal addresses the growing need for more flexible, technology-enhanced approaches to student assessment and feedback in higher education. Building on recent insights

regarding artificial intelligence (AI) and learning analytics (LA), the PhD candidate will investigate and design an AI-driven assessment model aligned with "Assessment for Learning" (AfL). This model aims to provide real-time, formative feedback that fosters meaningful student engagement, collaborative problem-solving, and higher-order thinking skills within authentic learning contexts.

The project encompasses **three core elements**:

1. **Development of AI-Supported Formative Assessment Tools**
    - Implement large language model generative AI (LLMG AI) and learning analytics to continuously monitor students' progress.
    - Explore Socratic tutoring systems, capable of guiding learners with personalized prompts and clarifying feedback.
    - Integrate new digital frameworks to evaluate not only individual tasks but also collaborative activities, such as group projects or team-based problem-solving.

2. **Design of a Student-Centric Assessment Ecosystem**
    - Employ institutional data (e.g., LMS interaction logs) for the diagnostic and predictive analysis of learner performance.
    - Develop interactive dashboards for students, educators, and administrators to visualize learning trajectories and target specific interventions.
    - Investigate how micro-credentials and shorter learning units might incorporate AI-generated performance evidence, aligning with the unbundling trends in higher education.

3. **Validation in Authentic Contexts**
    - Conduct pilot studies in higher education courses to assess the effectiveness of AI-enabled formative feedback on learner motivation, collaboration, and achievement.
    - Identify and address ethical and data privacy challenges, including strategies for responsible AI use and transparent data governance.
    - Engage with faculty and external accreditation bodies to ensure alignment with institutional quality standards while advocating innovative, technology-enhanced assessment.

By exploring the synergy of AI, learning analytics, and AfL principles, the project aspires to produce robust methods and tools that universities can adopt to foster deeper learning, more equitable assessment, and enhanced student autonomy. In doing so, it will contribute to reshaping institutional strategies for curriculum design, ensuring that graduates acquire the flexible skills necessary for today's knowledge-based professions.

Supervisor: Prof. Andrea Perali, University of Camerino
Co-supervisor: Prof. Michele Loreti, University of Camerino

Duration: 3 years
Provisional starting date: 1 November 2025

ECTS credits (within 3 years): 180
The PhD program comprises 180 ECTS, distributed as follows to ensure alignment with European and global standards:

- **Year 1:**
  - 40 ECTS in research activity (annual evaluation)
  - 10 ECTS in mandatory transferable-skills activities
  - 10 ECTS in curricular-related activities (thematic courses, seminars, events)
- **Year 2:**
  - 40 ECTS in research activity (annual evaluation)
  - 10 ECTS in mandatory transferable-skills activities
  - 10 ECTS in curricular-related activities (thematic courses, seminars, events)
- **Year 3:**
  - 50 ECTS in research activity (writing and defending the doctoral dissertation)
  - 10 ECTS in mandatory transferable-skills activities

Mandatory Period of research mobility abroad: at least 6 months

Scholarship code: COMP 3

Language of the Phd Program: English

PhD Course and curriculum: **Computer Science and Mathematics**

Curriculum**: Computer Science**

Research field: **Artificial Intelligence**

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, School of Science and Technology.

Research Topic and project:

Title: From Large to Small: Adaptive Language Model Architectures for Intelligent Business Process Analysis

Abstract: This project aims to explore the interaction and complementarity between Large Language Models (LLMs) and Small Language Models (SLMs) in the context of business process analysis, optimization, and automation. While LLMs provide high-level generative and interpretative capabilities at significant

computational costs, SLMs are emerging as lighter, more customizable tools for targeted tasks. The research will develop a hybrid framework in which LLMs support semantic mining and natural language understanding in process-related data, while SLMs are applied to specific activities such as task classification, event extraction, and decision rule optimization. Special attention will be given to integrating these technologies with advanced data mining and process mining techniques, with the goal of building adaptive intelligent systems capable of learning from historical data and supporting digital transformation of business processes in a transparent, efficient, and scalable way.

Supervisor: Prof. Flavio Corradini
Co-supervisor: Prof.ssa Barbara Re

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: COMP 4

Language of the Phd Program: English

PhD Course and curriculum: COMPUTER SCIENCE AND MATHEMATICS
Research field: **Civil Engineering**

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, included UNICAM branch at Civitanova Marche

Research Topic and project:
Byesian and Machine Learning methods for evolutive models of constructions in seismic prone areas
The research project is oriented to evaluate the vulnerability of constructions in areas close to seismic active faults. The research proposal aims to enhance the safety, resilience, and sustainability of seismic prone regions, providing original methods for a probabilistic evaluation of risk. Models for seismic vulnerability at construction scale and regional scale can be considered.
The research program is oriented to the seismic risk of existing constructions. Probabilistic models will be proposed starting from the knowledge provided by surveys, experimental tests, and monitoring data. Probabilistic predictive models will be developed exploiting Bayesian approaches and Machine Learning techniques, aiming at proposing evolutive tools based on prior knowledge and progressively including information from monitoring and inspections. Outcomes of the research will be tested on case-studies, considering near-fault seismic scenarios. It is expected that proposed models might contribute to enhance the prediction performance of time-dependent reliability methods, including potential system degradation and cumulate damage.

Supervisor: Prof. Andrea Dall'Asta
Co-supervisor: prof. Alessandro Zona

Scholarship co funded by **REDI Consortium** https://www.redi-research.eu/it/homepage/

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: COMP 5

Language of the Phd Program: English

PhD Course and curriculum: COMPUTER SCIENCE AND MATHEMATICS
Research field: **Civil Engineering**

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, included UNICAM branch at Civitanova Marche

Advanced Numerical Modelling for Bridge Piers on Deep Foundations Subjected to Lateral Soil Movements: Landslide–Bridge and Seismic Interaction Mechanisms in Multi-Hazard Environments

The research proposal aims to enhance the safety, resilience, and sustainability of bridge infrastructure exposed to multiple natural hazards, particularly in regions affected by both slope instability and seismic activity. In the context of climate change, which intensifies the frequency of slow-moving landslides and extreme meteorological events, and in proximity to active faults where near-fault effects are critical, understanding and mitigating multi-hazard impacts becomes imperative.
This PhD project combines theoretical advancement with applied numerical and experimental approaches to investigate the interaction between slow ground displacements and the structural response of deep foundations and bridge superstructures.
The project will also benefit from the integration of data acquired through low-cost seismic sensor networks installed in areas near surface fault systems. These data will be employed to improve the understanding of local site response and the s geotechnical–seismic characterization in proximity of structures or infrastructures. The resulting models will be used as input for some of the numerical simulations described in point 4.

Supervisor: Prof. Andrea Dall'Asta
Co-supervisor: prof. Francesca Dezi

Scholarship co funded by **REDI Consortium** https://www.redi-research.eu/it/homepage/

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: LEGAL 1

Language of the Phd Program: Italian/English

PhD Course and curriculum: LEGAL AND SOCIAL SCIENCES
Curriculum**: Fundamental Rights in the Global Society**
Research field: Administrative Law

Leader of the Phd Course: prof.ssa Carlotta Latini
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Law

Research Topic and project:
OneHealth e strumenti giuridici
The aim of the research project is to reflect on the legal instruments to transform the OneHealth strategy into a concrete reality.
In a context characterized by high complexity, the administration must renew itself in terms of organization and methods of action of public power, integrated with the private sector and citizens. It is necessary to survey, on both levels of administration (organization and procedures), which organizational structures and decision-making processes exist today, subject them to analysis and legally control whether and how the multidimensionality of skills is guaranteed, whether and how the relationship between experts and decision-makers is regulated. For example, the regulations of some sectoral areas, although essential for the OneHealth perspective, are currently completely or almost completely devoid of references to the OneHealth approach: the regulations on environmental assessments, on waste, on fishing, even those on climate change. Another issue emerges from the point of view of provisions historically characterized by stability: it is necessary to find new, more flexible tools. In fact, administrative action must necessarily open up to new solutions characterized by flexibility and results-oriented.

Supervisor: Prof.ssa Sara Spuntarelli
Co-supervisor: Prof. Simone Rodolfo Masera

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: LEGAL 2

Language of the Phd Program: Italian/English

PhD Course and curriculum: LEGAL AND SOCIAL SCIENCES
Curriculum**: Civil Law and constitutional legality**
Research field: Person and Markets in the Sustainable Transition Era

Leader of the Phd Course: prof.ssa Carlotta Latini
Leader of the Curriculum: Prof.ssa Lucia Ruggeri (lucia.ruggeri@unicam.it)
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino - School of Law and University of Rome 3 (UNIROMA3) – Department of Economics

Research Topic and project:
Evolution of civil categories in the so-called system digital sustainability
The proposed research focuses on the study of traditional civil categories in the framework of sustainable law in the same way, in a broader and more innovative perspective, of the digital revolution. This involves subjecting the classic institutions of civil law to evolutionary interpretation, such as those of property, contractual autonomy, civil liability and the theory of goods itself. "Digital sustainability", with the aim of enhancing human dignity in interaction with new technologies, then imposes itself as a tool for the refunctionalization of private law, with a notable impact on the crucial sectors of civil life (environment,

energy, information, etc.). The research carried out by the PhD candidate will move within this methodological framework in order to verify the coherence and consequences of the proposed objectives.

(*work in progress) In relation to this scholarship, it may be possible to activate the attribution of the title of doctor europaeus on this position, in the presence of the conditions required in this regard. It will be possible to activate a co-supervision agreement with the VUB (Brussels) or other foreign institutions which will be evaluated during the process.*

Supervisor: Prof. Francesco Longobucco
Co-supervisor: Prof. Lucia Ruggeri

Co-funded by University of Rome 3 (UNIROMA3) – Department of Economics

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Specific requirements:

A mandatory period is to be spent at UNIROMA3

Scholarship code: LEGAL 3

Language of the Phd Program: Italian/English

PhD Course and curriculum: LEGAL AND SOCIAL SCIENCES
Curriculum**: Civil Law and constitutional legality**
Research field: Person and Markets in the Sustainable Transition Era

Leader of the Phd Course: prof.ssa Carlotta Latini
Leader of the Curriculum: Prof.ssa Lucia Ruggeri (lucia.ruggeri@unicam.it)
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Law

Research Topic and project:
Energy and sustainable transition: legal aspects
The aim of the research is to identify statutory policies and contractual instruments for the governance and management of energy communities in light of the European regulatory framework, in particular with reference to post-Green Industrial Act energy policies. The focus of the project is to investigate the impact of community policies and the effectiveness of the support and investment regime on the energy transition in marginal and fragile areas such as those affected by natural disasters, including a study and research pilot on cases of set-up of energy communities in areas affected by the 2016 earthquake.

(*work in progress) In relation to this scholarship, it may be possible to activate the attribution of the title of doctor europaeus on this position, in the presence of the conditions required in this regard. It will be possible to activate a co-supervision agreement with the VUB (Brussels) or other foreign institutions which will be evaluated during the process.*

Supervisor: Prof.ssa Lucia Ruggeri
Co-supervisor at RENARL: Avv. Raffaella Diana

Scholarship co-funded by RENAEL (Rete Nazionale delle Agenzie Energetiche Locali)

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Specific requirements:

up to 18 months at RENAEL and locations/local administrations connected to the activities of the Network (e.g. municipalities affected by the 2016 earthquake - will be determined following the start of the activities in concert with RENAEL)

Scholarship code: LEGAL 4

Language of the Phd Program: Italian/English

PhD Course and curriculum: LEGAL AND SOCIAL SCIENCES
Curriculum**: Civil Law and constitutional legality**
Research field: Person and Markets in the Sustainable Transition Era

Leader of the Phd Course: prof.ssa Carlotta Latini
Leader of the Curriculum: Prof.ssa Lucia Ruggeri (lucia.ruggeri@unicam.it)
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Law

Research Topic and project:
Un uso SOstenibile per una risorsa Sostenibile: filiera del Legno e "regolamento deforestazione zero". (acronimo: SOS-Legno)
A sustainable use for a sustainable resource: wood supply chain and "zero deforestation regulation". (acronym: SOS-Legno)
The aim of the project is to help the Marche Region wood sector' supply chains to integrate the new European rules on deforestation and ecological transition into their policies, production processes and contractual relationships. The project combines legal (UNICAM), economic (UNIVPM), sociological (UNIURB) and Cluster IN MARCHE skills, placing the innovative role of SMEs in the wood supply chain at the centre. The expected results are the development of contractual clauses on the sustainability of the materials and/or processes used, of the guidelines on the implementation and reporting of duties taking into account the characteristics and needs of the company, the replicability of the contractual and regulatory models for the companies interested in the project.

(*work in progress) In relation to this scholarship, it may be possible to activate the attribution of the title of doctor europaeus on this position, in the presence of the conditions required in this regard. It will be possible to activate a co-supervision agreement with the University of Edinburgh or other foreign institutions which will be evaluated during the process.*

Supervisor: Prof.ssa Lucia Ruggeri
Co-supervisors:
Prof.Marco Cucculelli (UNIVPM)
Prof. Angela Genova (UNIURB)
Dott. Alessio Gnaccarini (COSMOB spa - Pesaro)
Arch. Andrea Gianfelici (Harcome - Camerino)

Scholarship funded **by the Marche Region under Innovative PhD research scholarships with an industrial characterization for the academic year 2025/2026 - PR Marche FSE+ 2021-2027 Asse 4 OS 4a DGR N. 532 del 11/04/2025**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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 for Scholarship funded by the Marche Region :

***Scholarships reserved for graduates residing or domiciled in the Marche region, unemployed/not working, in accordance with current regulations, who have not yet reached 36 years of age at the time of application The requirements above mentioned must be met by the candidates at the time of submission of the application for participation in this call for applications.

-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): period to be defined at the premises of the involved companies and Clusters of Marche Region

Further aspects related to this topic must comply with the project the position is based on.

Scholarship code: LIFE 1

Language of the Phd Program: **English**

PhD Course and curriculum: **Life and Health Sciences**

Curriculum**: Nutrition Food and Health**
Research field: **Healthy Food**

Leader of the Phd Course: prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Biosciences and Veterinary Medicine.

Research Topic and project:
Valorization of the Saturnia peach from Marche region as a source of prebiotics useful for the development of functional foods for active and healthy aging (VALOR-PESCA)

The Saturnia Peach from the hills of the Marche region, specifically the Chienti Valley, is an outstanding product with high-value organoleptic and nutritional characteristics. Studies have demonstrated its elevated content of compounds such as polyphenols and flavonoids, which are well-known for their antioxidant properties and health benefits. However, this fruit has not yet been fully recognized as a positive modulator of the gut microbiota or as an ingredient in functional foods.

This project aims to investigate the peach as a natural source of prebiotic compounds capable of restoring and maintaining the balance of the intestinal microbial ecosystem. A multidisciplinary approach will allow for the analysis of the synergistic role of peach-derived prebiotics, intestinal bacteria, and their metabolites in preserving the integrity of the intestinal barrier, maintaining microflora equilibrium, modulating immune responses, and preventing chronic inflammation associated with aging.

The ultimate goal is to identify prebiotic nutraceutical compounds useful for the development of functional products that promote healthy longevity, utilizing fruits with size and/or aesthetic defects, obtained from sustainable cultivation techniques. The results will promote environmental sustainability and the multifunctionality of the Marche region, creating new market opportunities for products currently considered waste but possessing high nutraceutical value.

The PhD project integrates basic and preclinical research primarily conducted at the University of Camerino (Unicam), with some activities performed at the University of Politecnica delle Marche (UnivPM) and in collaboration with a pioneering sustainable Italian producer of high-quality flat peaches and nectarines from the Marche region. The project includes a mandatory period abroad to acquire complementary skills.

Supervisor: **Dr. Laura Bonfili** (Unicam)
Co-supervisors: **Prof. Anna Maria Eleuteri** (Unicam)
Dr. Marco Malavolta (UnivPM)

Scholarship funded **by the Marche Region under Innovative PhD research scholarships with an industrial characterization for the academic year 2025/2026 - PR Marche FSE+ 2021-2027 Asse 4 OS 4a DGR N. 532 del 11/04/2025**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Special requirements, additional to "standard" ones for Scholarship funded by the Marche Region :

***Scholarships reserved for graduates residing or domiciled in the Marche region, unemployed/not working, in accordance with current regulations, who have not yet reached 36 years of age at the time of application The requirements above mentioned must be met by the candidates at the time of submission of the application for participation in this call for applications.

-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): period to be defined at the premises of the involved companies and Clusters of Marche Region

Further aspects related to this topic must comply with the project the position is based on.

Scholarship code: LIFE 2

Language of the PhD Program: **English**

PhD Course and curriculum: **Life and Health Sciences, One Health**

Curriculum**: One Health**
Research field: **Biodiversity and Ecosystem Management**

Leader of the Phd Course: prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Biosciences and Veterinary Medicine.

Research Topic and project:

Patterns and drivers of plant functional diversity through forest monitoring infrastructure data

The definition of biodiversity in international policies aimed at its conservation is often based on the simple number of species. However, recent scientific evidence has highlighted that species richness alone is not always particularly informative about ecosystem functioning, their resilience to external disturbances, or their ability to provide ecosystem services. Classifying species into functional groups and, even more so, using measurable parameters such as functional traits, has great potential for understanding ecosystem functioning. In this context, the PhD project aims to assess the functional diversity (in terms of functional groups and traits) of plant species present in Italian forests and the factors that shape it. The project will benefit from datasets at various spatial and temporal scales, regarding the new Italian National Forest Inventory, which, for the first time, will collect information on plant diversity. The project's impact extends to numerous national and international policies, including the EU Forest Strategy and the Biodiversity Strategy for 2030, the 2023 working document of the European Commission: Commission Guidelines for the Definition, Mapping, Monitoring, and Strict Protection of EU Primary and Old-Growth Forests, the principles of Sustainable Forest Management (SFM; Forest Europe 2020), the NEC Directive 2016/2284/EU (National Emission Ceiling), and the related monitoring obligations.

Supervisor: Prof. Giandiego Campetella
Co-supervisor: Dr. Marco Cervellini

Scholarship co-funded under the agreement between CUFA (Comando unità forestali, ambientali e agroalimentari) and UNICAM IFNI 2025

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: LIFE 3

Language of the PhD Program: **English**

PhD Course and curriculum: **Life and Health Sciences, One Health**

Curriculum**: One Health**
Research field: **Biodiversity and Ecosystem Management**

Leader of the Phd Course: prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Biosciences and Veterinary Medicine.

Research Topic and project:
Innovative Biodiversity Approaches for Forest Inventorying and Monitoring.

National and international policies regarding climate change require detailed information on the global state of forests and trends in terms of surface area, biomass, and forest types. Recently, in response to the biodiversity crisis and the related policies aimed at counteracting this phenomenon, the need has emerged to focus monitoring efforts on multiple components of forest ecosystems. As part of the new Italian National Forest Inventory (IFNI), in addition to the classic parameters of forest structure, vegetation diversity will be surveyed for the first time, with a specific focus on vascular plants and lichens. These data will be complemented by information related to so-called “tree-related microhabitats,” which are connected to many other taxonomic groups (birds, insects, bats, etc.). The project, drawing from IFNI data as well as additional existing datasets (such as the multi-taxonomic network of the Cost Action Bottoms-Up project, the LTER network, and the ICP Forests LII network), aims to assess patterns and drivers of forest diversity in Italy, across various forest types and structural parameters, including data quality assessment. The project will contribute to the objectives set by various national and international regulations, including the EU Forest

Strategy and the Biodiversity Strategy for 2030, the 2023 working document of the European Commission: Commission Guidelines for the Definition, Mapping, Monitoring, and Strict Protection of EU Primary and Old-Growth Forests, the principles of Sustainable Forest Management (SFM; Forest Europe 2020), the NEC Directive 2016/2284/EU (National Emission Ceiling), and the related monitoring obligations.

Supervisor: Prof. Roberto Canullo
Co-supervisor: Prof. Stefano Chelli

Scholarship co-funded under the agreement between CUFA (Comando unità forestali, ambientali e agroalimentari) and UNICAM IFNI 2025

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Position code: LIFE 4

Type of Position: without scholarship

Language of the Phd Program: English

PhD Course and curriculum: Life and Health Sciences, Curriculum One Health

Curriculum**:** One Health
Research field: Veterinary Science and Animal Health in the One Health Approach

Leader of the Phd Course: Prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Biosciences and Veterinary Medicine

Research Topic and project:
Metabolomic analysis of cerebrospinal fluid and microbiota study on fecal samples in dogs with idiopathic epilepsy, age- related cognitive dysfunction, intracranial neoplasms, non-infectious meningoencephalitis, and ischemic/hemorrhagic stroke

The aim of this study is to perform a metabolomic analysis of cerebrospinal fluid (CSF) and fecal microbiome study from dogs affected by these diseases, to evaluate potential correlations, identify disease biomarkers, and explore possible therapeutic strategies. Dogs enrolled in the study will undergo a general physical examination, a neurological evaluation, and comprehensive blood testing, including a complete blood count, serum biochemistry, and C- reactive protein measurement. Magnetic resonance imaging (MRI) of the neurocranial region will be performed, followed by CSF collection via cisterna magna or lumbar puncture. Fecal samples will be collected directly from the rectal ampulla or provided by the owner within hours prior to diagnostic procedures. This study is designed to generate data that can be easily collected during routine veterinary clinical practice, with results that may be translatable to human medicine. Metabolomic alterations identified could serve as disease biomarkers and help elucidate poorly understood pathogenic mechanisms. Furthermore, targeting these metabolic disturbances could aid in managing these highly debilitating conditions in humans and significantly improve quality of life for both dogs and their owners in veterinary medicine.

Supervisor: Prof. Fabrizio Dini
Co-supervisor: Prof. Angela Palumbo Piccionello

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic: Master degree in Veterinary Medicine must be owned.

Scholarship code: LIFE 5

Language of the Phd Program: **English**

PhD Course and curriculum: **Life and Health Sciences**

Curriculum**: One Health**
Research field: **Veterinary Science and Animal Health in the One Health Approach**

Leader of the Phd Course: prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Biosciences and Veterinary Medicine/ Evvivax srl, via Castel Romano 100, ROMA

Research Topic and project:
FELINE INFECTIOUS PERITONITIS AS A CLINICAL MODEL FOR HUMANS: CLINICAL DIAGNOSIS AND INNOVATIVE VACCINE THERAPIES
Feline Infectious Peritonitis (FIP) is a viral disease affecting domestic cats, caused by a mutation of the feline coronavirus (FCoV). FIP has garnered significant interest within the scientific community, not only due to its clinical relevance in veterinary medicine but also as a pathological model for the study of human diseases, particularly those associated with coronaviruses and immune-mediated conditions. FCoV is a mutagenic virus belonging to the same family as human coronaviruses, including SARS-CoV, MERS-CoV, and SARS-CoV-2.
Following infection, the virus is disseminated systemically via macrophages, inducing an aberrant immune response characterized by widespread systemic inflammation and the formation of multifocal lesions, often of granulomatous nature. FIP may also result in vasculitis, effusive processes, neurological impairments, and other systemic manifestations, thereby presenting notable parallels to certain human viral diseases.
The diagnosis of FIP remains particularly challenging, as no single diagnostic test currently allows for definitive confirmation. However, a robust presumptive diagnosis can be achieved through a combination of clinical assessment and laboratory investigations, including hematological and biochemical profiling, serum protein electrophoresis, measurement of acute phase proteins (notably alpha-1 acid glycoprotein), serological detection of anti-FCoV antibodies, and RT-PCR testing of fecal samples for coronavirus RNA.
Therapeutic options are presently limited, with treatment relying primarily on the use of non-specific immunosuppressive agents. While certain antiviral compounds have demonstrated efficacy, their use remains restricted in several countries, including Italy. As such, FIP represents a promising model for both diagnostic innovation and therapeutic advancement.

An emerging therapeutic strategy under investigation involves the use of DNA-based vaccines delivered via ElectroGeneTransfer (EGT) technology. This approach has shown efficacy in the context of cancer immunotherapy in both animal models and preliminary human clinical trials (Phase I), and may offer a novel and effective modality for the treatment of FIP in feline patients.

Supervisor: Prof. Alessandra Gavazza
Co-supervisor: Giacomo Rossi

Scholarship co-funded by **Evvivax srl** (ROME)

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic: Master degree in Veterinary Medicine must be owned

<u>Position code: LIFE 6</u>

Type of position: without scholarship

Language of the Phd Program: English

PhD Course and curriculum: **Life and Health Science**

Curriculum**: Molecular biology and cellular biotechnology**
Research field: **Molecular Frontiers in Biomedical Research and Learning**
Leader of the Phd Course: prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Biosciences and Veterinary Medicine

Research Topic and project:
Development of New Technologies in Biological Science Education to Support the Dissemination of Molecular Biology Applications to Civil Society

Description: This project is dedicated to high school science teachers, which take a temporary leave from teaching to engage in a research experience. It is based on the Amgen Biotech Experience (ABE) which is an innovative science education program that empowers teachers to bring biotechnology into their classrooms helping to raise awareness in civil society about 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, since 2022 is a partner of ABE Italy, coordinated by the National Association of Natural Sciences Teachers (ANISN) (https://amgenbiotechexperience.net/it/ital/home).

PhD candidates selected for this project will gain experience in promoting the ABE program, conducting research to develop new educational technologies or improve those already implemented by ABE, and evaluating the program's societal impact through the identification of new indicators.

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

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: LIFE 7

Language of the Phd Program: **English**

PhD Course and curriculum: **LIFE AND HEALTH SCIENCES**

Curriculum**: Molecular Biology and Cellular Biotechnology**
Research field: **Molecular Frontiers in Biomedical Research and Learning**

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, SCHOOL OF PHARMACY**

Research Topic and project: D**evelopment of human and murine organs-on-chips for the evaluation of new innovative and predictive therapeutic approaches.**
Supervisor: **PROF. MASSIMO NABISSI**
Co-supervisor: **PROF. CRISTINA LIMATOLA**

Scholarship funded **by the Marche Region under Innovative PhD research scholarships with an industrial characterization for the academic year 2025/2026 - PR Marche FSE+ 2021-2027 Asse 4 OS 4a DGR N. 532 del 11/04/2025**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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 for Scholarship funded by the Marche Region :

***Scholarships reserved for graduates residing or domiciled in the Marche region, unemployed/not working, in accordance with current regulations, who have not yet reached 36 years of age at the time of application The requirements above mentioned must be met by the candidates at the time of submission of the application for participation in this call for applications.

-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): period to be defined at the premises of the involved companies and Clusters of Marche Region

Further aspects related to this topic must comply with the project the position is based on.

Scholarship code: LIFE 8

Language of the Phd Program: **English**

PhD Course and curriculum: **Life and Health Sciences**

Curriculum**: One Health**
Research field: **Veterinary Science and Animal Health in the One Health Approach**

Leader of the Phd Course: prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Biosciences and Veterinary Medicine

Research Topic and project:
ROLE OF SIALIC ACIDS AND DIETARY SIALOPROTEINS IN THE INDUCTION OF INFLAMMATION AND CANCER IN ANIMALS AND HUMANS.

Sialic acids (Neu5Gc, Neu5Ac) play crucial roles in several functions, such as immune system support and cellular protection from degradation. Neu5Gc is synthesized by the CMAH enzyme, inactivated during evolution in humans and polymorphic-dysfunctional in dogs. It is incorporated into tissues through the diet, becoming a "xeno-auto-antigen". Its presence causes the production of anti-Neu5Gc antibodies, triggering chronic inflammation or "xenosialitis". The intestinal microbiota is crucial in exposure to Neu5Gc. Some bacteria can "coat" themselves with Neu5Gc to avoid immune recognition, facilitating its tissue integration. Bifidobacteria, on the other hand, remove sialic acid from glycoconjugates.
Methods: analysis of Neu5Gc in tissues; anti-Neu5Gc antibodies in excreta; analysis of fecal microbiota and metabolomic tests for xenosialic acid metabolites.
Expected results: correlations between Neu5Gc accumulation and severity of inflammation or induction of neoplasia, considering the impact of intestinal dysbiosis. Analysis of uro-fecal metabolites and correlation with neurodegenerative and enterocolitic conditions.
Impact: understanding the role of the intestinal microbiome in xenosialytis for new therapeutic strategies.Technology transfer focused on One Health value and collaboration with pharmaceutical industries for the development of finalized products.

Supervisor: **Prof. Giacomo Rossi**
Co-supervisor: **Prof. Alessandra Gavazza**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic: Master degree in Veterinary Medicine must be owned.

Scholarship code: LIFE 9

Language of the Phd Program: English

PhD Course and curriculum
PhD Course: **Life And Health Sciences**
Curriculum**: One Health**
Research field: **Veterinary Science and Animal Health in the One Health Approach**

Leader of the Phd Course: **Prof. Attilio Fabbretti**
Lead Partner of the PhD Program: **University of Camerino**
Operative site of the Phd Student: **University of Camerino, School of Biosciences and Veterinary Medicine**

Research Topic and project:
Non-transfusional hemo-components, a modern, topical, therapeutic approach to tissue repair and regeneration
Non-transfusional hemo-components (NTHCs) are therapeutic constituents of blood intended to be directly used on the affected site to contribute to tissue repair and healing. Many key concepts of NTHCs still need to be fully clarified and, at the same time, many innovative aspects can be proposed in this field of regenerative medicine research, in both humans and animals. The project aims to determine the therapeutic indications and the efficacy of NTHCs in tissue repair and regeneration; advance the method of production; characterize the quality of fresh and preserved NTHCs; evaluate the effect on cell cultures and on bacterial/fungal cultures; clarify the relationship between NTHCs and cancers; evaluate the effect of combining NTHC with other biological or synthetic regenerative medicine tools. These objectives will be pursued in full compliance with the One-Health translational perspective through the implementation of *in vitro* studies, *in vivo* experimental studies on animal models, and *in vivo* clinical studies on animals with spontaneous lesions.

Supervisor: Prof. Adolfo Maria Tambella

Scholarship co-funded by the Clinica Veterinaria Posatora, Via Martin Luther King, 7 - 60131 Ancona.

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic: Master degree in Veterinary Medicine must be owned.

Scholarship code: LIFE 10

Language of the Phd Program: English

PhD Course and curriculum: **Life and health sciences**

Curriculum**: One Health**
Research field: **Veterinary Science and Animal Health in the One Health Approach**

Leader of the Phd Course: Prof. Attilio Fabbretti
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Veterinary Medicine

Research Topic and project:
A MULTIDISCIPLINAR APPROACH TO THE REPRODUCTIVE MANAGEMENT OF RUMINANTS HERDS IN THE ITALIAN BREEDING SYSTEM
Effective reproductive management in both dairy and meat-producing cattle and sheep is essential to improve productivity, enhance animal longevity, and reduce environmental impact. In dairy herds, the use of fertility programs—supported by Doppler ultrasonography and early non-pregnancy diagnosis—optimize conception and submission rates. This project aims to evaluate new re-synchronization strategies based on progesterone monitoring and corpus luteum (CL) perfusion, comparing ultraportable ultrasound devices with high-precision systems.
In the Italian sheep sector, a European leader and producer of Pecorino Romano DOP, reproductive seasonality limits year-round product availability for consumers. The strategic use of melatonin, administered via subcutaneous ear implants and combined with ovarian cycle monitoring, and the use of GnRH to induce cyclicity enables targeted out-of-season breeding. This approach enhances productivity and strengthens market competitiveness.

Supervisor: Alessandro Troisi
Co-supervisor: Federico Randi

Scholarship co-funded by the agreement between the University of Camerino and Ceva Sante Animale, Libourne France.

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Additional criteria specific for the topic: Master degree in Veterinary Medicine must be owned.

Scholarship code: PHYS_MAT_EARTH 1

Language of the Phd Program: English

PhD Course and curriculum: **Physics, Earth and Materials Sciences**

Curriculum**: Physics/Material Science**
Research field: **Physics/Material Science**

Leader of the Phd Course: Prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino

Research Topic and project:
Fine analysis techniques for materials under extreme conditions: from planetary interiors to green Energy applications

Advanced experimental and computational techniques are currently being used for studying and understanding structure and properties of matter and materials under extreme conditions. In particular, x-ray spectroscopy (EXAFS), diffraction and Raman techniques can be used to study in-situ the behaviour of materials of interest under high pressure using for example diamond anvil cells and high temperatures, reproducing the conditions of the interior of planets. Water with dissolved guest species, including metal ions, represents an important field of study both for implications in life existence in different conditions and for gas-storage applications. In fact, all models of interiors of ice bodies in the Universe rely on our knowledge of the behavior of a few simple molecules under high pressure and temperature. The inclusion of guest species can strongly modify the structural, thermal and conductivity properties of ice, and promote novel exotic properties, as the predicted superionicity. The existence of these filled ices in extra-terrestrial bodies challenge our present description of their physics, essentially based on the assumption of the properties of pure ice. Filled ices also show an incredibly enhanced gas storage and recovery capability with respect to common hydrates, thus indicating the possibility of their future
applications for fuel recovery and CO2 sequestration. The goal of this project is to define the range of existence of ions/gas filled ice structures, characterize their formation, unravel their exotic properties, and tailor their future applications, by combining new groundbreaking experimental x-ray and optical high-pressure experiments, assisted by advanced simulations.

Supervisor: Prof. Andrea Di Cicco
Co-supervisor: Dr. Angela Trapananti

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: PHYS_MAT_EARTH 2

Language of the Phd Program: English

PhD Course and curriculum: **Physics, Earth and Materials Sciences**

Curriculum**: Physics**

Research field: Experimental quantum science and technology

Leader of the Phd Course: Prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: School of Science and Technology. University of Camerino

Research Topic and project:
Opto-electro-mechanical quantum transducer
This project is well integrated into the activities carried out by the Quntum Optics, Opto-Mechanics and Cryogenic Group within the field of Quantum Science and Technologies. The main goal is to experimentally realize and characterize an electro-optomechanical quantum transducer. Quantum transduction represents a key ingredient in quantum technologies. The project focusses on the coherent conversion between optical and microwave/radiofrequency (mw/rf) photons, the optical domain being ideal for reliable long-range communications through optical fibers or in free space, while the lower frequency band is particularly suitable for high-fidelity local quantum operations using superconducting and other solid-state processors. The easiest way to bridge the enormous energy gap is to use a mediator which is simultaneously coupled to both the microwave and the optical modes and in this project, we propose to use electro-optomechanical systems, where a mechanical resonator is coupled capacitively to microwave photons, and it is coupled dispersively via radiation pressure with the optical mode(s).
The main activities and work packages of this project may be summarized in: realization of the electro-opto-mechanical device and characterization of the main properties (interactions cooperativity) by homodyne detected optical interferometry in the quantum standard limit at room temperature (A1); integration of the device inside an high-Q optical cavity (A2); experimental realization and test of a transducer at room temperature and demonstration of the sympathetic cooling of the LC resonator by electro-opto-mechanical interaction (A3); integration of the transducer in ultra-cryogenic environment (A4); realization and test of the electro-opto-mechanical transducer at ultra-cryogenic temperature in the classical regime (A5); Realization of the ground state cooling of the resonators (A6); final demonstration of electro-mechanical transducer in the quantum regime by using QED generated signals (such as reading out single qubit in superconducting microwave devices) (A7).
The research activities of the project fall within the burgeoning field of quantum technologies, whose crucial role for the development of an innovative and technologically advanced society is well established at international level. In fact, all big-tech companies are massively investing in the field, and specific actions both at European and national level are currently being taken. In Italy, quantum technologies are recognized as one of the key enabling technologies. The project is strongly related to quantum metrology and sensing applications since a quantum transducer will be a key element of any mature quantum network. The development of these hybrid quantum devices, able to reach unprecedented sensitivity in signal transduction

and detection, also represents an unvaluable tool for the advancement of science and our understanding of the laws of nature in more general terms. In fact, the same platform can also be used for putting bounds on the fundamental interactions or preparing quantum states of macroscopic LC resonators. Transduced rf/mw signals can be advantageous for positioning, timing, sensing and MRI applications, and for more fundamental science applications, such as the sensitive detection of rf/mw signals of astrophysical nature (astronomical plasmas, sun activity, and exoplanets research).

Supervisor: Prof. David Vitali
Co-supervisor: Prof. Nicola Malossi
Co-supervisor: Prof. Flavio Travasso

Scholarship co-funded under the project **CUP "J53C24002930006": Bando PRIN 2022 (D.D. n. 104, 02-02-2022) titled "Membrane Dissipation in Opto-Mechanical resoNators (MeDiOMeN)", (Prot.20228EF2NP) Avviso n. 1401 del 18-09-2024 Disposizioni per lo scorrimento delle graduatorie**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: PHYS_MAT_EARTH 3

Language of the Ph.D. Program: English

PhD Course and curriculum: **Physics, Earth and materials sciences**

Curriculum**: Physics**
Research field: **Physics**

Leader of the Phd Course: Prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino
Joint site: University of Antwerp, Belgium

Research Topic and project:

Novel phases and coherent phenomena with electron-hole superfluids in heterostructures and cavities.
The research project will adopt theoretical and computational methods and it will have as main objective the novel design and corresponding numerical characterization of quantum coherent devices in electron-hole superfluid van der Waals heterostructures and hybrid material platforms. This will include new Josephson effects with electron-hole superfluid junctions for innovative Josephson junctions with enhanced properties for quantum sensing and computing. In particular, a specific system of interest in the project consists in considering excitons in electron-hole double layers placed in an unpumped empty cavity between two superconductors. Recently, it has been demonstrated that in a single electron layer so placed, the electron Coulomb interactions are modified by cavity polariton modes. However, the effects in a single-layer system, while real and measurable, are not dramatic at all. With excitons in a double layer system the effects should be very much larger and dramatic and the Coulomb interactions can even change sign. The phase diagram of the proposed system will be studied and novel quantum phases explored. The research activities will be coordinated by the Complex Quantum Matter group in Camerino and by the Quantum Matter Theory group in Antwerp.

Supervisor at University of Camerino: Prof. Andrea Perali
Co-supervisors at University of Antwerp, Belgium: Prof. Jacques Tempere and Prof. David Neilson

Scholarship carried out in collaboration with University of Antwerp, Belgium
(work in progress) In relation to this scholarship, it may be possible to activate a joint supervision agreement with the University of Antwerp.

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025
The PhD candidate will spend: 18 months in Camerino and in 18 months in Antwerp, Belgium

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.

Planned Period of research mobility abroad: 18 months (at the University of Antwerp, Belgium).

Scholarship code: PHYS_MAT_EARTH 4

Language of the Ph.D. Program: English

PhD Course and curriculum: **Physics, Earth and materials sciences**

Curriculum**: Physics**
Research field: **Physics**

Leader of the Phd Course: Prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino
Joint side: University of Antwerp, Belgium

Research Topic and project:

Design and characterization of new superconducting nanostructures for quantum technologies.
This research project for the joint doctorate Antwerp-Camerino will have as main objective the novel design and corresponding theoretical characterization. The research activities and the obtained results will support the subsequent experimental measurements that will be done in the low temperature laboratory group of the University of Camerino where the candidate will be able to collaborate. The theoretical activity will focus on first principle numerical calculations of the electronic and superconducting properties of quantum coherent devices with superconducting nanostructures, exploiting multicomponent superconducting materials with multiple bands. The theoretical activities will be coordinated with the experimental realizability in the laboratories in Camerino. The project will search for new quantum coherent effects with specifically designed two-dimensional materials at the atomic scale, such as cuprates, borophene family or tailored graphene structures. The novel quantum effects studied in the project will be applied to effective qubit implementations and novel Josephson junctions with enhanced properties for predesigned applications.
The innovative material and possible design investigation is expected to result in longer decoherence time and robustness against disorder and external perturbation that is crucial in development of the next generation platforms for superconducting qubits. The impact will be also associated with the realization of novel Josephson junctions' devices, which will benefit quantum metrology and quantum sensors. The research project will be theoretical and computational in character, and it will be closely connected with the experimental activities carried out in the quantum matter laboratories of the University of Camerino. The materials chosen and the physical quantities evaluated will be selected in the project in such a way to be

experimentally realizable in the laboratory in Camerino, in order to provide continuous and profitable feedbacks between theory and experiments.

The research activities will be coordinated by the Complex Quantum Matter group in Camerino and by the Condensed Matter Theory group in Antwerp.

Supervisors at University of Camerino: Prof. Andrea Perali and Prof. Javid Rezvani
Co-supervisors at University of Antwerp, Belgium: Prof. Milorad V. Milosevic

Scholarship carried out in collaboration with University of Antwerp, Belgium
(work in progress) In relation to this scholarship, it may be possible to activate a joint supervision agreement with the University of Antwerp.

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025
The PhD candidate will spend: 18 months in Camerino and in 18 months in Antwerp, Belgium

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.

Planned Period of research mobility abroad: 18 months (at the University of Antwerp, Belgium)

Scholarship code: PHYS_MAT_EARTH 5

Language of the Phd Program: **English**

PhD Course and curriculum: **Physics, Earth and Materials Sciences**

Curriculum**: Physical and chemical processes in Earth systems**
Research field: **Earth science**

Leader of the Phd Course: prof. Gunnella Roberto
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Science and Technology, Geology Division.

Research Topic and project:
Multiscale Investigation of Mud Volcano Systems in Central Italy: Geological, Geophysical, and Machine Learning Approaches for Fluid Migration Pathway Reconstruction
The PhD research is part of a project focused on fluid migration and geohazard assessment in mud volcano provinces of Central Italy. It aims to reconstruct the 3D architecture of selected mud volcano systems by investigating stratigraphic, structural, hydrological, and seismic controls. The work combines geological mapping, geophysical imaging (ERT, gravimetry, MT), geochemical analyses (soil gas composition and flux), and laboratory investigations (XRD, micropaleontology) to characterize subsurface fluid pathways. Remote sensing data from Sentinel-1 and Sentinel-2 will be analyzed using machine learning algorithms to detect surface deformation, vegetation stress, and thermal anomalies. The project integrates correlations among mud emissions, seismic activity, and meteorological events. The ultimate goal is to develop a multiscale model of fluid migration to support monitoring and hazard forecasting.
The PhD student will benefit from an international research environment and collaborations with expert groups in geophysics, geochemistry, and AI applied to Earth sciences. Several protocols and techniques to be used in the project have already been tested and refined through pilot studies, ensuring a solid methodological foundation.

Supervisor: Prof. Pietro Paolo Pierantoni
Co-supervisor: Prof. Miller Zambrano

Scholarship co-funded by INSTM (National Interuniversity Consortium of Materials Science and Technology).

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: PHYS_MAT_EARTH 6

Language of the PhD Program: Italian/English

PhD Course and curriculum: **Physics, earth and materials sciences**

Curriculum**: Physics, earth and materials sciences**
Research field: **Materials Science**

Leader of the PhD Course: prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino, School of Science and Technology.

Research Topic and project:
Production and characterization of panels ennobled in biomass waste with natural adhesives for thermal/acoustic insulation use and installation in furnishing structures

The research proposal, starting from the experience acquired by the research group on characterization of ligno-cellulosic biomass and development of polysaccharide-based adhesives, aims to build a database of solutions, starting from secondary raw materials at “zero km” for the production of thermal and/or acoustic insulation panels for use in interior furnishings and in the construction industry. The panels will be finalized by impregnation through lignin extracted from the biomass itself and with an antibacterial effect.
The PhD project combines basic and applied research activities, both in Italy and abroad, in particular: 1. Outsourcing and characterization of local biomass; 2. Development of polysaccharide based adhesives; 3. Preparation of samples for different tests (acoustical, thermal, mechanical, namely compression, elastic rebound, impact, densification; 4. Ennobling with self-developed bio-resins with antibacterial additives; 5. Micro-drilling tests of the final demonstrator panels; 6. Accelerated aging tests by conditioning. 7. Selection of prototypes for final use in the furniture industry

Supervisor: Prof. Carlo Santulli
Co-supervisor: Prof. Valeria Corinaldesi (UNIVPM)

Scholarship funded **by the Marche Region under Innovative PhD research scholarships with an industrial characterization for the academic year 2025/2026 - PR Marche FSE+ 2021-2027 Asse 4 OS 4a DGR N. 532 del 11/04/2025**

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months
Special requirements, additional to "standard" ones for Scholarship funded by the Marche Region :

***Scholarships reserved for graduates residing or domiciled in the Marche region, unemployed/not working, in accordance with current regulations, who have not yet reached 36 years of age at the time of application The requirements above mentioned must be met by the candidates at the time of submission of the application for participation in this call for applications.

-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): period to be defined at the premises of the involved companies and Clusters of Marche Region

Further aspects related to this topic must comply with the project the position is based on.

Scholarship code: PHYS_MAT_EARTH 7

Language of the Phd Program: English

PhD Course and curriculum: **PHYSICS, EARTH AND MATERIALS SCIENCES**
Curriculum**: Physics**
Research field: **Cosmology/gravitational waves**

Leader of the PhD Course: prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the PhD Student: University of Camerino, School of Science and Technology.

Research Topic and project:
Innovative material characterizations for next generation gravitational wave detectors
The project is part of a joint research effort to improve the sensitivity of existing (such as Virgo and LIGO) and future (such as Einstein Telescope and Cosmic Explorer) gravitational-wave interferometers. In particular, the research focuses on materials and solutions that can improve the performance of the coatings and the suspensions of the main mirrors. For both topics, the candidate will have to integrate with existing national and international collaborative projects (PRIN2022- MeDiOMeN, ET collaboration, Virgo collaboration and so on) to study mechanical, structural and thermal properties of different samples for coatings and suspensions with the goal of optimizing not only the choice of materials but also the production and pre- and post-production treatment techniques.
In particular, this implies:
- for coatings: research into materials, deposition techniques and thermal treatments that can produce thin films with low thermal noise and low optical absorption both at room temperature and at cryogenic conditions. To do this, it will be necessary to implement a measurement system for mechanical losses at cryogenic temperature; investigate structure and morphology by different analytical techniques; implement a system for optical absorption measurements.
- suspensions: design and test a measurement system to perform Q measurements at cryogenic temperature; collaborate with the companies responsible for the production of the crystalline fibers/rods to optimize the production technique and the design; measure of thermal conductivity; measure of breaking strength in traction and in bending.

Supervisor: Prof. Flavio Travasso
Co-supervisor: prof. Nicola Malossi,
Co-supervisor: prof. Angela Trapananti

Scholarship co-funded under the project **CUP "J53C24002930006": Bando PRIN 2022 (D.D. n. 104, 02-02-2022) titled "Membrane Dissipation in Opto-Mechanical resoNators (MeDiOMeN)", (Prot.20228EF2NP) Avviso n. 1401 del 18-09-2024 Disposizioni per lo scorrimento delle graduatorie**

Duration: **3 years**
Provisional starting date: 1st November 2025

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.

Planned Period of research mobility abroad: 6 months

Scholarship code: PHYS_MAT_EARTH 8

Language of the Phd Program: Italian/English

PhD Course and curriculum: **PHYSICS, EARTH AND MATERIALS SCIENCES**

Curriculum**: Physical and chemical processes in Earth systems**

Research field: **Seismic Hazard**

Leader of the Phd Course: prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Science and Technology.

Research Topic and project:
Probabilistic seismic hazard validation based on recorded, simulated and historical scenarios in Italy
This research aims to reconstruct the seismic history of selected sites in Italy by integrating multiple approaches, including instrumental data from high-quality intensity measures, physics-based or stochastic ground motion simulations, and historical event reconstruction from macroseismic intensity data. By developing site-specific earthquake scenarios, the study will provide robust validation benchmarks for probabilistic seismic hazard assessment (PSHA) models, with particular emphasis on long-return period ground motion estimates. This work will contribute to improving the reliability of hazard assessments at both regional and site scales. The outcomes of this research will inform seismic risk mitigation strategies, while contributing to the advancement of harmonized and physics-based national seismic hazard assessments. The project combines fundamental and applied research activities, to be carried out both in Italy and abroad, and

will include: Scientific and bibliographic review of ground motion data and seismological parameters; In-depth analysis of ground motion simulation methods and empirical ground motion prediction models; Application of PSHA methodologies to selected case studies in Italy. The research will be conducted in close collaboration with the Istituto Nazionale di Geofisica e Vulcanologia (Milan section) and other institutions of the REducing risks of natural DIsasters (REDI) consortium. Opportunities for international research exchanges are also foreseen.

Supervisor: Dr.T. Volatili
Co-supervisor: Dr. Sara Sgobba (INGV), Prof. Emanuele Tondi

Scholarship co funded by **INGV** and **REDI Consortium** https://www.redi-research.eu/it/homepage/

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

ECTS credits (within 3 years): 180
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  - 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.

Planned Period of research mobility abroad: 6 months

Scholarship code: PHYS_MAT_EARTH 9

Language of the Phd Program: Italian/English

PhD Course and curriculum: **PHYSICS, EARTH AND MATERIALS SCIENCES**

Curriculum**: Physical and chemical processes in Earth systems**

Research field: **Natural hazards and related disasters**

Leader of the Phd Course: prof. Roberto Gunnella
Lead Partner of the PhD Program: University of Camerino
Operative site of the Phd Student: University of Camerino, School of Science and Technology

Research topic and project:
Psycho-social interventions and communities' resilience before, during and after natural disasters
This research aims to co-design, with local communities' exposed and vulnerable to natural hazards, strategies and pilot actions for psycho-social support to the most fragile families and citizens', to improve community resilience and reduce the risk of disaster impacts before the occurrence of an adverse event. Strategic planning will also include recommendations and guidelines for specific psycho-social interventions both in times of emergency and response, and in times of relief and recovery. Preliminary analyses and assessments of risk and resilience at the local scale will be propaedeutic to the subsequent elaboration of the strategies. The expected results of this research will thus inform and contribute to risk mitigation and reduction strategies, advancing the knowledge and experience in the field through selected case studies of experimental and applied research. The project combines in fact fundamental and applied research activities, to be carried out both in Italy and abroad, and will include: scientific and bibliographic review of psycho-social support and interventions in the contexts of natural hazards and related disasters; in-depth analysis and assessment of community readiness, preparedness and resilience; and application of innovative methodologies to selected case studies in Italy and abroad. The research will be conducted in close collaboration with the Italian Institute of Geophysics and Volcanology – INGV, Milan section), and other institutions of the Consortium "REDI" (REducing risks of natural DIsasters). Opportunities for international research exchanges are also foreseen.

Supervisor: Prof. M. Sargolini
Co-supervisors: Dott. F. Stimilli, Dott. Gemma Musacchio (INGV)

Scholarship co funded by **INGV** and **REDI Consortium** https://www.redi-research.eu/it/homepage/

Exclusive participation to the project for the entire duration of the scholarship is foreseen.

Duration: **3 years**
Provisional starting date: 1st November 2025

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

- 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.

Planned period of research mobility abroad: 6 months

** The topic is approved under reserve of actual co-funding

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: "LIAOCHENG" (see Call text)

Type of positions: supernumerary – international mobility Phd Position – without UNICAM scholarship

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. The candidate must indicate the course and the curriculum of interest in the application form. In the hypothetical research project, the candidate must specify the agreement with the Chinese university.

Positions codes: "ZHENGZHOU-A" (see call text)

Type of positions: supernumerary – international mobility Phd Position – without UNICAM scholarship

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. The candidate must indicate the course and the curriculum of interest in the application form. In the hypothetical research project, the candidate must specify the agreement with the Chinese university.

Positions codes: "ZHENGZHOU-B" (see call text)

Type of positions: supernumerary – international mobility Phd Position -– without UNICAM scholarship

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. The candidate must indicate the course and the curriculum of interest in the application form. In the hypothetical research project, the candidate must specify the agreement with the Chinese university.

Positions codes: JILIN

Type of positions: supernumerary – international mobility Phd Position

No. 1 co-funded scholarship reserved for Chinese citizens under the co-tutorship agreement between the University of Camerino and Jilin Agricultural University (China). The candidate must indicate the course and the curriculum of interest in the application form. In the hypothetical research project, the candidate must specify the agreement with the Chinese university.

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 November 2025**.

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:
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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
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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:

Further aspects related to these topics must comply with the Agreements the positions are based on.