FINALIZED “TOPIC-BOUND GRANTS”.

3 SCHOLARSHIPS within the framework of the “**POLO DEI MATERIALI COMPOSITI**” (Composite Materials Hub), for research activities relating to environmental sustainability, design, modelling and chemical development of products in the sector.	**Area of Research and PhD Curriculum**	**For additional information**
	Architecture, Design, Planning - Innovation Design	lucia.pietroni@unicam.it
	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	fabio.marchetti@unicam.it
	Physics, Earth and Materials Sciences - Materials Sciences	simonetta.boria@unicam.it

1 SCHOLARSHIP FOR THE AWARD OF A DOCTORAL DEGREE IN CO-TUTORSHIP BETWEEN UNICAM and the UNIVERSITY of ANTWERPEN	**Area of Research and PhD Curriculum**	**For additional information**
Research field		
Physics of matter	Physics, Earth and Materials Sciences - Physics	andrea.perali@unicam.it

1 SCHOLARSHIP FOR THE AWARD OF A DOCTORAL DEGREE IN CO-TUTORSHIP BETWEEN UNICAM and the JILING AGRICULTURAL UNIVERSITY (CHINA)	**Area of Research and PhD Curriculum**	**For additional information**
Diet based intervention for Alzheimer’s disease prevention and treatment. Taking into account the well established role of the gut microbiota in the health status of an individual, strategies to modulate the gut microbiota composition and functionality for delaying the onset or counteracting the progression of neurodegenerative disorders will be the focus of the doctoral project.	Life and Health Sciences - Nutrition, Food and Health	annamaria.eleuteri@unicam.it

	Area of Research and PhD Curriculum	**For additional information**
Quantum Technologies: Study and implementation of photonic and solid-state platforms for the generation, processing and control of quantum information	Physics, Earth and Materials Sciences - Physics	david.vitali@unicam.it

	Area of Research and PhD Curriculum	**For additional information**
Adaptation of bacteria to the presence of anthropogenic pollutants in aquatic ecosystems. Microbiological analysis, with integration of genomic data, of the role played by plastic materials in the spread of pathogens and genes responsible for antibiotic resistance	Life and health sciences - Molecular Biology and Cellular Biotechnology	postlaurea@unicam.it

ADDITIONAL POSITIONS

Up to a maximum of 5 SCHOLARSHIPS reserved for Chineses citizens graduated from the Liaocheng University, under the AGREEMENT SIGNED BETWEEN UNICAM AND LIAOCHENG UNIVERSITY (CHINA)	For additional information
Research topics	
Priority will be given to applications in the disciplines of **Physics, Chemistry, Mathematics, Biology and Veterinary Medicine**	postlaurea@unicam.it

Up to a maximum of 6 SCHOLARSHIPS reserved for Chineses citizens graduated from the Zhengzhou University within the framework of the AGREEMENT SIGNED BETWEEN UNICAM AND ZHENGZHOU UNIVERSITY (CHINA)	For additional information
Research topics	
Priority will be given to applications in the disciplines of **Food Sciences, Chemistry, Biology and Design**	postlaurea@unicam.it

Up to a maximum of 6 SCHOLARSHIPS reserved for Chineses citizens under the AGREEMENT SIGNED BETWEEN UNICAM AND SUZHOU CHIEN SHIUNG INSTITUTE OF TECHNOLOGY (CHINA)	For additional information
Research topics	
Priority will be given to applications in the disciplines of **Chemistry, Biosciences, Pharmaceutical Sciences, Architecture and Computer Sciences**	postlaurea@unicam.it

Up to a maximum of 5 SCHOLARSHIPS reserved for Chineses citizens under the AGREEMENT SIGNED BETWEEN UNICAM AND OCEAN UNIVERSITY OF CHINA for the awarding of Dual Degrees and 5 SCHOLARSHIPS reserved for Chineses citizens under the AGREEMENT SIGNED BETWEEN UNICAM AND OCEAN UNIVERSITY OF CHINA for the awarding of Single Degree	Area of Research	For additional information
Research topics		
Positions reserved to Chinese perspective PhD candidates and OUC staff holding legal Master Degree of the field of **Computer Science**	Computer Science and Mathematics	postlaurea@unicam.it

	2 POSITIONS without a scholarship under the agreement signed between the University of Camerino and the FHNW University of Applied Sciences and Arts, North-western Switzerland , for research on "Business Information Systems".	Area of Research	For additional information
	Research topics		
1	**Decision support for business model implementation of startups.** (Gassmann et al. 2014) have identified 55 business models, which can act as blueprints for building a new company. While there exists a database with 100+ case studies, it is still difficult for a startup to identify and implements the appropriate model. This objective of this research is to develop a decision support system for business model implementation which covers two aspects: In a first step a decision model shall be developed, that identifies the most appropriate business model. In a second step, the startup shall be guided in how to implement the business model.	Computer Science and Mathematics	knut.hinkelmann@fhnw.ch
2	**Integration AI and Knowledge Management for Hybrid Intelligence.** Hybrid intelligence enables adequate cooperation, interaction, augmentation, and combination of human and machine intelligence to achieve business goals that neither humans nor machines can achieve alone. While knowledge management has a focus on knowledge interpreted and used by humans, AI deals with machine-interpretable knowledge. The objective of this research is do develop a concept of a hybrid intelligent system consisting of and adequate interaction between human and machine. The aim is for humans to represent knowledge and train AI and conversely for AI to improve human learning and application of knowledge	Computer Science and Mathematics	knut.hinkelmann@fhnw.ch
3	**Innovative Information Systems in the Digital Economy.** Digitalization leads to a fusion of business and IT leading to new opportunities but also dealing with challenges like IT security or data governance. The objective of this research is to explore and develop an innovative solution for business challenges using recent technology trends.	Computer Science and Mathematics	knut.hinkelmann@fhnw.ch

	RESEARCH TOPICS LIST: ARCHITECTURE, DESIGN, PLANNING		
	Research topics description	**Area of Research and PhD Curriculum**	**For additional information**
1A	**Teorie e progetto dell'architettura contemporanea ; Theories and design of contemporary architecture**	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
2A	**Storia e valorizzazione del patrimonio architettonico ; History and enhancement of architectural heritage**	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
3A	**Rappresentazione grafica e multimediale dell'architettura ; Graphic and multimedia representation of architecture**	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
4A	**Valorizzazione digitale del patrimonio culturale e artistico, sia di tipo materiale che immateriale ; Digital enhancement of cultural and artistic heritage, both tangible and intangible**	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
5A	**Valorizzazione digitale sostenibile del patrimonio materiale e immateriale: il caso dell'Accademia Nazionale dei Lincei [IL TOPIC SARA' ATTIVATO IN CASO DI FINANZIAMENTO]**	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
6A	**Design di oggetti, sistemi e ambienti innovativi ed intelligenti ; Design of innovative and intelligent objects, systems and environments**	Architecture, Design, Planning - Innovation Design	postlaurea@unicam.it
7A	**Design per la sostenibilità ambientale e per l'innovazione di processo e di prodotto ; Design for environmental sustainability and for process and product innovation**	Architecture, Design, Planning - Innovation Design	postlaurea@unicam.it
8A	**Design della comunicazione, nuove tecnologie e patrimonio culturale ; Design for communication, new technologies and cultural heritage**	Architecture, Design, Planning - Innovation Design	postlaurea@unicam.it
9A	**Sviluppo sostenibile del territorio, contenimento del consumo di suolo e strategie di adattamento al *climate change***	Architecture, Design, Planning - Sustainable Urban Planning and Inland Areas Development Strategies	postlaurea@unicam.it
10A	**Gestione del rischio e superamento delle situazioni di crisi**	Architecture, Design, Planning - Sustainable Urban Planning and Inland Areas Development Strategies	postlaurea@unicam.it
11A	**Politiche per l'innovazione, valorizzazione territoriale e sviluppo delle aree interne**	Architecture, Design, Planning - Sustainable Urban Planning and Inland Areas Development Strategies	postlaurea@unicam.it
12A	**Attivazione di processi di rigenerazione urbana**	Architecture, Design, Planning - Sustainable Urban Planning and Inland Areas Development Strategies	postlaurea@unicam.it
13A	**Ecological transition and inland areas:** IL RUOLO DELLE AREE INTERNE NELLA TRANSIZIONE ECOLOGICA E DIGITALE: La risorsa del policentrismo per definire nuovi equilibri territoriali **[IL TOPIC SARA' ATTIVATO IN CASO DI FINANZIAMENTO]**	Architecture, Design, Planning - Sustainable Urban Planning and Inland Areas Development Strategies	rosalba.donofrio@unicam.it

	RESEARCH TOPICS LIST: CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY		
	Research topics description	**Area of Research and PhD Curriculum**	**For additional information**
1CH	**Research Topic in Physical Chemistry.** The research activity in physical chemistry will be focused on sustainable materials and technologies for Lithium-ion and Sodium-ion batteries and Fuel Cells, through the following activities: (i) synthesis of sustainable active materials to reduce dependence on critical raw materials; (ii) development of green formulations and processing of electrodes; (iii) physico-chemical characterizations of chemical, structural, morphological and electrochemical properties; (iv) development of innovative recycling processes.	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	francesco.nobili@unicam.it
2CH	**Research Topic in Inorganic Chemistry.** Synthesis and characterization of coordination compounds based on transition metals for biological applications. The research activity in inorganic chemistry will be focused on the development of innovative anticancer and antiviral strategies by exploiting the promising features of 11th group and first row transition metal-based compound. New ligands, including bi-functional chelators to be conjugated with selected bioactive molecules, will be synthesized and used for the preparation of related metal-based complexes.	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	maura.pellei@unicam.it; carlo.santini@unicam.it
3CH	**Research Topics Inorganic Chemistry:** MOF-based materials for antimicrobial application	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	fabio.marchetti@unicam.it
4CH	**Characterization functionalization of thermoplastic polymers from renewable sources compatible with food and medicinal contact.** The importance of polymeric materials for various applications in everyday life has continuously increased over the last decades. Many technical polymers may seem to be of chemically simple composition, but polymeric materials can be complex samples containing numerous additives that are responsible for the final physical and chemical properties as well as for the long-term behavior. The aim of this topic is to develop a new class of polymeric materials functionalized by suitably prepared small organic molecules. The materials obtained have a wide range of properties which can be tailored according to the specific requirements, with particular attention to polymeric matrix materials for packaging applications. A study that promotes the transition from economic system predominantly linear in a widely circulated (upcycling).	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	enrico.marcantoni@unicam.it ; cristina.cimarelli@unicam.it ; serena.gabrielli@unicam.it

5CH	**Applications of organic chemistry for nanotechnologies in sustainable lighting innovations**: For some years we have been experimenting the useful contribution of organic chemistry in sustainable development and recycling as fundamental part of the process and product innovation. In this, particular attention was focused her attention in last years in recycling of plastic. To extend the study to nanocomposites it is observed that to date only a few recycling and re-use strategies have been developed for nanoparticles. Designing these strategies is challenging because of the intrinsic value of nanoparticles, and the need to recover and re-use these high value materials. Given that lighting has evolved from a branch of engineering ensuring safety and performance in indoor and outdoor installations, to a key discipline interacting with a wide spectrum of fields and having a deep impact on our daily lives, the use of new nanoscale structures should yield improvements in lighting. Nanomaterial recycling is gaining traction as a topic of importance in the scientific community, and certain the organic chemistry could make its own contribution by studying and preparing additives necessary for recycling processes that must be relatively simple, cheap, fast, and energy efficient (circular economy).	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	enrico.marcantoni@unicam.it ; cristina.cimarelli@unicam.it ; serena.gabrielli@unicam.it
6CH	**New efficient sustainable synthetic methodologies for biological and pharmacological active small organic molecules containing heterocycles**: Recent advances in synthetic organic chemistry have played a major role in understanding and utilizing small molecules, and there are several benefits associated with the use of small molecules as therapeutic agents. In particular, heterocyclic compounds are an integral part of many biologically active small molecules, and numerous efforts in recent years focused in the development of improved methods for their synthesis. Thus, this topic proposes a research finalized to optimize the structure-activity correlation to reduce the necessary resources, to minimize waste, and to eliminate the use or generation of hazardous substances. Practical scientific principles in solving real organic synthesis problems and improving own skills in analytical techniques are developed.	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	enrico.marcantoni@unicam.it ; cristina.cimarelli@unicam.it ; serena.gabrielli@unicam.it
7CH	**Development of analytical methods for the chemical-physical characterization of seabed.** The aim of the study is to develop methods of analysis for the physico-chemical characterization of seabeds and for the evaluation of their environmental health status. Particular attention will be paid to the search for analytical methodologies capable of detecting the presence of VOCs of both anthropogenic and natural origin.	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	mario.berrettoni@unicam.it ; silvia.zamponi@unicam.it
8CH	**Methods for recovering critical elements from waste and their innovative treatments**. The aim of the research is the development and / or improvement of methodologies capable of recovering valuable materials from waste. At the same time, innovative systems of irreversible trapping of dangerous pollutants in industrial waste will be studied.	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	mario.berrettoni@unicam.it ; silvia.zamponi@unicam.it
9CH	**Environmental problems and green solutions**	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	rita.giovannetti@unicam.it
10CH	**New Synthetic tools for the Preparation of Heterocyclic Systems with Biological Activity.** The growing number of biologically active compounds featured by the nitrogen containing heterocycles makes the study of their preparation and synthetic transformations particularly interesting and indispensable. The proposed research plan is aimed to provide new synthetic pathways for the preparation and functionalization of heterocyclic systems. Particularly, the development of new techniques based on flow chemistry and photochemical devices represents the main focus of the research activity in which the PhD candidate will be involved.	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	marino.petrini@unicam.it

1PS	The main goal of this PhD program is to involve PhD students in stimulating research activities in the fields of **drug design, rationale synthesis, in vitro and in vivo pharmacological studies, drugs and cosmetics formulation and delivery, food quality and safety, food supplements and nutraceuticals, analytical and biological studies on plant extracts**. During the three years PhD Course the students will have personal mentors who educate them to follow research topics, with the goal to allow the students to become able to formulate a scientific problem independently, propose hypotheses and procedures leading to its solving on an experimental or theoretical level in the above different fields. The general concept behind all the research activities listed above is related to human health and well-being. Research activities will be related to: **computer assisted drug design and optimization; synthesis of potential drugs with different synthetic approaches and instrumental characterization; isolated macromolecules, cell tissues and animal pharmacological studies; novel strategies for drug delivery systems; new formulations, mainly based on natural ingredients, for cosmetics; in deep quali-quantitative analytical studies of foods; development of functional food and food supplements, mainly based on nutraceutics; analytical studies and biological properties of essential oils and solvent extracts from plants.**	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	sauro.vittori@unicam.it
2PS	**Tackling Neglected Tropical Diseases (NTDs), multi-drug-resistant pathogens, and viruses by natural products.** Neglected tropical diseases (NTDs) are a diverse group of 20 conditions that are mainly prevalent in tropical areas, where they mostly affect more than 1 billion people who live mostly in low-income communities. They are caused by a variety of pathogens, including viruses, bacteria, parasites, fungi, and toxins. These diseases cause devastating health, social and economic consequences. The epidemiology of NTDs is complex and many of them are vector-borne and often related to animal reservoirs. All these factors make their public-health control challenging. Antimicrobial resistance (AMR) is a global health and development threat. AMR is rising to dangerously high levels in all parts of the world. It has been estimated that in Europe, drug-resistant bacteria cause 25,000 deaths annually and cost more than 1.5 billion dollars every year in healthcare expenses and productivity losses. In recent years, viral infection has gradually become an important factor threatening human health and is one of the leading culprits of human death worldwide. The recent outbreaks of SARS (2002), MERS (2012), and COVID-19 (2019) have exacerbated the problem. However, the development of successful antiviral therapeutics remains a daunting challenge. The project is focused on developing naturally occurring compounds extracted and purified from aromatic and medicinal plants that might represent useful tools in discovering new promising drug candidates. The research activities will be undertaken at the School of Pharmacy in the Chemistry Interdisciplinary Project (ChIP)'s recently built laboratories in the context of a highly active research environment.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	riccardo.petrelli@unicam.it
3PS	**Inhibitors of nucleotide metabolism key enzymes as chemotherapeutic agents: synthetic approaches and biological evaluation**	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	loredana.cappellacci@unicam.it
4PS	**Study and characterization of aroma bioactive compounds in food extracts**	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	gianni.sagratini@unicam.it

5PS	**Sample preparation and Instrumental Analysis of Food and Plant.** The candidate PhD will have to get familiar mainly with sample preparation techniques (extraction methods, like Soxelet, Ultrasound Assisted Extraction, Microwave Assisted Extraction, Naviglio, Liquid/Liquid Extraction, etc; prepurification methods, like SPE, SPME, etc) and Instrumental Analysis, using GC-FID, GC-MS, HPLC-DAD, HPLC-FD, HPLC-MS, HPLC-MS-MS (triple quad), etc. This is to assess quality content of Food and Plant, to determine nutritional and health properties of the same. [THIS TOPICS IS ADDRESS TO CANDIDATES FROM ZHENGZHOU UNIVERISTY INTERESTED IN FOOD SCIENCES]	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	sauro.vittori@unicam.it
6PS	**Targeting dopamine D4 receptor for the treatment of glioblastomas.** Glioblastomas (GBM) are the most malignant primary adult brain tumors, characterized by an aggressive invasive behavior associated with high drug resistance. Temozolomide is the first-choice chemotherapeutic drug for GBM, but its efficacy is transient and occurs in a subgroup of patients. Thus, there is an urgent need to develop new specific anticancer agents targeting regulatory pathways outside the traditional chemotherapies. Dopamine and its receptors are involved in the growth of cancers. In particular, D4 receptor subtype (D4R) has recently been suggested as a potentially therapeutic target for the treatment of GBM, considering that inhibition of D4R disrupts the autophagy-lysosomal pathway of GBM neural stem cells, leading to apoptosis. Based on these observations, this project aims at developing highly potent and selective D4R antagonists to be evaluated as an innovative targeted therapy for GBM.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	fabio.delbello@unicam.it ; wilma.quaglia@unicam.it
7PS	**Characterization of new molecules and their pharmaceutical activity as receptor ligands, antitumor agents and enzyme inhibitors.** The research topic is focused on characterization of new molecules as ligands of various class of receptors involved in neuroinflammation and neurodegeneration, potential antitumor and enzyme inhibitors through pharmacological and biotechnological approaches. The new molecules will be evaluated in in vitro and ex vivo studies in specific cell lines or in animal tissues. In addition, their metabolic stability and absorption will be estimated in in vitro preparations, trough rat hepatic microsomes (containing the metabolizing enzymes CYP450s) and everted gut sac or CaCo2 cells, respectively.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	michela.buccioni@unicam.it ; gabriella.marucci@unicam.it
8PS	**Polymeric nanoparticles for combination therapy in cancer treatment**	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	roberta.censi@unicam.it
9PS	**Design, synthesis and characterization of new molecules as receptor ligands, antitumor and antibacterial agents and enzyme inhibitors.** This topic is focused on the realization of new nucleosides, nucleotides, and heterocycles as ligands of various class of receptors involved in neuroinflammation and neurodegeneration, potential antitumor and antibacterial drugs and enzyme inhibitors. The compounds will be obtained with classical methods of organic synthesis and purification through the main chromatographic procedures and crystallization; new molecules will be characterized by spectrometric methods (mass, NMR, elementary analyses). Attention should be placed to the design of experimental procedure for the biological activity characterization of new molecules.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	catia.lambertucci@unicam.it
10PS	**Chemical-physical characterization of self-assembling compounds intended for drug delivery**	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	giulia.bonacucina@unicam.it

11PS	**Rational design of biologically active compounds with molecular modeling tools.** The rational design of biologically active compounds through computational chemistry/molecular modeling techniques is a critical step for the development of molecules aimed at becoming drugs, pharmacological tools, or diagnostics. This research topic is focused to the use of computational tools to analyze or develop the 3D structures of proteins as biological targets of drugs (i.e. G Protein-Coupled Receptors, Ion Channels, and Enzymes) and to design and in silico test novel compounds potentially able to modulate the activity of these proteins	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	diego.dalben@unicam.it
12PS	**Nutrigenomics applied to the development of nutraceuticals and functional food.** The nutrigenomic impact of food extracts can play a role in the promotion of human health. The aim of this project is to study the nutrigenomic effects of selected food matrices in order to highlight their new potential healthy properties and bring out their novel applications as a source of bioactive compounds for the development of nutraceuticals and functional food.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	laura.bordoni@unicam.it
13PS	**Advanced electronic systems for remote monitoring of human and animal health conditions.** This project aims to implement a series of miniaturized sensors with wireless technology to record specific physiological parameters including heart and respiratory rate, pressure, consumption of food and liquids, postural deficits, movement difficulties etc. This devices, connected to specific software systems, will allow to monitor, in real time, the conditions of individuals in precarious health conditions (e.g. elederly). Such sensors could also be useful for monitoring the health of animals on farms, improving their conditions and productivity.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	massimo.ubaldi@unicam.it
14PS	**Research activities related to:** analysis and study of the ingredients and composition of food supplements, with particular reference to the use of plant extracts and preparations (botanicals). Study and evaluation of the safe use of foods for special medical purposes and food supplements indicated for the dietary management of the pharmacologically treated patient, in support of the standard therapeutic treatments. Study and deepening of the novel foods that may be present in food supplements in accordance with current legislation, with particular reference to plant substances and extracts and their respective history of significant consumption. Assessment of the innovative outcomes used in clinical pharmacology in the context of the correct use of medicines and the patient's therapeutic adherence to drug treatment. Study of innovative technological and regulatory strategies aimed at ensuring access to therapies, continuity of care and therapeutic adherence to hospitalized patients. Study of new approaches for the correct administration of the medicine to the patient and pharmacological recognition. Analysis of the prescriptive appropriateness and rationalization of the consumption of medicines and health goods in the hospital setting.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	sauro.vittori@unicam.it

	RESEARCH TOPICS LIST: COMPUTER SCIENCE AND MATHEMATICS		
	Research topics with co-funded fellowships	**Area of Research and PhD Curriculum**	**For additional information**
1 CS	**Topological Dynamics of Highly Irregular Maps:** The project aims at studying the emergence of various forms of chaotic behavior and related concepts (topological entropy, topological mixing, turbulence) in cases in which the dynamical system under consideration is generated by a map lacking significant regularity properties, in particular allowing a potentially dense set of discontinuities. The investigation of systems falling in this wide category has begun in the last 10-15 years (key works being those by T. Steele and coworkers and by R. Pawlak and coworkers). The main motivation arose from both the direct modeling of discontinuous physical phenomena and the search for generalization of classical results established for continuous maps. Particular attention will be devoted to maps generated by simple algorithmic rules, as for instance the ones considered in symbolic and substitutive dynamics and the ones defined by means of elementary concepts in combinatorics on words (critical exponent, repetition threshold).	Computer Science and Mathematics	alessandro.dellacorte@unicam.it
2 CS	**Theory and application of topological dynamics in cancer treatments:** The study of the cell cycle as an emerging behavior of the complex system is the topic of the project. From theory to practice and back the young researcher will be guided to look at the understanding of cell dynamics during the process of adaptation to mutations leading to cancer. From the theory of computation to shaping language and back to DNA computing.	Computer Science and Mathematics	emanuela.merelli@unicam.it
3 CS	**Uncertainties and model updating in structural reliability problems:** The project concerns the reliability of civil constructions (e.g. buildings, bridges, tunnels) and the role of uncertainties in the overall probability of failure. Different problems will be considered, including uncertainties in the intensity and the recurrence properties of external actions, probabilistic response models, and time evolution of degrading processes. Special attention will be dedicated to techniques oriented to reduce uncertainties by exploiting data recorded by sensors.	Computer Science and Mathematics	andrea.dallasta@unicam.it
4 CS	**Logics and Theoretical Computer Science*:*** Fundamentals of mathematical logic are largely used in computer science, especially in the context of theoretical computer science. These relations date back to the birth itself of computer science, and the seminal paper written by Turing about computability. Other fruitful collaborations have been related to computational complexity, proof theory (and logical programming), model checking and program analysis techniques (such as type systems) and semantics of concurrent and distributed programs. These methodologies provide the base for formal modeling and the modular reasoning on systems of concurrent and communicating processes with provable correctness properties including protocol conformance, data-race freedom, deadlock freedom and security. Other areas of mathematics, like model theory and set theory, which are in principle more abstract and closer to pure mathematics, admit intriguing connections - for example, in the case of model theory, finite model theory and decidability.	Computer Science and Mathematics	sonia.linnocente@unicam.it ; michele.loreti@unicam.it

	RESEARCH TOPICS LIST: LEGAL AND SOCIAL SCIENCES		
	Research topics description	**Area of Research and PhD Curriculum**	**For additional information**
1 LS	**Constitutional Rules and Civil Law Relationships.** The main aim of this research is to make private relationships functional to the values that mould the whole multi-level legal system. The Italian Constitutional legal framework introduces a new kind of legality which is direct to respect also European and International Principles. The research covers all areas of Civil Law such as contracts, torts, property, rights of persons and Family law, Alternative Disputes Resolutions**.** The research will be developed through an analysis of European and International case-law. The central issue of the research is to demonstrate that the free development of the human person is superior to any concurrent economic interest. A very special interest will be in research focused on the fundamental rights (e.g. integrity of the person, respect for private and family life, Protection of personal data) in the Market Place and on the role of the enterprises, no-profit organizations, professionals to achieve the new goals proposed by the 2030 Agenda for Sustainable Development.	Legal and Social Sciences - Civil Law and Constitutional Legality	lucia.ruggeri@unicam.it
2 LS	**The execution of public contracts** *(Public Administration Fellowships Programme – financed by Ministry of Education, University and Research- Following the DM 351/2022)* The project is aimed at reconstructing and interpreting the legislation and practice relating to the execution of public contracts according to the rules of public contracts, the special one (also relating to emergencies) and the private one which in relation to the execution remains the reference legislation. The research programme will follow the mandatory criteria inserted in the DM 351/2022. In particular, the research activities will be held for at least 6 months in Italian enterprises, research centres or public Administrations, including museums, institutes of the Ministry of Culture, archives, libraries, in addition to the mandatory research activities abroad from a minimum of six months.	Legal and Social Sciences - Civil Law and Constitutional Legality	francesco.rizzo@unicam.it
3 LS	**Civil and Labor Law profiles of sports work under the reform of Sports Law: the role of the certification.** ***This research topic is co-financed by Società sportiva dilettantistica San Paolo Ostiense – Roma in memory of in memoria di Jurij Prestijacopo.*** The recent reform of the sports legal system, contained in Legislative Decree No. 36 of 28 February 2021, concerning professional and amateur sports associations as well as sports labor, determines a renewed arrangement of the sector on subject, with consequences both on the front of the organization of sports bodies and under the aspect of identifying the “cause-type” of sports labor contracts. In this context the role of the interpreter becomes very relevant, the latter being obliged, under the civil law categories, to govern, in the concrete case and in relation to the interests at stake, both the “subjects” and the “purposes” (lucrative or non-lucrative), as well as the “legal relationships”, namely the cases that legitimize the establishment of an employment relationship from those that do not allow this. The role of private certainties – related to the institution of labor contract certification – thus becomes very diriment and full of important opportunities to get orientation in the new sports legal system.	Legal and Social Sciences - Civil Law and Constitutional Legality	francesco.longobucco@uniroma3.it

4 LS	**Artificial intelligence in the assessment and evaluation of personal injury.** Artificial intelligence pervades many contexts of daily operations in healthcare, already constituting a valuable aid to some diagnostic and therapeutic activities. The main objective of this research is to ascertain the application potential of artificial intelligence and machine learning in the specific medico-legal context of personal damage assessment and evaluation. After defining the state of the art in this operational context, the research will address deontological issues and professional liability when using artificial intelligence in the ascertainment/assessment pathway of personal damage. Future potential will then be investigated, with particular reference to the possibility of structuring machine learning pathways to assist in the assessment of personal damage.	Legal and Social Sciences - Civil Law and Constitutional Legality	piergiorgio.fedeli@unicam.it
5 LS	**Management of library resources and the biblio-museum centre in the University. Profiles in the history and conservation of cultural heritage.** *(Public Administration Fellowships Programme – financed by Ministry of Education, University and Research- Following the DM 351/2022)* **.** The research project aims to develop competences within the public administration in relation to the management of the museum library centre and the conservation and protection of cultural heritage, in the light of recent developments in the digital age in relation to the University, in cooperation with the University Museum-Library Centre and with Head of Area Libraries, Documentary and Digital Services	Legal and Social Sciences - Fundamental Rights in the Global Society	carlotta.latini@unicam.it
6 LS	**Public Contracts and Anti-Corruption in the Context of Emergency Legislation in Universities.** *(Public Administration Fellowships Programme – financed by Ministry of Education, University and Research-Following the DM 351/2022)* **.** The project is aimed at reconstructing and interpreting the legal framework of reference, both national and supranational, including secondary legislation and instructions of a technical/applicative nature that supplement the regulatory framework (technical "specifications", application guidelines, ANAC indications)	Legal and Social Sciences - Fundamental Rights in the Global Society	sara.spuntarelli@unicam.it
7LS	**Digital Transformations in Comparative Legal History (THE TOPIC WILL BE ACTIVATED ONLY IN CASE OF COFINANCING]**	Legal and Social Sciences - Fundamental Rights in the Global Society	carlotta.latini@unicam.it

	RESEARCH TOPICS LIST: LIFE AND HEALTH SCIENCES		
	Research topics description	**Area of Research and PhD Curriculum**	**For additional information**
1 LH	**Nutrigenomics applied to the control of inflammation.** The nutrigenomic impact of food components on gene expression and epigenetic modifications can be used to trace and target the control of low grade inflammation. The aim of this project is to screen bioactive compounds able to modulate inflammation in human cell lines. Gene expression and epigenetic modifications (DNA methylation and histone modifications) will be analysed to identify how bioactive food components can control inflammatory responses.	Life and Health Sciences - Molecular Biology and cellular Biotechnology	rosita.gabbianelli@unicam.it
2 LH	**Eukaryotic microorganisms as models for the response to environmental changes.** We use eukaryotic microorganisms as models for studying the cell response to environmental changes in temperature, salinity, and pollutants concentration. The approach is molecular, looking at changes in phenotype and genotype. By differential expression analysis (RNAseq), we identify marker genes and biological processes affected by environmental stresses (see as example the publication by Piersanti et al. Environ Pollut, 2021, 269: 116955)	Life and Health Sciences - Molecular Biology and cellular Biotechnology	cristina.miceli@unicam.it
3 LH	**Understanding the microbial interactions in the gut.** The human body is associated with many microorganisms, and both prokaryotes and micro-eukaryotes are harbored in the human gut and their functions and interactions contribute to human health. We study the plasticity of the human gut microbiome when exposed to changes of external environment and diet by 16S rDNA analysis (see as example the publication by Chen et al. 2021, Parasites Vectors, 14: 62) and by whole shotgun metagenomics	Life and Health Sciences - Molecular Biology and cellular Biotechnology	cristina.miceli@unicam.it
4 LH	**Microplastic contamination in marine environments.** We extract the microplastics from water sediments and characterize by shotgun metagenomics the microorganisms associated with them and their genes to obtain information on their metabolism. We also study the cultivable microorganisms from the same samples to characterize the plastic impact on them and to identify species capable of plastic degradation.	Life and Health Sciences - Molecular Biology and cellular Biotechnology	cristina.miceli@unicam.it
5 LH	**Research on teaching and learning processes in Science education.** This PhD project aims at the development of new approaches to teaching and learning Biology in the Italian schools. The program is especially dedicated (but not reserved) to high school Science teachers, willing to explore new ways to approach Biology. Focus of this topic is also the development of innovative methods for education in biology through use of lay language for the general public and use of research laboratories, as well as the possibility of integrating the skills of different disciplines. In the Ph.D. degree program, competencies in the concepts, reasoning and skills of doing science and in the principles and teaching methods of biology will be developed.	Life and Health Sciences	gilberto.mosconi@unicam.it ; paola.scocco@unicam.it
6 LH	**Aquatic ecosystems as a reserve and vehicle for pathogens of health and veterinary interest.** Study of antibiotic resistance genes in new vectors, such as microplastics.	Life and Health Sciences - Molecular Biology and cellular Biotechnology	roberto.spurio@unicam.it
7 LH	**In vitro and in vivo evaluation of toxicity of food lipids oxidation products.** [In the framework of the Joint Supervision Agreement between UNICAM and the University of Massachusetts]	Life and Health Sciences - Nutrition, Food and Health	elenagiovanna.vittadini@unicam.it ; daniela.beghelli@unicam.it ; edeckerma@gmail.com

8 LH	**Strip cropping and other agroecological cultivation models for organic diversified vegetable productions that respect soil health (Acronym: OrtoBioStrip).** The increase in extreme weather events and the decline of biodiversity advocate for the urgent need to develop more resilient and sustainable production systems. The objective of the OrtoBioStrip project is to implement in a real business context (i.e. horticultural farms), the use of organic farming techniques with low environmental impact (i.e. strip cropping), based on agroecological approaches of crop diversification able to increase crop yields and productivity, as well as to generate positive environmental and social externalities (e.g. protection of functional (soil) biodiversity in agroecosystems, carbon sequestration in soil, soil erosion etc) The selected PhD candidate will analyze the effects produced on soil health from the proposed agroecological practices (strip cropping), in comparison with those generated from the traditional crop management (pure stand). The research activities will be carried out through the application of several biological (i.e. functional characterization of earthworm and soil microarthropods communities) and physical-chemical indicators.	Life and Health Sciences - One Health	antonietta.laterza@unicam.it
9 LH	**Plant functional diversity and community structure.** Adopt field experimental system on forest understorey, across management gradient and oldgrowth references. In-site sampling and measurements of plant assemblies, and the relations with stand descriptors. Aimed to fine scale modeling of ecological trajectories to inform conservation practices	Life and Health Sciences - One Health	roberto.canullo@unicam.it
10LH	**“Smart” Biolarvicides: new concepts for eco-friendly mosquito control methods.** Mosquito-borne diseases (MBDs) affect mostly tropical countries, but globalization and climate changes are increasing the risk of transmission in Europe, where the native Culex pipiens (vector of endemic West-Nile virus) is widespread and invasive species (i.e. Aedes vectors of exotic arboviruses such as Dengue) are increasing. Moreover, high mosquito densities represent a major nuisance affecting people's wellbeing. In the absence of therapeutic treatments and vaccines for most MBDs, vector control is the only effective strategy to prevent transmission. Innovative product to reduce the risk of MBDs are urgently needed. ‘Lure and kill’ larvicides based on bait-yeast that combine ‘attracting’ and ‘entomopathogenic’ properties of mosquito mycobiota are considered a promising tool.	Life and Health Sciences - One Health	irene.ricci@unicam.it
11LH	**Study of innovative feeds, based on feedstuffs deriving from agroindustry by-products, and effects on growth and welfare status of freshwater species.**	Life and Health Sciences - One Health	alessandra.roncarati@unicam.it
12LH	**New methodologies for the study and modulation of the macrophage response in the context of the cell-mediated response**	Life and Health Sciences - One Health	giacomo.rossi@unicam.it
13LH	**Veterinary transfusion medicine as a tool of education for donation and as a means of protecting public health**	Life and Health Sciences - One Health	alessandra.gavazza@unicam.it
14LH	**Development of new technologies in Biological Science Education**	Life and Health Sciences	cristina.miceli@unicam.it
15LH	**Plant-based beverages: new trends in the coffee industry**	Life and Health Sciences - Nutrition, Food and Health	silvia.vincenzetti@unicam.it

	RESEARCH TOPICS LIST: PHYSICS, EARTH AND MATERIALS SCIENCES		
	Research topics description	**Area of Research and PhD Curriculum**	**For additional information**
1P	**Condensed Matter and Quantum Physics** • Many-body theory of ultracold matter • Superconductivity at the nanoscale: theory, simulations, and experiments • Theory of electron-hole superfluidity in graphene devices • BCS-BEC crossover in multicomponent superfluids and superconductors • Quantum physics: quantum materials, devices, optics and theory	Physics, Earth and Materials Sciences - Physics	postlaurea@unicam.it
2P	**Experimental Physics** • Matter under extreme conditions • **Physics of surfaces, interfaces and nanosized systems** • Physics, Astrophysics and Cosmology with Gravitational Waves • Soft matter, glasses, liquids and liquid solutions • Synchrotron Radiation and advanced radiation sources • Nuclear and astroparticle physics	Physics, Earth and Materials Sciences - Physics	postlaurea@unicam.it
3P	**Physics Education**	Physics, Earth and Materials Sciences - Physics	postlaurea@unicam.it
4P	**Theoretical and Computational Physics** • Active Matter, Brownian motion, bacterial motion • Computer simulations for molecular modelling and spectroscopy • Soft matter, clustering, non equilibrium physics, transport properties	Physics, Earth and Materials Sciences - Physics	postlaurea@unicam.it
5P	**3D structural modelling of regional structures of the Sibillini and Laga mountains (Fogli 325-Visso e 326-Ascoli Piceno)** - geological mapping and structural analysis in sedimentary rocks; - construction of geological cross-sections; - seismic interpretation; - reconstruction of 3d geological models using softwares	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	stefano.mazzoli@unicam.it ; pietropaolo.pierantoni@unicam.it ; claudio.dicelma@unicam.it
6P	**Hydrogeological characterization and groundwater resources evaluation in the carbonate aquifers of the Umbria-Marche Ridge**	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	marco.materazzi@unicam.it

7P	**The late Miocene-Pliocene tectono-stratigraphic evolution of southern Marche: a key sector of the Apennine foreland to recognise the evolutionary steps marking the transition from a foredeep to a wedge-top basin.** Geological-stratigraphic mapping and facies analysis of clastic sedimentary successions exposed in the southern sector of Sheet 326 Ascoli Piceno (southern Marche). This field-based PhD project aims to examine the Miocene to Pliocene structural and stratigraphic evolution of the Central Apennine Foreland and integrates several disciplines, such as sedimentary geology, geological mapping and structural geology. Duties • Collect, process and interpret field data. • Mapping surficial deposits and geologic structures, measuring sections in sedimentary rocks • Sedimentological description and reconstruction of deep-water architectural elements • Scientific collaboration in applied projects and in geological mapping. Requirements • Master in Geology, possibly with majors in geological mapping of clastic systems, facies analysis or structural geology. • Good background in Apennine geology and sedimentary geology. • A broad clastic sedimentology background, including field work experience. • Experience in geological mapping, facies analysis and Geographic Information Systems (GIS). • Ability to work in autonomy and to respect the schedules. • Willingness to work out-of-office over long times for field work and flexibility to reach the scope of the project. • Ability in the use of unmanned aerial vehicles (UAV) and experience with working with innovative digital outcrop modelling software focusing on advanced visualization of photorealistic textured models and meshes.	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	claudio.dicelma@unicam.it ; pietropaolo.pierantoni@unicam.it ; stefano.mazzoli@unicam.it
8P	**Pre- and syn-eruptive volcanic processes.** Experimental and theoretical studies of magma crystallization behavior provide novel insights for understanding factors controlling whether magmas erupt effusively or explosively, thus greatly aiding evaluation of volcanic hazards. Possible research topics in this general field include: a. Crystal mush in basaltic systems. Mechanisms that control mobility and eruptibility of basaltic magma often depend on rheological properties of crystal-mush systems, which are complex and poorly understood. Proposed research involves experimental (4D experiments and static microtomography) and textural analysis work. b. How initial conditions affect disequilibrium in different magmas. Initial superheated conditions can affect crystallization kinetics once magma is undercooled, but current knowledge of such effects is limited. This can be an experimental (4D experiments) and analytical project. A new unique crystallization model can be obtained at the end of this project (collaborating with INGV-Catania). c. Crystals-trace element disequilibrium and implications for magma dynamics. Zoning profiles in volcanic phenocrysts represent disequilibrium processes and their interpretation can provide constraints on timescales of volcanic processes such as magma mixing, magma decompression, magma cooling or heating, and degassing, all of which are fundamental for evaluating eruption hazards. These topics can provide training in hi P-T experimental techniques, 4D-tomography using synchrotron radiation, advanced analytical methods (SEM, Electron Microprobe, Laser Ablation ICP-MS), theoretical models of magma crystallization, crystallization kinetics, diffusion, TE partitioning (also using Machine-Learning methods).	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	michael.carroll@unicam.it ; fabio.arzilli@unicam.it

9P	**Sustainable stone consolidation for monument restoration:** The project is aimed at the experimentation of products used in the consolidation and restauration of stone monuments, with particular attention to sandstones in seismic areas.The focus will be on the efficacy and durability of the products as well as on the sustainability for the environment and the operators' health.	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	eleonora.paris@unicam.it
10P	**Waste recycling in new green products for the building sector.** Recycling of industrial waste can give opportunities to produce new green materials, especially for the construction sector, saving extraction of new virgin materials from quarries, reducing CO 2 emissions, postponing end-of life, reducing landfilling.	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	eleonora.paris@unicam.it
11P	**Geoscience education.** Georesources, waste recycling, sustainability. These themes are relevant for the society today and need to be addressed in school to educate tomorrow's citizens to the environmental challenges on the planet. This research topic is reserved to teachers, who will deepen their knowledge in these highly interdisciplinary topics, create new didactic activities, confront with other colleagues in Italy and abroad, share results with colleagues in schools**. (no grant)**	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	eleonora.paris@unicam.it
12P	**Manufacturing and processing materials** • Materials for energy harvesting and storage • Materials science and circular economy • Materials for theranostics • Metals, alloys and superconductors	Physics, Earth and Materials Sciences - Materials Sciences	postlaurea@unicam.it
13P	**Advanced material characterization** • Fine-analysis of materials using electron and optical probes • Application of synchrotron radiation techniques to advanced materials • Transport, electron and structural properties of super- and semi-conductors • Materials under extreme conditions • Nanoscale and low-dimensional systems	Physics, Earth and Materials Sciences - Materials Sciences	postlaurea@unicam.it
14P	**Composites and hybrid materials** • Biomaterials and biocompatible materials • Nanomaterials • Oxides and composites for electrodes and devices	Physics, Earth and Materials Sciences - Materials Sciences	postlaurea@unicam.it

	RESEARCH TOPICS LIST: Ph.D COURSE IN "NATURAL HAZARDS AND DISASTER RISK REDUCTION" Joint PhD Programme pursuant to Ministerial Decree No. 226/2021, Art.3 c.2. Phd course under the framework of the REDI research Consortium (www.redi-research.eu/it/homepage/), among University of Camerino, Gran Sasso Science Institute, National Institute of Geophysics and Vulcanology-INGV, National Institute of Nuclear Physics-INFN.		
	Research topics description	**Area of Research and PhD Curriculum**	**For additional information**
1RE	**Analysing and mapping multiple, potentially concurring natural hazards as a preliminary step for risk reduction.** The project aims to produce new techniques of analysis and/or geo-referenced mapping of potentially concurring natural hazard factors (e.g., geophysical, hydrogeological and/or meteorological), their reciprocal interactions, and the impact of human activities.	Natural Hazards and Disaster Risk Reduction	Massimiliano Barchi (Unipg) massimiliano.barchi@unipg.it; Emanuele Tondi (Unicam) emanuele.tondi@unicam.it
2RE	**Seismic risk reduction of buildings and infrastructures.** The project aims to provide new tools for the seismic risk reduction, including new methodologies to develop advanced and more refined response models of constructions, new technologies for the mitigation of the damage following earthquakes, and innovative monitoring techniques to reduce prediction uncertainties.	Natural Hazards and Disaster Risk Reduction	Andrea Dall'Asta (Unicam) andrea.dallasta@unicam.it
3RE	**Empirical methods for the evaluation of shaking and risk scenarios of historical and recent earthquakes.** The purpose of the activity is to use different methods to calculate seismic hazard at the site, calibrated on instrumental and historical-macroseismic data. The candidate will evaluate the impact of different methods on risk evaluation for prevention, seismic codes and civil protection applications.	Natural Hazards and Disaster Risk Reduction	Lucia Luzi (INGV) lucia.luzi@ingv.it; Emanuele Tondi (Unicam) emanuele.tondi@unicam.it
4RE	**Facilities for laboratory dynamic testing aimed at studying seismic interaction between structures.** The project aims at developing innovative lab facilities and test rigs capable of simulating the interaction between structures, substructures and soil by exploiting hybrid shaking table and pseudo dynamic equipment. The most promising systems could be realised to carry out experimental investigations in systems of importance for structural and geotechnical engineering.	Natural Hazards and Disaster Risk Reduction	Graziano Leoni (Unicam) graziano.leoni@unicam.it
5RE	**Socio-Economic Impacts of Natural Disasters.** Socio-economic impacts of natural disasters are nowadays on the top of the policy agendas world-wide. Recent events such as COVID-19, socio-political tensions, man-made risks and climate change claim for a deep understanding of and innovative solutions to the socio-economic challenges in different countries, regions, territories and communities. The research track aims at analysing, both in the ex-ante and ex-post perspectives, the socio-economic impacts of natural disasters by integrating in the REDI multi-disciplinary context research and analyses tackling the socio-economic costs and impacts of disasters at territorial level and providing technical assistance and sound policy advice even in terms of the disaster risk management. Suitable candidates mainly have (but not only) a background in applied economics, regional economics and economic geography.	Natural Hazards and Disaster Risk Reduction	Marco Modica (GSSI) marco.modica@gssi.it, Alessandra Faggian (GSSI) alessandra.faggian@gssi.it
6RE	**The participation of communities in the processes of post-disaster reconstruction and recovery.** The process of physical reconstruction of an area hit by a disaster should be consistent with the socioeconomic revival necessary to complete the recovery phase. All this concerns and relates closely with the needs of the affected communities. Defining ways of interaction among planners, economists and sociologists who interpret these needs, as well as the ways of interacting and engaging with the communities themselves, is a primary objective of this research topic.	Natural Hazards and Disaster Risk Reduction	Flavio Stimilli (Unicam) flavio.stimilli@unicam.it

7RE	**The green and digital transitions in the framework of the Next generation EU: from strategies to action plans.** In a moment of deep understanding and sharing of some European strategies towards the green and digital transitions, particularly useful are insights into the role that urban planning can have in interpreting those strategies and implementing coherent applications and projects.	Natural Hazards and Disaster Risk Reduction	Massimo Sargolini (Unicam) massimo.sargolini@unicam.it
8RE	**The use of virtual representation for the enhancement of historic and artistic assets.** The enhancement of historic and artistic assets, in particular those located in areas prone to natural disasters, requires fostering innovative ways of interaction with and enjoyment of those assets by their users, also through the possibilities offered today by virtual representation and augmented reality.	Natural Hazards and Disaster Risk Reduction	Federico Bellini (Unicam) federico.bellini@unicam.it
9RE	**Risk communication for prevention and preparedness (without scholarship).** Preparedness as well as prevention actions for a natural event with possible catastrophic effects require correct information on natural hazards and their interaction with human activities. This research project aims to develop an effective approach to communication both in the pre- and post-event phase, when teams of planners and first responders must work together effectively and efficiently to address the myriad of problems that arise in these situations. Reliable communications are a key point to a successful emergency operation.	Natural Hazards and Disaster Risk Reduction	Piero Farabollini (Unicam) piero.farabollini@unicam.it; Chiara Invernizzi (Unicam) chiara.invernizzi@unicam.it

	RESEARCH TOPICS LIST: Ph.D COURSE IN "NEGLECTED AND POVERTY-RELATED PARASITIC DISEASES IN A ONE HEALTH PERSPECTIVE" . Joint PhD Programme pursuant to Ministerial Decree No. 226/2021, Art.3 c.2. Agreement among University of Camerino, University of Pisa and University of Brescia.		
	Research topics description	**Area of Research and PhD Curriculum**	**For additional information**
1NE	**Epidemiology and control of parasitic diseases related to poverty.** The neglected tropical diseases (NTDs) are a group of chronic and disabling infections that occur primarily in settings of extreme poverty and affect over one billion people worldwide. Aim of the project is to ascertain the prevalence rates, geographical distributions, epidemic characteristics, risk factors, and clinical manifestations of selected parasitic diseases of poverty (World Health Organization's list of recognized NTDs) to develop new effective control approaches	Neglected and poverty-related parasitic diseases in a one health perspective	guido.favia@unicam.it
2NE	**Innate immunity in malaria-leishmaniasis co-infection.** Malaria and leishmaniasis are severe parasitic diseases endemic in the tropics, but also present in the Mediterranean basin. The two infections can co-occur and cross-interact in the same patient with implications on the course of the two diseases that are not completely elucidated. The aim of the project is to investigate in vitro macrophages and dendritic cell functions in the presence of malaria and leishmania parasites or their products. The expression of co-stimulatory molecules, cytokines release and inflammasome activation will be investigated to identify new adjuct therapy	Neglected and poverty-related parasitic diseases in a one health perspective	guido.favia@unicam.it
3NE	**Risk factors of neglected diseases in vulnerable populations**	Neglected and poverty-related parasitic diseases in a one health perspective	guido.favia@unicam.it
4NE	**Neglected diseases at the human-animal interface in endemic and non endemic countries**	Neglected and poverty-related parasitic diseases in a one health perspective	guido.favia@unicam.it