

Up to a maximum of 10 SCHOLARSHIPS FUNDED THROUGH EUREKA 2019 PROJECT, for unemployed/non-employed residents of or domiciled in the Marche Region at the time of the application for the scholarship

**For additional information
postlaurea@unicam.it**

Research topic description

Manufacturing, Wood-furniture industry, Industry 4.0, Tourism, Construction and Renewable Energies, Mechanical and Mechatronic industries, Innovative Materials, Agri-food industry, Blue Economy and Personal Services

5 SCHOLARSHIPS FUNDED THROUGH THE INNOVATIVE DOCTORAL PROGRAM, for unemployed/non-employed residents of or domiciled in the Marche Region

**For additional information
postlaurea@unicam.it**

Research topic description

The research has to be undertaken in one of the 12 areas of specialized research identified by the PNR 2015-2020, along with the area of "Disaster Risk Reduction" promoted by the United Nations (Sendai Framework 2015-2030) which has become central to the agenda of the Marche Region. Special attention will be given to sustainable manufacturing, agri-food industry, with a view toward enhancing the territory and the landscape for tourism; mechanical and mechatronic industries; reducing the risk of natural disasters. Applications can also be submitted for projects regarding digital security and the circular economy.

3 SCHOLARSHIPS FUNDED within the framework of the POLO dei MATERIALI COMPOSITI, a network promoted by HP Composites, for research activities on composite materials

**For additional information
postlaurea@unicam.it**

Up to a maximum of 5 SCHOLARSHIPS reserved for Chinese citizens who have graduated from Liaocheng University within the framework of the AGREEMENT BETWEEN UNICAM AND LIAOCHENG UNIVERSITY (CHINA)	For additional information postlaurea@unicam.it
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Research fields
Priority will be given to applications in the field of Physics, Chemistry, Mathematics, Biology and Veterinary Medicine

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

1 SCHOLARSHIP FUNDED THROUGH THE PARTNERSHIP AGREEMENT BETWEEN UNICAM and the JILING AGRICULTURAL UNIVERSITY (CHINA)	Area of Research and PhD Curriculum	Contact person
	Life and Health Sciences - Nutrition, Food and Health	Prof. Cristina Miceli (cristina.miceli@unicam.it)

1 SCHOLARSHIP FUNDED THROUGH THE PARTNERSHIP AGREEMENT BETWEEN UNICAM and the UNIVERSITY of ANTWERPEN	Area of Research and PhD Curriculum	Contact person
Research field	Physics, Earth and Materials Sciences - Physics	Prof. Andrea Perali (andrea.perali@unicam.it)
Physics of matter		

1 SCHOLARSHIP FUNDED THROUGH THE PARTNERSHIP AGREEMENT BETWEEN UNICAM and the ISTITUTO SUPERIORE DI SANITA'	Area of Research and PhD Curriculum	Contact person
Research topic description		
The effect of global environmental changes on aquatic ecosystems and human health in environments subject to specific anthropogenic pressures; Evaluation of the spread of emerging and re-emerging pathogenic microorganisms and monitoring of the resistome induced by antibiotics through the use of molecular methods	Life and Health Sciences - Molecular Biology and cellular Biotechnology	Prof. Roberto Spurio (roberto.spurio@unicam.it)

1 SCHOLARSHIP for an INDUSTRIAL DOCTORATE POSITION FUNDED THROUGH THE PARTNERSHIP AGREEMENT BETWEEN CNR and the VETRYIA COMPANY	Area of Research and PhD Curriculum	Contact persons
Development of an algorithm based on machine learning to exploit big data from cloud platforms with the blockchain context	Computer Science and Mathematics	Prof. Stefano Bistarelli (stefano.bistarelli@unipg.it), Prof. Paolo Mori IIT

RESEARCH TOPICS LIST

	Research topics description	Area of Research and PhD Curriculum	For additional information
1A	Teorie e progetto dell'architettura contemporanea	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
2A	Storia e valorizzazione del patrimonio architettonico	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
3A	Rappresentazione grafica e multimediale dell'architettura	Architecture, Design, Planning - Architecture, Theories and Design	postlaurea@unicam.it
4A	Design di oggetti, sistemi e ambienti innovativi ed intelligenti	Architecture, Design, Planning - Innovation Design	postlaurea@unicam.it
5A	Design per la sostenibilità ambientale e per l'innovazione di processo e di prodotto	Architecture, Design, Planning - Innovation Design	postlaurea@unicam.it
6A	Design della comunicazione, nuove tecnologie e patrimonio culturale	Architecture, Design, Planning - Innovation Design	postlaurea@unicam.it
7A	Sviluppo sostenibile del territorio, contenimento del consumo di suolo e strategie di adattamento al <i>climate change</i>	Architecture, Design, Planning - Sustainable Urban Planning	postlaurea@unicam.it
8A	Gestione del rischio e superamento delle situazioni di crisi	Architecture, Design, Planning - Sustainable Urban Planning	postlaurea@unicam.it
9A	Politiche per l'innovazione e la valorizzazione territoriale	Architecture, Design, Planning - Sustainable Urban Planning	postlaurea@unicam.it
10A	Attivazione di processi di rigenerazione urbana	Architecture, Design, Planning - Sustainable Urban Planning	postlaurea@unicam.it
1 CH	<p>Research topic in analytical and environmental chemistry.</p> <p>The research in <i>analytical and environmental chemistry</i> includes the feasibility of CH₄-CO₂ replacement in marine Natural Gas Hydrate sediments, the synthesis and characterization of nanocomposite functional materials for Li-ion and Na-ion batteries and absorbent/photoactive nanomaterials for energy and environmental applications. Further researches are related to diagnostic methods for characterization, conservation and restoration of cultural heritage, the immobilization technics of dangerous wastes in inorganic polymeric matrices, the chemometric data sets elaboration, and the samples preparation and analysis for the speciation of particular pollutants and analytes in different environmental matrices.</p>	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	postlaurea@unicam.it

2 CH	<p>Research topic in food chemistry. The primary field of food chemistry research is the assessment of food quality by means of development and application of new methods to identify and quantify both new and classical chemical markers and investigating reactions and compositional changes occurring in food during cooking, processing and storage.</p>	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	postlaurea@unicam.it
3 CH	<p>Research topic in inorganic chemistry. The research in inorganic chemistry covers several important areas of chemistry such as coordination chemistry, organometallic chemistry, metal-based drugs, metals in medicine and in biological processes, catalysis, porous coordination polymers, MOFs, and functionalized nano-materials. The main topics focus on: a) design and synthesis of new ligands characterized by the presence of C-, N-, O-, P- and S-donor groups; b) evaluation of their coordination capabilities with main group and late transition metal ions; c) applications in medicinal inorganic chemistry, in the field of composite materials, in catalysis and as materials for optoelectronics.</p>	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	postlaurea@unicam.it
4 CH	<p>Research topic in organic chemistry. The research in organic chemistry is organized around the following areas: catalytic processes for organic reactions; synthetic organic chemistry, focusing on key reactions in the synthesis of a variety of bioactive compounds including organic molecules having pharmacological importance; organic transformations using new sustainable processes by the use of unconventional methods for preparing highly functionalized organic molecules; organic surface chemistry focusing on modification of surfaces using organic molecules to create coatings and materials with controllable properties.</p>	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	postlaurea@unicam.it
5 CH	<p>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 qualitative analytical studies of foods; development of functional food and food supplements, mainly based on nutraceuticals; analytical studies and biological properties of essential oils and solvent extracts from plants.</p>	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	postlaurea@unicam.it

1 CS	Artificial Intelligence and Intelligent Systems <ul style="list-style-type: none"> • Adaptive control and optimisation • Adaptation policies • Collective and adaptive systems • Knowledge representation and autonomic reasoning 	Computer Science and Mathematics	postlaurea@unicam.it
2 CS	Computing and Mathematics <ul style="list-style-type: none"> • Algebraic and logical aspects of computing) • Computational Models and Models of Computation • Formal languages • Algebraic languages for specific domains • Model theory • Methodological aspects of science education 	Computer Science and Mathematics	postlaurea@unicam.it
3 CS	Cybersecurity <ul style="list-style-type: none"> • Access Control and Resource Usage Policies • Distributed Ledger Technologies • Design of Resilient Systems • Network security • Intrusion Detection Systems 	Computer Science and Mathematics	postlaurea@unicam.it
4 CS	Data Science and Machine Learning <ul style="list-style-type: none"> • Data driven models of complex systems • Topology-based data analysis methods • Data driven system verification • Optimization and econometric techniques • Discriminative and generative modelling 	Computer Science and Mathematics	postlaurea@unicam.it
5 CS	Embedded Systems and IoT <ul style="list-style-type: none"> • Middleware and services • Communication and networking for wireless and embedded systems • Specifica, progettazione e analisi, e verifica di sistemi embedded distribuiti • Wireless Sensor Networks • Energy efficiency and harvesting 	Computer Science and Mathematics	postlaurea@unicam.it
6 CS	Process Management <ul style="list-style-type: none"> • Continuous improvement of Process Aware Information Systems • Collaborative and Distributed Business Process Enactment including Blockchain • Models for Process Intensive Systems • Process Mining Techniques • Simulation and Verification of Data-Aware Collaboration Models 	Computer Science and Mathematics	postlaurea@unicam.it

7 CS	<p>Software and Information System Engineering</p> <ul style="list-style-type: none"> • Engineering of Enterprise Architecture • Applied Formal Methods and Verification Tools • Testing and Verification in distributed setting • Quantitative Analysis and Tools • Runtime Monitoring and Verification 	Computer Science and Mathematics	postlaurea@unicam.it
8 CS	Machine learning econometrics for business analytics and finance	Computer Science and Mathematics	postlaurea@unicam.it
9 CS	Natural language processing for business analytics and finance	Computer Science and Mathematics	postlaurea@unicam.it
1 LS	<p>Succession Law.</p> <p>Succession Law is evolving both for the implementation of European regulations and for the development of an evolutionary and axiological interpretation. They constitute a fundamental tool for the transmission of assets with significant impacts on the economy when the subject of the succession are companies. [THE TOPIC WILL BE ACTIVATED ONLY IN CASE OF CO-FINANCING]</p>	Legal and Social Sciences - Civil Law and Constitutional Legality	postlaurea@unicam.it
2 LS	<p>The power of destination constraints.</p> <p>The power to create destination constraints on a part of the heritage is a theme that involves many themes and allows us to understand the evolution that civil law has undergone in recent times. The main research areas are:</p> <ul style="list-style-type: none"> • the current reading of the principle of asset liability; • the current potential of negotiating autonomy; • the role of the cause in the destination constraints; • the investigation into the renewed protection of the settlor's creditors. <p>The study will enhance the main characteristics of trust property [THE TOPIC WILL BE ACTIVATED ONLY IN CASE OF CO-FINANCING]</p>	Legal and Social Sciences - Civil Law and Constitutional Legality	postlaurea@unicam.it
3 LS	<p>Cultural Leadership for Local Development.</p> <p>This PhD track will explore cases (both Italian and international) of economic growth or rebirth in depressed or disaster areas made possible by the leadership of cultural actors such as universities, UNESCO World Heritage sites and museums.</p> <p>This program aims at combining a local perspective with state of the art international research on regional development and on complex systems.</p> <p>Leadership theory will dialogue with the legal parameters at various levels of jurisdiction, from the Sendai Framework for Disaster Reduction, approved by the UN General Assembly in 2015, to articles 2 and 117 of the Italian Constitution, which respectively state the principle of solidarity and specify the competences of state organs in post-disaster scenarios. [THE TOPIC WILL BE ACTIVATED ONLY IN CASE OF CO-FINANCING]</p>	Legal and Social Sciences - Civil Law and Constitutional Legality	postlaurea@unicam.it

4 LS	<p>Constitutional Rules and Civil Law Relationships.</p> <p>The main aims of this research is to re-read the civil code and statutes in the light of the Italian Constitution and to make private relationships functional to the values that mould the whole legal system. The Republican Constitution introduce 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, family law, analyses domestic, European and International test cases or doctrines. 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 specific focus will be dedicated to the effective implementation of the civil rights in several sectors, of the society, for example the accessibility to justice, but also to the mobility, as expression of fundamental rights.</p>	Legal and Social Sciences - Civil Law and Constitutional Legality	postlaurea@unicam.it
5 LS	<p>Fundamental, Human and Social Rights</p>	Legal and Social Sciences - Fundamental Rights in the Global Society	postlaurea@unicam.it
1 LH	<p>Neuromorphology and modulation of neuroplasticity in cognitive dysfunction</p>	Life and Health Sciences - Molecular Biology and cellular Biotechnology	postlaurea@unicam.it
2 LH	<p>The effect of global environmental changes on aquatic ecosystems and human health in environments under specific anthropic pressures; Evaluation of the spread of emerging and re-emerging pathogenic microorganisms and monitoring of the resistome induced by antibiotics through the use of molecular methods</p>	Life and Health Sciences - Molecular Biology and cellular Biotechnology	postlaurea@unicam.it
3 LH	<p>Nutrigenomics and Nutriepigenomics: Gene expression and epigenetic modulation analyses to identify how bioactive food components and food contaminants can modulate inflammatory responses and pathways involved in neurodegeneration in human cell lines and/or animal models.</p>	Life and Health Sciences - Nutrition, Food and Health	postlaurea@unicam.it
4 LH	<p>Optimizing food processing for innovative applications (i.e. legumes, wheat, coffee,...) and impact on nutritional value and health status.</p>	Life and Health Sciences - Nutrition, Food and Health	postlaurea@unicam.it
5 LH	<p>Composition of microbiota and modulation by exogenous compounds (for example prebiotics/probiotics) able to affect gut-brain axis and the inflammatory pathway in the prevention and progression of diseases.</p>	Life and Health Sciences - Nutrition, Food and Health	postlaurea@unicam.it
6 LH	<p>Veterinary medicine: multidisciplinary approach to diagnostic, pathology, therapy and animal breeding (topic suggested for candidates coming from LCU)</p>	Life and Health Sciences - One Health	postlaurea@unicam.it
7 LH	<p>Study of the impact of agricultural management practices (i.e. fertilizer addition, tillage, agrochemical treatment etc.) on soil organisms with the aim to preserve a bio-diverse soil crucial for animal health and wellbeing</p>	Life and Health Sciences - One Health	postlaurea@unicam.it
8 LH	<p>Management of plant communities for biodiversity preservation</p>	Life and Health Sciences - One Health	postlaurea@unicam.it
9 LH	<p>Science education: pedagogy, methodologies and digital resources to empower lifelong, lifewide and lifedeeep skills</p>	Life and Health Sciences	postlaurea@unicam.it

1P	Condensed Matter Physics <ul style="list-style-type: none"> • 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 	Physics, Earth and Materials Sciences - Physics	postlaurea@unicam.it
2P	Experimental Physics <ul style="list-style-type: none"> • 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 	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 <ul style="list-style-type: none"> • 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	Crustal Processes <ul style="list-style-type: none"> • Earthquakes • Faults and fractures • Fluid flow • Natural Hazards and Risk reduction • Sedimentary basins • Tectonics 	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	postlaurea@unicam.it
6P	Earth Surface Processes <ul style="list-style-type: none"> • Climatology • Geo-Archeology • Geomorphology • Hydrogeology • Neo-tectonics 	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	postlaurea@unicam.it
7P	High Pressure-Temperature Processes <ul style="list-style-type: none"> • Crystallization kinetics • Mineral and melt structures • Volcanism and magmatic volatiles • Waste recycling 	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	postlaurea@unicam.it
8P	Geoscience Education	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	postlaurea@unicam.it
9P	Manufacturing and processing materials <ul style="list-style-type: none"> • Materials for energy harvesting and storage • Materials upcycled from waste • Metals, alloys and superconductors 	Physics, Earth and Materials Sciences - Materials Sciences	postlaurea@unicam.it

10P	<p>Advanced material characterization</p> <ul style="list-style-type: none"> • Fine-analysis of materials for cultural heritage • Application of synchrotron radiation techniques to advanced materials • Transport, electron and structural properties of superconductors • Materials under extreme conditions 	Physics, Earth and Materials Sciences - Materials Sciences	postlaurea@unicam.it
11P	<p>Composites and hybrid materials</p> <ul style="list-style-type: none"> • Biomaterials and biocompatible materials • Nanomaterials • Oxides and composites for electrodes and devices 	Physics, Earth and Materials Sciences - Materials Sciences	postlaurea@unicam.it