

RESEARCH PROJECTS - no. 14
additional grants on green topics

	Research topics description	Area of Research and PhD Curriculum	Contact person	Mobility months in the firm	Mobility Months abroad
1	Metodologie innovative per l'impiego sostenibile e il riciclo di materiali polimerici nell'industria della calzatura	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	carlo.santini@unicam.it	12	6
2	DIVERSITY: An energy efficient blockchain for Smart Energy Community	Computer Science and Mathematics	leonardo.mostarda@unicam.it	6	6
3	Design sostenibile di arredi scolastici circolari: dal prodotto al prodotto-servizi	Architecture, Design, Planning - Innovation Design	lucia.pietroni@unicam.it	6	0
4	Sviluppo di materiali e tecnologie per celle a combustibile a idrogeno con applicazioni nel settore della mobilità	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	francesco.nobili@unicam.it	6	6
5	REefPOWER: Materials, technologies, and devices for renewable energies, production, storage, and transport	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	chiara.invernizzi@unicam.it	8	6
6	Metodologie sintetiche innovative per la produzione sostenibile di molecole bioattive	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	alessandro.palmieri@unicam.it	6	6
7	Comunità energetiche e forme di finanziamento ad impatto sociale. Energy Communities and social impact bonds Energy communities are based on public-private cooperation in order to achieve: innovative low environmental impact products and services, preservation of the ecosystem, enhancement of biodiversity, reduction of the impacts of climate change and promotion of sustainable development. They can offer a contribution to the green recovery and to overcome the effects of the crisis resulting from the COVID-19 pandemic. The research examines the financing of these communities also through financial instruments such as social impact bonds	Legal and Social Sciences - Civil Law and Constitutional Legality	lucia.ruggeri@unicam.it	6	6
8	Valutazione dello spettro d'azione e attività insetticida di formulati a base di oli essenziali e di nuove molecole, anche in miscela con oli noti. Estrazione e caratterizzazione chimica di composti bioattivi, in miscela (es. sotto forma di estratti ed oli essenziali) o in forma purificata, da utilizzare in formulati, e valutazione del loro profilo tossicologico e dell'attività insetticida contro insetti nocivi per le colture agricole.	Chemical and Pharmaceutical Sciences and Biotechnology - Pharmaceutical, Nutraceutical and Food Sciences	filippo.maggi@unicam.it	6	6

9	<p>Economia Circolare e tecnologie Green Applicate al recupero del patrimonio edilizio e alle nuove costruzioni. Urban regeneration and reconstruction of functional ecosystems for urban metabolism. The research topic aims to investigate the overall innovative capacity of cities to design and implement transition pathways towards high environmental, social and economic sustainability, in pursuing solutions that mimic natural biological processes to improve sustainability, protect urban and marine landscapes, and create high quality and efficient environments.</p> <p>Rigenerazione urbana e ricostruzione di ecosistemi funzionali al metabolismo urbano. Il research topic vuole indagare la capacità delle città a preservare, migliorare la qualità dei sistemi insediativi, ricostruendo il capitale naturale, ottimizzando l'utilizzo delle risorse, i flussi di materiali, azzerando le emissioni di CO2, incorporando modelli circolari nell'ecosistema urbano.</p>	Architecture, Design, Planning - Sustainable Urban Planning and Inland Areas Development Strategies	mariafederica.ottone@unicam.it	6	6
10	Materiali e metodi per applicazioni ambientali	Chemical and Pharmaceutical Sciences and Biotechnology - Chemical Sciences	rita.giovannetti@unicam.it	6	0
11	<p>Biodiversità, cambiamenti climatici, animal welfare, sostenibilità economica ed ambientale degli allevamenti semi-estensivi di montagna. Biodiversity, climate changes, animal welfare and economic sustainability of mountain semi-extensive farming. The PhD project is part of a research line already active for some years and which has led to the publication of a number of papers in international journals. The research project focuses on the chain of semi-extensive pastoral systems and its adaptation to climate change. The rationale of the project is based on the fact that semi-extensive farming represents the means by which to manage and conserve the animal and plant biodiversity that distinguishes the grasslands, whose protection is recognized as a priority by the Directives of the European Union. The approach will obviously be multidisciplinary and involves the study of the relationships between seasonal and multi-season climatic trends with biodiversity besides the chemical and quantitative characteristics of the forage. At the same time, the relationships between the quantitative-qualitative variation of pastures and animal welfare in its broadest sense will be studied. The aim is to define predictive models that can be useful tool for adapting semi-extensive farming practices to climate change while maintaining the economic sustainability of farming processes intact.</p> <p>The project will take place with the support of three companies that guarantee the completion of the supply chain (from grazing to the transformation and sale of products).</p> <p>The analysis tools provided are spectral images originated by remote sensing and processed using appropriate software. Elaboration of climatic data and analysis of the forecasts changes in the coming decades. Collection in sample areas of floristic data (plant diversity) and agronomic data (production trends; nutritional characteristics of the forage) as well as of the response to changes in the aforementioned parameters of the state of animal welfare. Correlations will be searched through a multivariate statistical approach. GIS maps will be created and best practices for managing pastoral systems will be defined as a tool for adapting to climate change.</p>	Life and Health Sciences - One Health	andrea.catorci@unicam.it ; gilberto.pambianchi@unicam.it ; paola.scocco@unicam.it	6	6

12	<p>Assessment of risk-maps of vector-borne diseases in Southern-Europe by exploring the ecological landscape of pathogens in relation to urban fragmentation, vegetation variability and animal diversity. The project aims to construct risk maps of diseases transmitted by mosquitoes, culicoides and ticks in selected ecological areas and contexts in Italy and Greece. The vector arthropods will be collected in different seasonal periods and the capture sites will be analyzed for climatic conditions, urban fragmentation, animal and plant species present. Arthropods will be cataloged on a morphological and molecular basis and by molecular analyzes will be determined and any species of pathogen related to them. In this way, on the basis of the animal and plant biodiversity present in the collection sites and the biodiversity of the vectors, it will be possible to draw up risk maps and simultaneously characterize the biodiversity of the selected ecosystems.</p>	Life and Health Sciences - One Health	guido.favia@unicam.it	9	6
13	<p>Mapping the microcosms of bacteria associated with microplastics</p> <ul style="list-style-type: none"> - Collection and characterization of microplastics on water environments of Regione Marche; - Isolation of bacteria adhering to the plastics; - Metagenomic analysis and, in parallel, determination of antibiotic resistant strains using classical microbiological techniques. In collaboration with the company Biolab S.r.l. (Ascoli Piceno), where the PhD candidate will spend 6-12 months of training; - Define a panel of antimicrobial resistant genes (AMR) carried by the ecosystem made of bacteria bound (and transported) by the microplastic particles. <p>Mappatura dei microcosmi costituiti da batteri associati con microplastiche</p> <ul style="list-style-type: none"> - Raccolta e caratterizzazione di microplastiche da ambienti acquatici della Regione Marche; - Isolamento dei batteri adesi al substrato; - Analisi Metagenomica e definizione dei ceppi antibiotico-resistenti utilizzando tecniche di microbiologia classica; - Definizione di un pannello di geni responsabili per l'antibiotico-resistenza (AMR genes) trasportati dall'ecosistema costituito da batteri legati a (e trasportati da) le particelle di microplastica. 	Life and Health Sciences - Molecular Biology and cellular Biotechnology	roberto.spurio@unicam.it ; dezemona.petrelli@unicam.it	6	6
14	<p>Recupero dei metalli presenti nei rifiuti dell'industria chimica, petrolchimica, e farmaceutica</p>	Physics, Earth and Materials Sciences - Physical and chemical Processes in Earth Systems	gabriele.giuli@unicam.it ; mario.berrettoni@unicam.it	12	5

**RESEARCH PROJECTS - no. 3 additional
scholarships on innovation topics**

1	Quality Assurance for blockchain-based applications in industry and public administration. The project aims to propose novel techniques and verification and testing tools that allow the developer community to write and deploy safer code	Computer Science and Mathematics	andrea.polini@unicam.it	6	6
2	Anomaly Detection and optimization of industry/manufacturing process. The project aims to define novel techniques to maximize the efficiency of the maintenance in the industry by monitoring the behaviour of the machine, extract useful information and analyzing them in order to take fast decisions	Computer Science and Mathematics	barbara.re@unicam.it	6	6
3	Innovazione della filiera produttiva per l'ottimizzazione dei processi industriali verso il Piano Transizione 4.0. Soluzioni digitali e tecnologiche innovative, a basso impatto ambientale, in relazione all'intero ciclo produttivo, scarti di lavorazione, ciclo dei rifiuti, recupero del calore dei processi industriali, efficientamento e riduzione dei consumi energetici degli edifici.	Architecture, Design, Planning - Innovation Design	giuseppe.losco@unicam.it	12	0