ANNEX 1

PhD courses - XXXVII cycle

SYSTEM BIOLOGY IN IMMUNITY AND INFECTIOUS PATHOLOGIES (INTERNATIONAL AND INDUSTRIAL PhD) – page 5

Topic title
SUSTAINABLE EGG BIOFORTIFICATION: SHEDDING LIGHT ON HEALTH BENEFITS. ACRONYM: SUSTAINEGG
INNOVATIVE STRATEGIES FOR CULEX MOSQUITO CONTROL
DEVELOPMENT OF NEW ANTIMALARIAL DRUGS ABLE TO COUNTERACT THE GROWING DRUG RESISTANCE IN PLASMODIUM FALCIPARUM
INNOVative mRNA Therapeutics dEvelopment for inflammatory and autoimmune disorders. Acronym: INNOVATE

BIOTECHNOLOGIES (INTERNATIONAL AND INDUSTRIAL PhD) – page 8

Topic title
BIOSOLVENTS
CLIMATE AND BIODIVERSITY
MICROBIO FOR SALINITY
PLANT NANOVESICLES

ECONOMICS - INSTITUTIONS, BUSINESSES AND QUANTITATIVE METHODS (INTERNATIONAL AND INDUSTRIAL PhD) – page 12

Topic title
REComPAcT

ENERGY AND SUSTAINABLE DEVELOPMENT (INTERNATIONAL AND INDUSTRIAL PhD) – page 14

Topic title
CER - RESILIENT ENERGY COMMUNITIES
DYE-SENSITIZED & PEROVSKITE SOLAR CELLS
WASTE SUSTAINABLE MANAGEMENT
SUSTAINABLE GREEN HYDROGEN
OLIVE RESIDUES BIOCHAR

ETHICS OF COMMUNICATION AND SCIENTIFIC RESEARCH (INTERNATIONAL AND INDUSTRIAL PhD) - - page 18

Topic title
BLOCKCHAIN TECHNOLOGIES AND FOOD PRODUCTS

PHYSICS (INTERNATIONAL AND INDUSTRIAL PhD) page 20

Topic title
PET DEGRADATION: OPTIMIZATION OF A NEW ENZYME FOR PET BIOLOGICAL DEGRADATION AND MICROPLASTICS DETECTIONS
HELP-MAT - HIGH EFFICIENCY PHOTOVOLTAICS AND LOW POWER MATERIALS
INNOVATIVE PIEZOELECTRIC MATERIALS FOR ENERGY HARVESTING APPLICATIONS
HIGH EFFICIENCY COOLING IN MICRO-CHANNELED DESIGNS
REUSABILITY OF AMORPHOUS SILICON AS BASIC MATERIAL FOR IONIZING RADIATION DETECTION IN MEDICAL AND SPACE APPLICATIONS
DEVELOPMENT OF SOLUTIONS FOR EFFICIENT FPGA-BASED COMPUTING ARCHITECTURES GENERATION

INDUSTRIAL AND INFORMATION ENGINEERING (INTERNATIONAL AND INDUSTRIAL PHD)– page 24

Topic title
CUBESAT RECONFIGURABLE RADIO AND FLIGHT (ACRONYM: CRR)
SENSING FOR 3D CHEMICAL IMAGING
REDOX FLOW BATTERY
ZERO GHG. INNOVATIVE TECHNOLOGIES FOR E-FUEL PRODUCTION FROM THE CO2 FROM WTE

INTERNATIONAL DOCTORAL PROGRAM IN CIVIL AND ENVIRONMENTAL ENGINEERING – (DOTTORATO INTERNAZIONALE E INDUSTRIALE) - page 28

Topic title
ENERGY GEOSTRUCTURES FOR GREEN BUILDINGS
SUSTAINABLE SEDIMENT MANAGEMENT OF DAM RESERVOIRS
IMPROVEMENT OF ENVIRONMENTAL AND SOCIO-ECONOMIC PERFORMANCE OF THE URBAN GREEN CHAIN

LEGALITY, POLITICAL CULTURES AND DEMOCRACY (INTERNATIONAL PhD) –– pagina 31

Topic title
GREEN PUBLIC PROCUREMENT (GPP) ANALYSIS AND MAPPING

HEALTH AND EXPERIMENTAL VETERINARY SCIENCE (INTERNATIONAL AND INDUSTRIAL PhD)– page 33

Topic title

GAME MEAT GREEN SAFETY
STUDY OF HEMP DERIVATIVES AS INNOVATIVE NON-CONVENTIONAL ANTIMICROBIALS IN VETERINARY MEDICINE
APPLYING GREEN TECHNOLOGIES IN THE PRODUCTION OF NORCIA HAM
NATURAL TREATMENT FOR THE CONTROL OF CANINE CHRONIC GIARDIOSIS

CHEMICAL SCIENCES (INTERNATIONAL AND INDUSTRIAL PhD) – page 37

Topic title
GREEN EXTRACTION SOLVENTS FOR APPLICATIONS IN OMICS
PERSISTENT PHOTOLUMINESCENT NANOCRYSTALS FOR SUSTAINABLE LIGHTING
SAFETY RISK ASSESSMENT OF METABOLITES OF POLY- AND PERFLUOROALKYL POLLUTANTS (PFAS) WITH METHODS ALTERNATIVE TO ANIMAL TESTING

AGRICULTURAL, FOOD AND ENVIRONMENTAL SCIENCES AND BIOTECHNOLOGIES (INTERNATIONAL AND INDUSTRIAL PhD) – page 40

Topic title
BEER AND SUSTAINABILITY
INNOVATIVE FEEDING STRATEGIES TO IMPROVE THE QUALITY OF RUMINANT PRODUCTS AND MITIGATE THE ENVIRONMENTAL IMPACT OF THEIR FARMING
BREEDING NEW DURUM WHEAT VARIETIES WITH LOW ENVIRONMENTAL IMPACT
TRUFFLE CULTIVATION IN NATURAL AND AGRICULTURAL SYSTEMS TO FOSTER RIPARIAN BIODIVERSITY

PHARMACEUTICAL SCIENCES (INTERNATIONAL AND INDUSTRIAL PhD) – page 44

Topic title
BIOMASS OXIDATION
ECO-BIOBANKING. DEVELOPMENT OF GREEN TECHNOLOGIES AND IMPLEMENTATION OF INNOVATIVE AND ECO-SUSTAINABLE BIO-BANKING PROCESSES FOR CRYO-STORAGE AND CRYO-PRESERVATION
GREEN ANTIBODY-DRUG.
GREEN TECH FOR FOOD
VITA-GREEN. DEVELOPMENT OF NATURAL VITAMINS AND NUTRITIONAL FORMULAS BY GREEN PROCESSES AND CHEMICAL SYNTHESIS ANALOGUES

LAW (INTERNATIONAL PhD) – page 48

Topic title
PUBLIC PROCUREMENT AND ECOLOGICAL TRANSITION: INTEGRATED WASTE MANAGEMENT SYSTEMS MODELS

HUMANITIES (INTERNATIONAL PhD) – page 50

Topic title
SOCIAL NETWORKS, KNOWLEDGE, PROFESSIONS AND “PRODUCTION CHAINS” AT THE TRASIMENO LAKE:

AN ANTHROPOLOGICAL RESEARCH ON GREEN ECONOMY AND ENVIRONMENTAL BALANCE
THE TRANSITION TO GREEN: BETWEEN DIGITAL AND PSYCHOLOGICAL FACTORS

EARTH SYSTEM AND GLOBAL CHANGES (INTERNATIONAL PhD) – page 53

Topic title
MULTISPECTRAL DATA FOR MONITORING CLIMATE CHANGE EFFECTS
MONITORING OF GREENHOUSE GASES

HISTORY, ARTS AND LANGUAGES IN ANCIENT AND MODERN EUROPE (INTERNATIONAL PhD) – page 55

Topic title
SUSTAINABLE CONSERVATION OF ARCHEOLOGICAL SITES IN ITALY AND ABROAD

PhD course:

SYSTEM BIOLOGY IN IMMUNITY AND INFECTIOUS PATHOLOGIES (INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 2**	**1 Scholarship - Topic title**: Sustainable Egg biofortification: shedding light on health benefits. Acronym: SustainEgg **Description of the topic to be developed by candidate in his/her research project:** As consumers worldwide become more health conscious, the demand for health-promoting foods is expected to grow. Biofortification of specific foods is a process of increasing the density of biomolecules, vitamins and minerals, to increase food nutritional properties and promote beneficial health effects. Carotenoids, flavonoids are important constituents of bioactive food. Synthetic or chemically purified carotenoids have extensively added to eggs to meet the requirements of consumers preferring eggs with colorful yolks and for improving food functional effects. SustainEgg aims at using a novel and eco-sustainable strategy to produce biofortify eggs by diet supplementation of laying hens with Italian-produced goji berries rich in carotenoids. They are a not only a suitable alternative to commercial synthetic carotenoids, but also represents an efficient and natural nutrient delivery system for the administration of compounds of high biological value without impacting on environment. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: FALLARINO FRANCESCA **1 Scholarship - Topic title**: "Strategie innovative per il controllo di zanzare Culex." **Description of the topic to be developed by candidate in his/her research project:** Mosquitoes of the Culex pipens complex transmit several human and animal pathogens, including West Nile and Rift Valley fever arboviruses, and the filarial nematodes. It is a cosmopolitan species, exhibiting great plasticity in host choice and, therefore, having the potential to act as a bridge vector for zoonotic pathogens. Almost all populations of the C. pipens complex naturally carry the maternally-inherited intracellular endosymbiont Wolbachia, currently in the forefront of vector control strategies in several endemic countries: this bacteria are able to induce host reproductive manipulations and interfere with pathogen transmission. The proposed project aims to generate novel Wolbachia transinfections in C. pipens using strains native to other insects and explore Wolbachia-conferred phenotypes in new host species. If displaying promising traits, the novel Wolbachia-carrying strains could potentially contribute to population suppression and replacement control strategies.

	Period at the company: 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: SPACCAPELO ROBERTA
Scholarships within INNOVATION Action IV.4 **N.2**	**1 Scholarship - Topic title:** Development of new antimalarial drugs able to counteract the growing drug resistance in Plasmodium falciparum **Description of the topic to be developed by candidate in his/her research project:** Malaria is a major global health problem that causes significant mortality and morbidity annually. While drugs and mosquito control have reduced levels of malaria over recent decades, the parasite still kills over 410,000 people every year, infecting many more. The therapeutic options are scarce and massively challenged by the emergence of resistant parasite strains, which causes a major obstacle to malaria control. To prevent a potential health emergency, and to achieve the goal set by the "World Health Assembly" in May 2015 of reducing the global incidence of malaria and mortality rates by at least 90% by 2030, there is an urgent need of new antimalarial drugs. The project aims to identify and validate cutting-edge drugs with single-dose cures, broad therapeutic potential, a novel of action to counter current drug resistance, safe and at low cost, also through the analysis of natural active substances or ingredients. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: SPACCAPELO ROBERTA **1 Scholarship - Topic title:** INNOVative mRNA Therapeutics dEvelopment for inflammatory and autoimmune disorders. Acronym: INNOVATE **Description of the topic to be developed by candidate in his/her research project:** Current treatments for autoimmune and chronic autoinflammatory diseases can cause systemic immunosuppression and side effects such as increased risk of bacterial and viral infections. The pandemic and the unprecedented success of mRNA-based COVID -19 vaccines have drawn attention and interest on mRNA technology, making it one of the most attractive technologies of our time. New materials with improved mRNA chemical stability are highly seeked by biotech companies for the next generation of mRNA based therapeutic agents. INNOVATE proposes a radical new science-based therapy based on the development of a new personalized strategy that synergistically combines modified mRNA into a novel biocompatible material based double layered hydroxides (LDH) nanoparticles, to obtain a mRNA-LDH hybrid systems for the treatment of autoimmune and autoinflammatory diseases. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: FALLARINO FRANCESCA
Coordinator	PUCCETTI PAOLO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999, **Any Master's degree ('Laurea Magistrale')** in accordance with the ministerial decree D.M. 270/2004, **Any University diploma ('Laurea Vecchio ordinamento')** obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30)

Evaluation of qualifications will be performed with regard to the candidate's university education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project **submitted in English**, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented, **in English**, together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained by candidates with a total mark equal to or above 30/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

BIOTECHNOLOGIES (INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N.4**	**1 Scholarship - Topic title**: Biosolventi **Description of the topic to be developed by candidate in his/her research project:** The research activity is directed towards the development of biosolvents and bioadditives, within the frame of a circular economy scheme, and the bioeconomy. A specific objective shall be the application of the substitution principle to solvents and additives which are considered as substances of very high concern for the human health and the environment under the EU REACH Regulation. The research activity shall develop throughout different phases, that are: preparation/identification of biomass-derived additives and solvents; investigation of the properties of the new bioadditives and biosolvents, and study of the correlation of such properties with their structure and with the biomass source; use of the new solvents and additives in processes of interest for industry to produce target molecules. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: MARROCCHI ASSUNTA
	1 Scholarship - Topic title: Clima e Biodiversità **Description of the topic to be developed by candidate in his/her research project:** Evaluate the effects of climate change on the plant communities of the karst plains, ex-perimenting with different forms of use that lead to the minimization of the effects of changes taking into account the hypothesis of increased temperatures and reduced rain-fall. The karst plains of the Apennines are characterized by large areas of humid and marshy vegetation with considerable biodi-versity maintained by the present ecological conditions and economic activities (mowing and grazing). In recent times, critical issues have already been observed on numerous ecological parameters such as the presence of snow, increase in the summer drought pe-riod, reduction of mowable biomass, endan-gering species and habitats of the European directive such as: Mowable grasslands of Trifolio hordeetalia (Habitat 6510) Alkaline bogs of Caricion davallianae (Habitat 7230) and residual Spagnete (Habitat 7140). The hypothesized scenarios are loss of biodiver-sity, sustainable damage to the economy, in-vasions of alien plant species and loss of ecosystem services. **Period at the company:** 8 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: ELIA CONCETTA, Co Referente VENANZONI ROBERTO

	1 Scholarship - Topic title: MicroBio for Salinity **Description of the topic to be developed by candidate in his/her research project:** Culturomic and metagenomic analysis of the eukaryotic and prokaryotic microbial biodiversity of the rhizosphere in conditions of high salinity (400,000 Ha increasing in Italy, 10% in the world) or extreme drought, induced respectively by bad practices and by relapses. The aims of this project are: 1. the systemic knowledge of microbial biodiversity in the presence of these stresses. 2. the mitigation of the reduction of availability and resilience of soils through i. use of already commercially available rhizosphere microbial consortia, ii. development of new microbial consortia optimized for the conditions of greatest interest and iii. definition of transdisciplinary consulting services for the use of these technologies. The microbiological and pedological impact of anaerobic digestate after composting will be evaluated as an adjuvant. Microbiological, molecular and pedological data will be stored in databases and analysed with bioinformatics treatments and AI models. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: CORTE LAURA **1 Scholarship - Topic title**: Plant Nanovesicles **Description of the topic to be developed by candidate in his/her research project:** The aim of the project is the characterization and evaluation of biological properties of NanoVesicles (NV) isolated from waste/polluting byproducts of agriculture food industry. Plant and fruit-derived NV (PFNV) are membrane enclosed nanoparticles, having structure similar to mammalian cell-derived exosomes. PFNV contain bioactive molecules and exert antioxidant/anti-inflammatory effects. Due to these properties, together with their stability in the gastrointestinal tract, they are considered a promising therapeutic tool. PFNV are much less studied than vesicles released by mammalian cells. Thus, the study of biochemical composition of NV isolated from waste byproducts of food agriculture will be a starting point aimed to valorize waste from food industry as source of NV, which could be considered not only carriers of bioactive compounds and nutraceuticals, but also as drug delivery vehicles, that can be loaded with drugs improving their stability and bioavailability. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: BURATTA SANDRA
Coordinator	CARDINALI GIANLUIGI

Degrees required for admission

Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999 in: 6/S "Biology", 7/S "Agricultural Biotechnologies", 8/S "Industrial Biotechnologies", 9/S "Medical, Veterinary and Pharmaceutical Biotechnologies", 14/S "Pharmacy and Industrial Pharmacy", 20/S "Physics", 23/S "Computer Science", 26/S "Biomedical Engineering", 27/S "Chemical Engineering", 33/S "Energy and Nuclear Engineering", 35/S "Computer Engineering", 36/S "Mechanical Engineering", 38/S "Environmental and Territorial Engineering", 46/S "Medicine and Surgery", 47/S "Veterinary Medicine", 52/S "Dentistry and Dental Prosthesis", 61/S "Material Sciences and Engineering", 62/S "Chemical Sciences", 68/S "Nature Sciences", 69/S "Human Nutrition Sciences", 77/S "Agricultural Science and Technology", 78/S "Agro-food sciences and technologies", 79/S "Agro-zootechnical sciences and technologies", 82/S "Science and Technology for the environment and territory";

Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004 in: LM-6 "Biology", LM-7 "Agricultural Biotechnology", LM-8 "Industrial Biotechnology", LM-9 "Medical, Veterinary and Pharmaceutical biotechnologies", LM-13 "Pharmacy and Industrial Pharmacy", LM-17 "Physics", LM-18 "Computer Science", LM-21 "Biomedical Engineering", LM-22 "Chemical Engineering", LM-30 "Energy and Nuclear Engineering", LM-32 "Computer Engineering", LM-33 "Mechanical Engineering", LM-35 "Environmental and Territorial Engineering", LM-41 "Medicine and Surgery", LM-42 "Veterinary Medicine", LM-53 "Materials Science and Engineering", LM-54 "Chemical Sciences", LM-60 "Natural Sciences", LM-61 "Human Nutrition Sciences", LM-69 "Agricultural Science and Technology", LM-70 "Food Sciences and Technologies", LM-71 "Industrial Chemistry Sciences and Technologies", LM-75 "Science and Technology for the Environment and Territory"; LM/SNT1 Nursing and Obstetric Sciences

University diploma ('Laurea Vecchio ordinamento') obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force, deemed equivalent to the Master's degrees ('Laurea Specialistica' or 'Laurea Magistrale') indicated above, in accordance with the current regulations on the equivalency of qualifications for the purpose of participation in public calls for applications.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30)

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application. under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score required in the evaluation of qualifications to access the interview is **15/30**.

Before the interview, the list of candidates admitted to interview, with scores obtained will be published on the website www.unipg.it/didattica under the heading "Research Doctorates" – ("Announcements, notices and forms").

Candidates who do not achieve the above minimum score will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the

application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

ECONOMICS - INSTITUTIONS, BUSINESSES AND QUANTITATIVE METHODS (INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN **Azione IV.5** **N. 1**	**1 Scholarship - Topic title:** REComPAcT **Description of the topic to be developed by candidate in his/her research project:** The aim of the REComPAcT project (Renewable Energy Community Proactive Tools) is to promote local energy autonomy and energy transition by an innovative and impactful research on renewable energy communities (REC). By developing cognitive and forecasting tools to support citizens, businesses and institutions in the era of energy transition REComPAcT combines environmental with social equity aims. REComPAcT involves: i) the systematic study of the REC, and of scientific literature, aimed at ii) the construction of experimental economic models to assess the ex-ante probability of REC success. REComPAcT aims to implement innovative bottom-up survey methods for data collection aimed at building models of analysis and aggregation of preferences. Models shall include economic determinants, criticalities and barriers linked to the success of REC and assess their potential impact. **Period at the company:** 9 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: POLINORI PAOLO
Coordinator	RIZZI FRANCESCO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30)

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score required in the evaluation of qualifications to access the interview is **15/30**.

Before the interview, the list of candidates admitted to interview, with scores obtained will be published on the website www.unipg.it/didattica under the heading "Research Doctorates" – ("Announcements, notices and forms").

Candidates who do not achieve the above minimum score will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

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PhD course:

ENERGY AND SUSTAINABLE DEVELOPMENT (INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN **Azione IV.5** **N.5**	**1 Scholarship - Topic title:** CER - RESILIENT ENERGY COMMUNITIES **Description of the topic to be developed by candidate in his/her research project:** The research topics are related to: - Assessment of renewable energy communities (CER) and citizen's energy communities(CEC) at national and international level. Evaluation of the environmental, social, economic and governance barriers CER and CEC implementation, especially at national level. Development of tailored algorithms to quantify the environmental, social and economic benefits of energy communities also through social networking analysis and triggering actions; - Development of smart, innovative and integrated environmental monitoring systems (with large-scale monitoring and physiological monitoring); - Indoor and outdoor environmental monitoring and analysis. Research of key correlation between climate change related events and human health condition. Development of measurable indices for environmental risk assessment - Analysis of mitigation and adaptation strategies for urban environments. **Period at the company:** 9 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: PISELLO ANNA LAURA
	1 Scholarship - Topic title: Dye-sensitized & perovskite solar cells **Description of the topic to be developed by candidate in his/her research project:** The research aims to develop a green theme related to the implementation of new low-cost photovoltaic cells, organic & hybrid, to be adopted both in buildings and in the industry. This theme is consistent with the indications of the PNR, the REACT-EU (action IV.5 relating to doctorates) and the SNSI (National Strategy on Intelligent Specialization). In addition, the result of the research programme will contribute to the regional goal of achieving at least 2.5 GW of installed electrical power from photovoltaics by 2050. The advantage of organic dyesynthesized (DS)[I] technology lies in its negligible costs compared to the corresponding inorganic technology, but also in the possibility of minimising environmental impacts during its decommissioning phase (harvesting & end-of-life management). The research involves testing PV organic DS and organic-inorganic hybrid perovskites based, these latter materials of great interest in the scientific community [1] and industry in the field of renewables for their impressive photoconversion efficienies. The research Will enable the advancement of the technology development level (TRL) from 5 to 7 also thanks to the realisation of a working prototype in the real environment. [1] Graetzel et al., Nature, 353, 737 (1991); [2] Miyasaka et al., J. Am. Chem. Soc. 2009, 131, 6050. [3] Giorgi et al. JPCL 2013,4, 4213 **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: MORETTI ELISA, Co Referente GIORGI GIACOMO
	1 Scholarship - Topic title: WASTE SUSTAINABLE MANAGEMENT **Description of the topic to be developed by candidate in his/her research project:**

	The research aims to study technological solutions and sustainable waste management models with the aim of maximizing recovery of energy and materials, reducing landfilling and decarbonising the sector according to the principles of the circular economy and sustainability. Actions in this sense could be: - Technological solutions for recovery of materials and energy in industrial symbiosis scenarios for local development and impact reduction; - Innovative processes for the valorization of specific waste fractions, analyzing process, economic and regulatory aspects, such as "end of waste" concept for example; - Innovative actions for lower consumption and increased energy efficiency in industrial processes (collection, transport, selection plants, treatment, etc.), also through the computerization of processes and digitalized management of plants; - Sustainability strategies as industrial drivers applied to the various step of the waste management chain. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: NICOLINI ANDREA **1 Scholarship - Topic title**: SUSTAINABLE GREEN HYDROGEN **Description of the topic to be developed by candidate in his/her research project:** The proposed research concerns the study of an integrated system for energy production and storage from renewables as well as green hydrogen production. These resources will be used to power a fleet of vehicles such as forklifts, company cars and other handling and transport systems supplied by fuel cells at the service of industrial users. Hydrogen production takes place through a pressurized electrolyzer fed by a photovoltaic system of suitable size. The plant is made up of a set of elements that need an optimization of the following technical aspects: - dimensioning of the size of the photovoltaic system; - dimensioning of the size of the electrochemical storage with batteries; - determination of the size of the hydrogen storage system; - definition of the operating pressure of the electrolyser. The objective of the optimization is to maximize the round trip efficiency parameter which will be calculated based on the operating parameters of the specific reality such as the company size, the number of users, etc. The consistency of the proposal with PNR, REACT-EU (green action IV.5) and the National Strategy on Smart Specialization is guaranteed by the following aspects: - production of energy from exclusively renewable sources; - maximization of the energy efficiency of integrated processes; - zero emissions of end users; - economic-energy saving. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: ROSSI FEDERICO **1 Scholarship - Topic title:** Olive residues biochar **Description of the topic to be developed by candidate in his/her research project:** The project demonstrates an innovative business and sustainable development model in the circular economy for the olive industry in the Mediterranean area. Olive stone or dried pomace are pyrolyzed in an innovative regenerative rotary kiln to obtain bio-char which is used to reduce the environmental impact of olive mill wastewaters by absorbing polyphenols, hence reducing significantly the polluting impact of their use as a fertilizer or disposal. The polyphenols enriched char has antioxidant potential and can reduce methane emissions from ruminants therefore it is added to dried pomace (from three phases or

	two phases) to produce a nutrient mix which is eventually pelletised and used as ingredient in the new formula for sheep and goats. Research consists in the design and optimization of biochar production and wastewater filtration on pilot scale and on the economical and environmental feasibility analysis of the business model. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: FANTOZZI FRANCESCO
Coordinator	COTANA FRANCO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30)

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 30/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal**

convocation and personal communications in this regard will not be sent. All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

ETHICS OF COMMUNICATION AND SCIENTIFIC RESEARCH (INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN **Azione IV.5** **N.1**	**1 Scholarship - Topic title:** Blockchain e alimenti **Description of the topic to be developed by candidate in his/her research project:** In the recent years, digitization and new digital ecosystems such as blockchain achieved great results. The use of blockchain technology has recently developed also in the agri food sector, becoming a strategic support to innovative communication and identification of products. The research will aim to provide a better understanding of private law issues of blockchain technologies in food industry and trade; to outline the potential uses of thistechnology to give evidence, in consumer advertising, of the fact that the producer is in compliance with the mandatory rules for the production; to consider the effects of the technology on data protection, with specific reference to consumer information about production techniques; to develop a comprehensive analysis of the legal framework. **Period at the company:** 9 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: CIANCI ALBERTO GIULIO
Coordinator	BORGHESI MASSIMO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;

Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;

Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

The Selection Procedure

The selection procedure will be carried out as follows:

Evaluation of Qualifications and Interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score required in the evaluation of qualifications to access the interview is **9/30**.

Before the interview, the list of candidates admitted to interview, with scores obtained will be published on the website www.unipg.it/didattica under the heading "Research Doctorates" – ("Announcements, notices and forms").

Candidates who do not achieve the above minimum score will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend

periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 30/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

PHYSICS
(INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 5**	**1 Scholarship - Topic title:** PET DEGRADATION: OPTIMIZATION OF A NEW ENZYME FOR PET BIOLOGICAL DEGRADATION AND MICROPLASTICS DETECTIONS **Description of the topic to be developed by candidate in his/her research project:** The research aims to optimize with biophysical means a novel enzyme able tohydrolase PET quickly, effectively, and atlow cost, thereby allowing:(i)a fullrecycle within a circular PET economy;(ii)the development of a biosensor to detectand knock down the microplastic contentin the waters. TheMolecular Horizon srlwill provide technical and scientificknowhow along with specific software forenzyme contact-surface analysis toinvestigate the mode of interaction withpolymer and solvent, and to identifypotential factors to improve theperformance of PET depolymerization(e.g., amino acid variants, optimizedoperating conditions such as temperature,solvent, pH, presence of coenzyme) to berealized and experimentally investigated.The study of a biological route to PETdegradation aims to develop protocolsexportable,that is, of potential interest forcompanies in the plastic recycle and waterpurification industries. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: COREZZI SILVIA **1 Scholarship - Topic title:** HELP-MAT - High Efficiency photovoltaics and Low Power MATerials **Description of the topic to be developed by candidate in his/her research project:** The research activity will be focused onthe study of growth processes andcharacterization of the properties ofmaterials to be used in the fields ofphotovoltaics (alone or in tandem withsilicon cells) and ultra-low consumptionelectronics such as Perovskites,Dichalcogenides, phosphorene, metal- organic molecules. The period ofinternship at the company will bemanaged in order to identify thematerials that appear to be morepromising andeasily scalable at theindustrial level and to optimize thegrowth processes. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: CARLOTTI GIOVANNI **1 Scholarship - Topic title**: INNOVATIVE PIEZOELECTRIC MATERIALS FOR ENERGY HARVESTING APPLICATIONS **Description of the topic to be developed by candidate in his/her**

	research project: The huge number of electronic devicescalled IoT (Internet of Things) requiresminiaturized, autonomous and ecologicallysustainable power sources. A possiblesource of power for these devices is givenby the conversion of vibrational energy intoelectrical through piezoelectric materials.However, the most efficient of thesematerials contain lead which makes thesystem potentially toxic and nonrecyclable.It is therefore necessary to study possiblealternatives, to micro and nano scales,which have a neutral impact on theenvironment. The proposed researchconcerns the study of innovativepiezoelectric materials based on thin filmsand two-dimensional materials for energyharvesting applications from mechanicalvibrations. The proposed research activityinvolves the growth of piezoelectric filmsand their characterizationas well as thesimulation and characterization ofnanoscale systems exhibiting piezoelectricproperties. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: NERI IGOR --- **1 Scholarship - Topic title:** HIGH EFFICIENCY COOLING IN MICRO-CHANNELED DESIGNS **Description of the topic to be developed by candidate in his/her research project:** Electronic devices are constantlyincreasing widespread in society,enhancing the need to lower down energyconsumption tomitigate economic andenvironmental costs. This project isspecifically aimed at containing the thermalbudget,which naturally limits theperformance of the device.The project aims at increasing the coolingefficiency in electronic components,bringing to the choice of investigating theuse of afluid with low critical point and anew concept of thermal management.The most effective solutions come from theintegration of micro-structured cold platesin the component supports. The state of theart relies on the application ofMEMSderived processes to the micro-fabrication of silicon devices, extremelyeffective but, unfortunately, expensive an complex. Promising developments come from the extension of additive manufacturingtechniques to ceramic materials and theintroduction of new processesfor siliconmicrostructuring.The project, in collaboration with thecompany LAYTECH srl, leader in complexelectronic solutions, is staged as follow:1)engineering of the cooling substrate(development of the microchannelingprocess in CMOS structures)-UNIPG /INFN / CERN2)study of the refrigerant-UNIPG /INFN / CERN3)prototype development-UNIPG /INFN/ LAYTECH4)test and characterization-LAYTECH/UNIPG -LEY.TECH/UNIPG

	Period at the company: 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: FANO' LIVIO **1 Scholarship - Topic title:** REUSABILITY OF AMORPHOUS SILICON AS BASIC MATERIAL FOR IONIZING RADIATION DETECTION IN MEDICAL AND SPACE APPLICATIONS **Description of the topic to be developed by candidate in his/her research project:** The research project aims to demonstrate thepossibility to use amorphous silicon,customarily the converting layer inphotovoltaic panels, to successfully detectionizing radiation, expecially the one used inmedical application, both diagnostic thantherapy. With the collaboration of EPFL Neuchatel several prototypewill be built andcharacterized with and without radiationfields. With the cooperation with GaziUniversity (Ankara) also the possible use ofgraphene as supporting layer for amorphoussilicon films will be studied, aiming to obtaina very thin , robustand flexible device. **Period at the company:** 9 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: PAULUZZI MICHELE, Co Referente SERVOLI LEONELLO
Scholarships within INNOVATION Action IV.4 **N.1**	**1 Scholarship - Topic title**: DEVELOPMENT OF SOLUTIONS FOR EFFICIENT FPGA-BASED COMPUTING ARCHITECTURES GENERATION **Description of the topic to be developed by candidate in his/her research project:** The research will focus on the development ofa new computing paradigm suitable forcomputational structures like neural networksand tensor processing models MachineLearning (ML) and Deep Learning (DL). Themain objective is to evolve the BondMachineso that it can implement ML & DL networksin hardware, creating low power and radiationresistant FPGA-based AI accelerators.The research activities will consider thecomplete stack of such a system spanningfrom the behaviour of the single computingelement, its composition and specialization upto the interaction of these elements in a singledevice (multicore) and extending towardsnetworked devices. Will be part of theactivities also the integration of these systemswith modern cloud based approach. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: SANTOCCHIA ATTILIO, Co Referente SPIGA DANIELE
Coordinator	FANO' LIVIO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of Qualifications and Interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score required in the evaluation of qualifications to access the interview is **10/30**.

Before the interview, the list of candidates admitted to interview, with scores obtained will be published on the website www.unipg.it/didattica under the heading "Research Doctorates" – ("Announcements, notices and forms").

Candidates who do not achieve the above minimum score will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **20/30**.

Eligibility is obtained with a total mark equal to or above 30/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

INDUSTRIAL AND INFORMATION ENGINEERING (INTERNATIONAL AND INDUSTRIAL PHD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 3**	**1 Scholarship - Topic title**: Monitoring of environmental contamination by chemicals by using 3D augmented reality techniques and IoT technologies Sensing for 3D Chemical Imaging **Description of the topic to be developed by candidate in his/her research project:** A distributed chemical or physical sensor array, either in the form of a swarm of sensing drones or installed onto smart cables for infrastructures monitoring, provides much increased information than an individual point sensor. This approach can produce not only a mapping of the monitored parameter, but also a three-dimensional temporal evolution and, ultimately, a precise description of the space-time evolution of a chemical cloud of contaminants. The correlation of data from the sensor network can also reduce the false positives of the detection of hazardous chemicals, improve sensitivity and identification. In addition, the integration with the swarm of drones also allows extending the characteristics of flexibility, accuracy, reliability of a network of distributed sensors, over much wider coverage than static networks. The proposed research will focus on all aspects involved: from the development of transducers and sensors developed using techniques and technologies of "green electronics" designed to allow the freest deployment in the environment of interest and the minimum environmental impact at the end-of-life and disposal. the cycle, the implementation of latest generation communication techniques and protocols typical of the ICT evolution towards the IoT, to conclude with the development of "machine learning" and "augmented reality" 3D algorithms for mapping/imaging. **Period at the company:** 10 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: ROSELLI LUCA
	1 Scholarship - Topic title: Redox flow battery **Description of the topic to be developed by candidate in his/her research project:** Redox flow batteries, even if the current ones have low energy density, present a long lifespan, low fire risk and the possibility of decoupling capacity and power, therefore dimensioned separately according to the application requirements. In this context, the research activity will be carried out, focusing on studies at both pack/system and integration levels. The potential field of study includes technologies, among which

	at least one of greater interest will be investigated, which have one (eg metal-air) or both flow compartments. Also environmentally sustainable and low-cost technologies, such as sodium ions ones, are potentially included as a valid alternative to Li-ion batteries. Sodium is the sixth element available in nature (it guarantees in the metallic form, as a negative electrode, a high theoretical capacity (1165 mAh / g) and a low redox potential (-2.71 V vs SHE)) and the marine application of the specification sodium-sea water technology is of great interest. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: BARELLI LINDA **1 Scholarship - Topic title**: Zero GHG. Innovative Technologies for e-fuel production from the CO2 from WtE **Description of the topic to be developed by candidate in his/her research project:** The goal of the research is to analyze different technologies and processes to produce Ethanol (C2H6) from the CO2 of combustion gases of waste and of the biogas generated from the anaerobic digestion of biodegradable substrates (*e.g.* bio-waste, manures, sludges, biomasses). Both combustion gases and the biogas are rich of CO2. Such CO2 generated from anthropogenic activities, is one of the major contributors to the greenhouse gas (GHG) emissions responsible of global warming. By recovering such CO2 to produce C2H6 it will allow the realization of energy production systems with zero GHG emissions. **Period at the company:** 8 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: DI MARIA FRANCESCO
Scholarships within INNOVATION Action IV.4 **N.1**	**1 Scholarship - Topic title:** Cubesat Reconfigurable Radio and Flight **Description of the topic to be developed by candidate in his/her research project:** A Cubesat is a miniaturized satellite made up of one cubic decimeter units. In such systems volume and mass are limited, and the payload must be carefully sized. The idea behind the present Ph.D. project is that the Cubesat on-board radio can be used both as a telecommunication device and as a scientific instrument. A similar approach was adopted in the radio-science experiments performed by Voyager probes: radiometry, occultation, scintillation, etc. Research will therefore be focused on the development of a high performance millimeter wave radio (100 Mbit/s), that is reconfigurable both in terms of operating frequency (Ku and Ka bands) and in terms of use (transceiver or microwave radiometer). The radio will enable commercial (telecommunication) and scientific (remote sensing)

	missions on Cubesat platforms thanks to the same apparatus. The type of research is industrial; orbital flight with docking to the ISS is planned. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: ALIMENTI FEDERICO, MEZZANOTTE PAOLO
Coordinator	LIOTTA GIUSEPPE

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:
Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).
Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).
The evaluation will also include the drafting of a research project, drawn up using Annex D.
The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.
All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 25/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal**

convocation and personal communications in this regard will not be sent. All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

INTERNATIONAL DOCTORAL PROGRAM IN CIVIL AND ENVIRONMENTAL ENGINEERING (DOTTORATO INTERNAZIONALE E INDUSTRIALE)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 3**	**1 Scholarship - Topic title**: ENERGY GEOSTRUCTURES FOR GREEN BUILDINGS **Description of the topic to be developed by candidate in his/her research project:** The research aims at promoting energy systems that exploit the geothermal resource for the conditioning of buildings through the development of green technology, based on Energy Geo-Structures (GSE), especially in light of the new technical standards and benefits for renovations, energy retrofitting and green building. The GSEs combine the structural and energetic function, allowing the savings related to the absence of additional drilling, required instead by the common geothermal boreholes. The proposed research aims at contributing to the deepening of knowledge on the thermo-hydro-mechanical THM effects induced in soils by GSEs through: - Numerical finite element modeling for the prediction of THM behavior, by means of constitutive models capable of reproducing the non-linear character of the soil response - in-situ THM monitoring of newly developed GSE prototypes at the Engineering Campus. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: SALCIARINI DIANA **1 Scholarship - Topic title**: SUSTAINABLE SEDIMENT MANAGEMENT OF DAM RESERVOIRS **Description of the topic to be developed by candidate in his/her research project:** The research deals with the issue of the progressive silting of artificial lakes, which is strongly present in the reservoirs realized some tens of years ago. This problem is determined by the combined processes of soil erosion and sediment washout on the slopes of the catchment and solid transport by the tributary (s). The research has as a multiple objective the modeling of the sediment accumulation process in artificial reservoirs and their transfer in the downstream receptor with the evaluation of the consequent environmental effects and the development of innovative techniques for solving the problem. In this context, the development of a pilot project and its implementation in a case study of Central Italy is envisaged. **Period at the company:** 6 months

	Stay abroad: 6 months to be completed by 31.12.2023 **Project contact person**: FLAMMINI ALESSIA **1 Scholarship - Topic title:** IMPROVEMENT OF ENVIRONMENTAL AND SOCIO-ECONOMIC PERFORMANCE OF THE URBAN GREEN CHAIN **Description of the topic to be developed by candidate in his/her research project:** Analysis of practices and technologies to increase the resistance of trees to pathogens and the effects of climate change (environmental stresses affecting phenological phases), to allow rationalization of irrigation, phytosanitary interventions, pruning and fertilization. The ecosystem performance of plant species will be analysed in order to make trees and shrubs available on the market, as well as technologies and techniques to manage urban green areas in an environmentally, economically and socially sustainable way and to certify the sustainability of the whole urban green sector, from nursery activities to maintenance and waste disposal. A further objective will be to analyze the growth of tree species in urban areas according to planting and development conditions in order to introduce appropriate correction factors to improve the interpretation of biological phenomena. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: VENTURA FLAMINIA
Coordinator	UBERTINI FILIPPO

Degrees Required for Admission

Master's degree ('Laurea Specialistica'): 3/S "landscape architesture", 4/S "architecture and construction engineering", 7/S "agricultural biotechnologies", 20/S "physics", 27/S "chemical engineering", 28/S "civil engineering", 32/S "electronic engineering, 36/S "mechanical engineering", 38/S "environmental and territorial engineering", 50/S "mathematical-physics modeling for engineering", 61/S "materials science and engineering", 62/S "chemistry", 103/S "theories and mehtods of industrial design"; **Master's degree ('Lauree Magistrali')** LM-3 "Landscape architecture", LM-4 "Architecture and Engineering", LM-4 c.u. ""Architecture and Engineering" (five-year degree), LM-7 "Agricultural Biotechnologies", LM-8 Industrial biotechnologies, LM-12 "Design", LM-17 "Physics", LM-22 "Chemical Engineering", LM-23 "Civil Engineering", LM-24 "Engineering of Construction Systems", LM-26 "Safety Engineering", LM-29 "Electronic Engineering", LM-33 "Mechanical Engineering", LM-35 "Environmental and territorial Engineering", LM-44 "Mathematical-Physics Modelling for Engineering", LM-53 "Materials Science and Engineering", LM-54 "Chemistry, LM-69 "Agricultural Science and Technology;

University diploma ('Laurea Vecchio ordinamento') obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force, deemed equivalent to the Master's degrees ('Laurea Specialistica' or 'Laurea Magistrale') above indicated, in accordance with the current regulations on equivalency of qualifications for the purpose of participation in public calls for Applications.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

LEGALITY, POLITICAL CULTURES AND DEMOCRACY (INTERNATIONAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 1**	**1 Scholarship - Topic title:** Green Public Procurement (GPP) analysis and mapping **Description of the topic to be developed by candidate in his/her research project:** The grant aims to promote research in the field of Green public procurement (GPP), which is one of the cornerstones of the European Green deal (and therefore of the italian pandemic recovery plan). In particular, it is intended to promote the mapping of the purchases of Italian public administrations, through the techniques of semantic data analytics, so as to acquire the ability to know the different relevant dimensions, for how they have consolidated over the past decade and how they will develop in parallel with the doctoral program: degree of diffusion in the different sectors of PA, product sectors and services, levels of compliance with CAM requirements, implementation and control methods. The analytical methodology developed in this way constitutes the prerequisite for the development of products and services for the green procurement market, both on the demand side (promoting and consolidating the ability of administrations to purchase efficiently, with an effective impact with respect to sustainability objectives), and on the supply side (offering market operators concrete and immediately usable indications about the characteristics of the market, so as to adapt and finalize the supply) **Period at the company:** 10 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: PONTI BENEDETTO
Coordinator	PROIETTI FAUSTO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:
Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).
Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).
The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.
All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.
The minimum score in in the evaluation of qualifications for admission to the interview is **12/30.**
Before the interview, the list of candidates admitted to interview, with scores obtained will be published on the website www.unipg.it/didattica under the heading "Research Doctorates" – ("Announcements, notices and forms").
Candidates who do not achieve the above minimum score will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 33/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

HEALTH AND EXPERIMENTAL VETERINARY SCIENCE (INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 4**	**1 Scholarship - Topic title**: GAME MEAT GREEN SAFETY **Description of the topic to be developed by candidate in his/her research project:** Development and implementation of protocols for decontamination of the prey and carcasses of hunted wild ungulates and disinfection of the facilities of the collection centres, involving the use of bioactive compounds extracted from by-products of the food industry and absence of treatment with synthetic chemicals. Different decontamination systems using compounds extracted from different by-products of the food industry will be evaluated in vitro and in the field. The efficacy in reducing the presence of pathogenic, spoiling and indicator microorganisms will be evaluated both on the unskinned and skinned carcasses and on the structures, in order to improve the hygienic level and prolong the shelf-life of the meat. For surfaces and equipment, particular attention will be paid to the ability to prevent or eliminate biofilm. **Period at the company:** 10 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: RANUCCI DAVID **1 Scholarship - Topic title:** STUDY OF HEMP DERIVATIVES AS INNOVATIVE NON-CONVENTIONAL ANTIMICROBIALS IN VETERINARY MEDICINE **Description of the topic to be developed by candidate in his/her research project:** Hemp is an herbaceous plant characterized by a strong green impact and significant eco-sustainability: as well as to be used in soil phytoremediation, its cultivation requires very little water, and no pesticides, it is no-waste and hosts a great biodiversity of insects and wildlife. Although many of its properties are still largely unknown, hemp is used in many fields, including the bio-medical one. Recent scientific studies have highlighted the possibility that its extracts exert an antimicrobial and immunomodulatory effect. Given the high prevalence of antibiotic-resistance and the increasingly limited effectiveness of conventional antimicrobials, the research aims to in vitro evaluate the antimicrobials capacity of hemp extracts against multi-resistant bacteria of significant clinical interest in pet animals. The study aims at the possible development of alternative therapeutic strategies to conventional antimicrobials. **Period at the company:** 6 months

	Stay abroad: 6 months to be completed by 31.12.2023 **Project contact person**: CASAGRANDE PROIETTI PATRIZIA
	1 Scholarship - Topic title: APPLYING GREEN TECHNOLOGIES IN THE PRODUCTION OF NORCIA HAM **Description of the topic to be developed by candidate in his/her research project:** The research goal is the creation of a Norcia ham obtained from pigs reared without the use of antibiotics and according to "green" technologies. The diet will be enriched with plant derivatives rich in bioactive compounds (polyphenolic compounds and / or essential oils) with positive impact on the quality of the product and characterised by an antimicrobial effect capable of reducing the use of drugs. Environmental and production sustainability will be improved (by using co-products from supply chains such as that of olive oil and adopting virtuous practices according to the concepts of energy efficiency and circular economy) giving a competitive plus to the product of an intrinsic (quality of feed and food raw materials) and extrinsic type (storytelling of the production process and any additional certifications), as requested by an important part of consumers. The project will possibly allow a product certification process as Prosciutto di Norcia PGI "Riserva". **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: TRABALZA MARINUCCI MASSIMO
	1 Scholarship - Topic title: NATURAL TREATMENT FOR THE CONTROL OF CANINE CHRONIC GIARDIOSIS **Description of the topic to be developed by candidate in his/her research project:** *Giardia duodenalis* is an intestinal protozoan agent of an important zoonosis that mainly affects fragile subjects. Dog, as well as acts as vector for human infection, frequently suffers for a chronic intestinal disease, requiring repeated and therapeutic regimens, lasting months. According to a number of Authors, Giardia in dogs represents an opportunistic pathogen, ables to exert its own virulence when intestinal dysbiosis occurs, thus suggests that preservation and restoration of the gut microbiota may acquire importance in the control. To date, the treatment consists on the use of febendazole (FBZ) and metronidazole (METR), drug of choice in the humans. Both those molecules have an intestinal elimination with residual active compounds, that accumulate and spread in the environment, interfering with both the aquatic and terrestrial ecosystem. Prolonged exposure to METR also may promote development of resistance in Giardia zoonotic strains and in bacteria (e.g. clostridia) of high concern in public health. The project aims to develop and test a natural, eco-sustainable product that reconstitutes

	and stabilizes the canine gut microbiota as an alternative to drug therapy for giardiosis. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: VERONESI FABRIZIA
Coordinator	PEPE MARCO

Degrees required for admission

Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999 in: 6/S "Biology", 9/S "Medical, Veterinary And Pharmaceutical Biotechnologies", 47/S "Veterinary Medicine", 79/S "Agro-Zootechnical Science And Technology";
Master's Degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004 in: LM-6 "Biology", LM-9 "Medical, Veterinary And Pharmaceutical Biotechnologies", LM-42 "Veterinary Medicine", LM-86 "Zootechnical Science And Animal Technologies"
University diploma ('Laurea Vecchio ordinamento') obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force, deemed equivalent to the Master's degrees ('Laurea Specialistica' or 'Laurea Magistrale') indicated above, in accordance with the current regulations on equivalency of qualifications for the purpose of participation in public calls for Applications.

Selection procedure
The selection procedure will be carried out as follows:
Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).
Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).
The evaluation will also include the drafting of a research project, drawn up using Annex D.
The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic
All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 30/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

CHEMICAL SCIENCES
(INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 3**	**1 Scholarship - Topic title:** GREEN EXTRACTION SOLVENTS FOR APPLICATIONS IN OMICS **Description of the topic to be developed by candidate in his/her research project:** Nowadays, metabolomics and lipidomics find a myriad of applications in the pharmaceutical, environmental and food fields. However, solvents or solvent mixtures used for the extraction of metabolites and toxic used for humans and the environment such as chloroform (carcinogen) and n-hexane (neurotoxic). Around 500 million liters of chloroform are consumed around the world every ALL 2 SUB 2 year and it is estimated that 25% derives from use in research. In the EU, these solvents are classified as undesirable, and are banned in various pharmaceutical companies. The project aims to identify new solvents or solvent mixtures for the extraction of organic compounds for omics which have properties similar to toxic solvents but which are non-impacting for the environment. The research will combine experimental work and modeling, including chemometric methods of AI. The collection of toxic solvents in the extraction of natural compounds fulfills the PNR OT8 objective. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: CRUCIANI GABRIELE
	1 Scholarship - Topic title: PERSISTENT PHOTOLUMINESCENT NANOCRYSTALS FOR SUSTAINABLE LIGHTING **Description of the topic to be developed by candidate in his/her research project:** The proposed doctoral program intends to work for the development of sustainable photoluminescent materials capable of contributing to self-powered (without electricity) outdoor and indoor lighting and cooling, helping to mitigate energy consumption. Photoluminescent materials, capable of emitting light for prolonged periods of time after having had only a few minutes of exposure to a natural or artificial light source, will be prepared and formulated to generate an adaptive emission to the needs of the individual user of the built environment The proposal provides for the synthesis and functionalization of photoluminescent nanocrystals, to give: 1. new anthropocentric and adaptive color effects to sun exposure for interior and exterior furnishing accessories; 2. improve the mitigation of urban heat islands. 3. nanocrystals able to

	couple in a modulable way the absorption and re-emission frequencies of solar radiation. The nanocrystals will be designed and prepared with chemical methods, using a sustainable approach, according to the principles of Green Chemistry. **Period at the company:** 8 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: LATTERINI LOREDANA
	1 Scholarship - Topic title: SAFETY RISK ASSESSMENT OF METABOLITES OF POLY- AND PERFLUOROALKYL POLLUTANTS (PFAS) WITH METHODS ALTERNATIVE TO ANIMAL TESTING **Description of the topic to be developed by candidate in his/her research project:** The Organization for Economic Co-operation and Development (OECD) calls for stewardship initiatives for the reduction / replacement of poly and per-fluorinated compounds (PFAS). Human health concerns were also confirmed by metabolomics in a recent study, which showed that higher plasma PFAS concentrations were associated with alterations in glucose homeostasis among overweight and obese children. However, this study does not take into account the metabolic biotransformations that PFAS can undergo in the body and in the environment. This project will simultaneously conduct an in-depth investigation of the biotransformation of PFAS in animal and human models alternative to in vivo and ex vivo tests (cellular and 3D organoid assays) to evaluate the effect of biotransformation on toxicity potential. This research will make use of artificial intelligence methods developed in the host research group. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: GORACCI LAURA
Coordinator	VACCARO LUIGI

Degrees required for admission

Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999 in: 7/S "Agricultural Biotechnologies", 8/S "Industrial Biotechnologies", 9/S "Medical, Veterinary and Pharmaceutical Biotechnologies", 14/S "Pharmacy and Industrial Pharmacy", 61/S "Material Sciences and Engineering", 62/S "Chemical Sciences", 81/S "Industrial Chemistry Sciences and Technologies";

Master's degree ('Laurea Magistrale'): in accordance with the ministerial decree D.M. 270/2004 in: LM-7 "Agricultural Biotechnology", LM-8 "Industrial Biotechnology", LM-9 "Medical, Veterinary and Pharmaceutical biotechnologies", LM-13 "Pharmacy and Industrial Pharmacy", LM-53 "Materials Science and Engineering", LM-54 "Chemical Sciences, LM-71 "Industrial Chemistry Sciences and Technologies";

University diploma ('Laurea Vecchio ordinamento') obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force, deemed equivalent to the Master's degrees ('Laurea Specialistica' or 'Laurea Magistrale') indicated above, in accordance with the current regulations on equivalency of qualifications for the purpose of participation in public calls for Applications

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **20/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

AGRICULTURAL, FOOD AND ENVIRONMENTAL SCIENCES AND BIOTECHNOLOGIES

(INTERNATIONAL AND INDUSTRIAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 4**	**1 Scholarship - Topic title**: BEER AND SUSTAINABILITY **Description of the topic to be developed by candidate in his/her research project:** The objective of this research activity is that of achieving sustainabile, resilient and circularity strategies in the beer industry value chain, enablng the valorization of the by-products through biorefining. Considering the composition of the byproducts and the different functionalities of their components, they represent a promising substrate to afford a wide range of added-value products for different applications. Specifically, the mjor components, namely proteins and fiber, make them ideal to produce functional ingredients for innovative formulations and advanced environmentally friendly materials. The strategies to be developed are expected to support companies of sector to increase productivity, also through smart solutions. In addition, they are expected to be a model, applicable to the whole food sector, to face Covid-19 like crises. The objective of this research activity is that of achieving sustainabile, resilient and circularity strategies in the beer industry value chain, enablng the valorization of the by-products through biorefining. Considering the composition of the byproducts and the different functionalities of their components, they represent a promising substrate to afford a wide range of added-value products for different applications. Specifically, the mjor components, namely proteins and fiber, make them ideal to produce functional ingredients for innovative formulations and advanced environmentally friendly materials. The strategies to be developed are expected to support companies of sector to increase productivity, also through smart solutions. In addition, they are expected to be a model, applicable to the whole food sector, to face Covid-19 like crises. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: MARCONI OMBRETTA **1 Scholarship - Topic title**: INNOVATIVE FEEDING STRATEGIES TO IMPROVE THE QUALITY OF RUMINANT PRODUCTS AND MITIGATE THE ENVIRONMENTAL IMPACT OF THEIR FARMING **Description of the topic to be developed by candidate in his/her research project:**

	The research will face the need, imposed by the ongoing climate changes, to develop "green" solutions also in the sector of ruminant feeding. The innovative solutions will aim at: 1) maintaining high production level while mitigating the environmental impact along the chain of the production considered; 2) reducing the competition between feed and food; 3) improving the health value of animal products. The proposed strategies will focus mainly on the re-use of agro-industrial by-product, the use of forage plants and alternative feed resources rich in bioactive compounds that may affect the metabolisms responsible for their accumulation in animal products and for the enteric methane production. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: PAUSELLI MARIANO **1 Scholarship - Topic title**: BREEDING NEW DURUM WHEAT VARIETIES WITH LOW ENVIRONMENTAL IMPACT **Description of the topic to be developed by candidate in his/her research project:** The core of the new Common Agricultural Policy is the New Green Deal based essentially on the environmental sustainability of agricultural production. Among the objectives to be pursued, the reduction in the use of pesticides is fundamental to reduce the environmental impact of crops and improve the healthiness of derived food products. Therefore, to match this aim it is needed to develop new varieties tolerant/resistant to the main plant. Durum wheat is the most important cereal for Italian agriculture, in terms of both extension of cultivation area and adaptability to Southern regions and Island. It also represents the raw material for the production of pasta, one of the excellences of the "Made in Italy". The aim of this project is to obtain new varieties of durum wheat tolerant/resistant to fungal diseases, in shorter times than conventional plant breeding methods. These varieties are capable of ensuring economically sustainable production, both in terms of production and quality. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: ALBERTINI EMIDIO **1 Scholarship - Topic title:** TRUFFLE CULTIVATION IN NATURAL AND AGRICULTURAL SYSTEMS TO FOSTER RIPARIAN BIODIVERSITY **Description of the topic to be developed by candidate in his/her research project:** The reduction of the riparian vegetation zone causes the loss of natural germplasm of Tuber magnatum, the most appreciated and well-known

	truffle species. It is therefore essential to carry out in situ conservation through environmental restoration, in detail: assessing and monitoring the symbiont species of T. magnatum to be protected and/or restored; planting native symbiont species specific to the potential vegetation, inoculated and/or mycorrhized with the local ecotype of T. magnatum, also by creating truffle orchards in the agricultural systems. This will provide a detailed study of the habitat and the ecological aspects to be conserved/restored, providing further knowledge for the cultivation of prized truffle species in a natural environment and in cultivated truffle beds, and indirectly promoting the reconnection and strengthening of riparian habitats, which are protected by international directives for the conservation of biodiversity. **Period at the company:** 8 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: REALE LARA, Co Referente DONNINI DOMIZIA
Coordinator	ALBERTINI EMIDIO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:
Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).
Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).
The evaluation will also include the drafting of a research project, drawn up using Annex D.
The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.
All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score in in the evaluation of qualifications for admission to the interview is **15/30.**
Before the interview, the list of candidates admitted to the interview, indicating the marks obtained on qualifications evaluation ,will be posted online on the website www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica" ("Research doctorates - Competitions, notices and forms").
Candidates who do not achieve the minimum score on qualifications evaluation will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

SCIENZE FARMACEUTICHE (DOTTORATO INTERNAZIONALE E INDUSTRIALE)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 5**	**1 Scholarship - Topic title**: Biomass Oxidation **Description of the topic to be developed by candidate in his/her research project:** The research aims to investigate new sustainable redox catalysts for the oxidative treatment of biomasses focusing on the removal of organic components from aqueous mixtures and the treatment of matrices for the recovery of specialty and fine chemicals for pharmaceutical and cosmetic purposes. Biomasses from the agri-food and zootechnical sectors will be considered, with particular emphasis for those that have a greater national and local interest (e.g. lignin, carbohydrates, vegetation water and wastewater). The reactions will be carried out using (not exclusively) selenium catalysts, green oxidants and solvents. Different activation sources such as temperature, light and ultrasounds should be investigated. Initially, the reactivity will be studied on simplified models able to reproduce the fate of the main and most interesting components of each single biomass. This approach will allow a better understanding of the oxidative degradation process that takes place in the system. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: SANTI CLAUDIO **1 Scholarship - Topic title**: ECO-BIOBANKING. DEVELOPMENT OF GREEN TECHNOLOGIES AND IMPLEMENTATION OF INNOVATIVE AND ECO-SUSTAINABLE BIO-BANKING PROCESSES FOR CRYO-STORAGE AND CRYO-PRESERVATION **Description of the topic to be developed by candidate in his/her research project:** The PhD student will explore cryopreservation processes of cells and other biological material intended for the application in protocols of cell therapy and regenerative medicine (in particular stem cells and exosomes). In detail, we will study "smart-safe" robotic cryopreservation systems in liquid nitrogen that allow the handling of a single sample without interventions of the operators and temperature variations. Such innovative technology will be tested in specialized centers as far as biological safety and efficacy of cryopreservation are concerned (BSL3-UNIPG facility which also allows us to operate with pathogens such as the SARS-Cov-2 virus). The improvement in terms of environmental impact (consumption energy and materials such as

	liquid nitrogen) will be assessed in collaboration with the industrial partner, and the impact on cell samples and exosomes will be assessed at the SCIFARM Department in collaboration with the international partner (University of Valencia, Spain). **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: GALLI FRANCESCO
	1 Scholarship - Topic title: Green antibody-drug. **Description of the topic to be developed by candidate in his/her research project:** The development of new and flexible therapeutic agents able to efficiently fight viral diseases is a key goal for a sustainable development of our society. Specifically, antibody-drug conjugates (ADCs) represent a promising class of biotechnological drugs in which a monoclonal antibody (mAbs), attached to a drug via a linker, is able to selectively release that drug inside the infected cell while generating passive immunity. In this PhD project, a green procedure for the synthesis and attachment of suitable drugs (payloads) to the mAbs will be developed. Employment of benign reaction conditions are in fact a critical requisite in order to formulate a sustainable approach for the synthesis of pharmaceuticals. Therefore, novel methodologies and synthetic strategies aim to obtain scalable amount of ADCs for industrial use and to minimize the waste production will be employed. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: LANARI DANIELA
	1 Scholarship - Topic title: GREEN TECH FOR FOOD **Description of the topic to be developed by candidate in his/her research project:** The proposed research falls within the field of the valorization of vegetable waste for the formulation of new ingredients/foods, in a circular economy perspective. The search for new technologies, based on green and sustainable processes, can provide enormous opportunities to increase the effectiveness of strategies for enhancing agri-food waste, with important repercussions for socio-environmental and economic aspects. In fact, the waste from agricultural activities and food industries is very rich from a nutritional point of view and contains numerous secondary bioactive metabolites. Such waste must be suitably stabilized or subjected to fractionation and extraction processes to obtain functional ingredients, to be added to common foods, including dairy products. These innovative products are characterized by the improvement of nutritional and health, technological and shelf-life properties. **Period at the company:** 6 months

	Stay abroad: 6 months to be completed by 31.12.2023 **Project contact person**: COSSIGNANI LINA **1 Scholarship - Topic title**: VITA-GREEN. DEVELOPMENT OF NATURAL VITAMINS AND NUTRITIONAL FORMULAS BY GREEN PROCESSES AND CHEMICAL SYNTHESIS ANALOGUES **Description of the topic to be developed by candidate in his/her research project:** The PhD student will explore processes and natural raw materials inspired to the principles of "green economy" - also deriving from circular economy processes (recovery of by-products or co-products of agri-food chains in the field of vegetable or animal production) - to develop vitamins and micronutrients alternative to synthetic compounds of the same classes. Comparative evaluations will be performed to assess the project outcomes in terms of: 1) environmental and commercial impact, and 2) in vitro and in vivo efficacy using cellular and molecular biology, transcriptomics and metabolomics techniques and bioinformatics tools of the latest generation. During the research experience in the company, the PhD student will carry out preliminary characterizations of raw materials and "green" processes, and transcriptomic and bioinformatic studies. These activities will be integrated with cellular and molecular biology and metabolomics activities that will take place at the SCIFARM Department. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: GALLI FRANCESCO
Coordinator	MACCHIARULO ANTONIO

Degrees required for admission

Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999 in: 6/S "Biology", 9/S "Medical, Veterinary and Pharmaceutical Biotechnologies", 14/S "Pharmacy and Industrial Pharmacy", 62/S "Chemical Sciences", 69/S "Human Nutrition Sciences", 78/S "Agro-food sciences and technologies";

Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004 in: LM-6 "Biology", LM-9 "Medical, Veterinary and Pharmaceutical biotechnologies", LM-13 "Pharmacy and Industrial Pharmacy", LM-54 "Chemical Sciences", LM-61 "Human Nutrition Sciences", LM-70 "Food Sciences and Technologies";

Any University diploma ('Laurea Vecchio ordinamento') obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force, deemed equivalent to the Master's degrees ('Laurea Specialistica' or 'Laurea Magistrale') above indicated, in accordance with the current regulations on equivalency of qualifications for the purpose of participation in public calls for Applications.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).
The evaluation will also include the drafting of a research project, drawn up using Annex D.
The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.
All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian, the candidate's knowledge of the English language will also be verified.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **18/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

LAW
(INTERNATIONAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 1**	**1 Scholarship - Topic title**: PUBLIC PROCUREMENT AND ECOLOGICAL TRANSITION: INTEGRATED WASTE MANAGEMENT SYSTEMS MODELS **Description of the topic to be developed by candidate in his/her research project:** The research topic is the study of public procurement models which could be functional for integrated waste management; it also analyses how public procurement, in this field, can be a practical tool to introduce (and to achieve) sustainability and circular economy objectives. The research also will focus on the analysis of best practices, experiences, and management systems, both national and foreign. The overall objective is to study and develop systemic models for integrated waste management, which could be also useful for the needs of the host- enterprise. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: GIUSTI ANNALISA
Coordinator	MARELLA MARIA ROSARIA

Degrees required for admission

Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999 in: 1/S "Cultural anthropology and ethnology", 18/S "Theoretical, moral, political and aesthetic philosophy", 21/S "Geography", 22/S "Law", **,** 54/S "Territorial urban and environmental planning ", 60/S ""International Relations", 64/S "Economic Sciences", 70/S "Political Science", 71/S "Public Administration Science", 83/S "Environmental And Cultural Economic Sciences", 84/S "Business Economics Science", 88/S "Sciences for development cooperation", 89/S "Sociology", 94/S "Contemporary History"; 96/S "History Of Philosophy";97/S "Medieval History";98/S "Modern History"; 99/S "European Studies"; 102/S "Theory And Techniques In Standardization And Legal Information"; LMG/01 "Law";

Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004 in: LMG/01 "Law", LM-1 "Cultural And Ethnological Anthropology"; LM-48 "Territorial urban and environmental planning", LM-52 "International Relations", LM-56 "Economic Sciences", LM-62 "Political Science", LM-63 "Public Administration Science", LM-76 "Environmental And Cultural Economic Sciences", LM-77 "Business Economics Science", LM-78 " Philosophical Sciences"; LM-80 "Geographical Sciences"; LM-81 "Sciences for development cooperation", LM-84 "Historical Sciences"; LM-88 "Sociology And Social Research", LM-90 "European Studies", LM/SC_GIUR "Law";

Any University diploma ('Laurea Vecchio ordinamento') obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force, deemed equivalent to the Master's degrees ('Laurea Specialistica' or 'Laurea Magistrale') above indicated, in accordance with the current regulations on equivalency of qualifications for the purpose of participation in public calls for Applications.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score in in the evaluation of qualifications for admission to the interview is **15/30.**

Before the interview, the list of candidates admitted to the interview, indicating the marks obtained on qualifications evaluation ,will be posted online on the website www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica" ("Research doctorates - Competitions, notices and forms").

Candidates who do not achieve the minimum score on qualifications evaluation will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian the candidate's knowledge of one among the following foreign languages will be tested: English, French, Spanish, German.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

HUMANITIES
(INTERNATIONAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 2**	**1 Scholarship - Topic title**: AN ANTHROPOLOGICAL RESEARCH ON GREEN ECONOMY AND ENVIRONMENTAL BALANCE **Description of the topic to be developed by candidate in his/her research project:** Lake ecosystems are characterized by delicate environmental balances. On this regard, particularly required are careful analyses of the relationships between uses, activities and forms of land protection, in order to have a new perspective on production chains and social networks capable of supporting strategic choices in terms of development and circular economy. The anthropological research in the Trasimeno area aims to question the plurality of environments – woods, fields, reeds and lake bed – and of human activities – professional fishing, sports, cultural heritage, tourism, business – which can contribute to maintaining and balance the collective environmental asset. Sustained by a constant relationship with Coop Pescatori del Trasimeno, the participatory research project is centered on production chains, processes concerning professional fishing, craft-ship using lake environmental resources (e.g. reed), ecotourism, maintenance practices of the lake bed, the social impact of hydraulic projects of water level management. **Period at the company:** 12 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: MINELLI MASSIMILIANO **1 Scholarship - Topic title:** THE TRANSITION TO GREEN: BETWEEN DIGITAL AND PSYCHOLOGICAL FACTORS **Description of the topic to be developed by candidate in his/her research project:** The green transition is closely connected to the digital transformation (DT) and the building of smart cities. International studies and the European policy underline two aspects related to the transformation process: 1) the importance of local actions (euractiv) and 2) the importance of the human factors (psychological factors) (Stef et al., 2019), which are underestimated although they play a crucial role. The human motivation to DT change needs to be studied through empirical tools and models in order to assess the profiles of readiness to digital/ green. Aims: 1) to study the psychological motivational factors linked to the readiness to digital/green change, its accessibility and acceptability; 2) to implement a community-based intervention model

	aimed to enhance - with a person-centered approach - the awareness with a focus on the wellbeing and sustainability. **Period at the company:** 8 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: MAZZESCHI CLAUDIA
Coordinator	VALORI FURIA

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30)

Evaluation of qualifications will regard the candidate's university education, as well as any further educational and professional experiences, research and any scientific publications. Scientific publications can also be presented in one of the following languages: **Chinese, English, French, Spanish, German and Portuguese** (candidates are advised to attach and/or declare all of the qualifications they have, with all elements that can help in evaluating them, including grades obtained within each course).
The evaluation will also include the drafting of a research project, drawn up using Annex D.
The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic, that can be written in Italian or in one of the following official EU languages: **English, French**.
All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score in in the evaluation of qualifications for admission to the interview is **15/30.**
Before the interview, the list of candidates admitted to the interview, indicating the marks obtained on qualifications evaluation ,will be posted online on the website www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica" ("Research doctorates - Competitions, notices and forms").
Candidates who do not achieve the minimum score on qualifications evaluation will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in one of the following EU languages: English, French.
For interviews held in Italian there will also be verification of knowledge of a foreign language indicated by the candidate in the application, among the following: English, French, German, Spanish, and Portuguese.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD course:

EARTH SYSTEM AND GLOBAL CHANGES (INTERNATIONAL PHD)

Duration	3 years
Scholarships within GREEN **Azione IV.5** **N. 2**	**1 Scholarship - Topic title**: MULTISPECTRAL DATA FOR MONITORING CLIMATE CHANGE EFFECTS **Description of the topic to be developed by candidate in his/her research project:** Multispectral data processing acquired by satellites and drones (remote sensing) for monitoring the Earth's surface stressed by climate changes. The data will be managed with the aim of automatically identifying (use of algorithms and machine learning) sectoral vulnerabilities to reduce the risks deriving from climate change and natural disasters (earthquakes, hydrogeological instability, volcanic eruptions). The monitoring will focus on some sites that are particularly sensitive to climate change and the effects of catastrophic events. **Period at the company:** 10 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: PORRECA MASSIMILIANO **1 Scholarship - Topic title**: MONITORING OF GREENHOUSE GASES **Description of the topic to be developed by candidate in his/her research project:** The research, in collaboration with THEAREN SRL, consists in the realization and experimentation of a network of mobile sensors for monitoring the concentration and flows of gases from the ground and the dissolved gases in groundwater. Both the major direct climate-altering gases, like CO2 and CH4, and some indirect greenhouse gases with high global warming potential (GWP), like volatile organic compounds (VOC), will be investigated. The possible applications are the local environmental monitoring (potentially contaminated sites, landfills, decontaminations) and the study of Earth degassing at largescale (e.g., gas emissions in geothermal region and along active faults). The research is being carried out in three phases: 1) selection and development of sensors, 2) network design, 3) experimentation and optimization of the network in various geo-environmental contexts using geostatistics and machine learning techniques for the elaboration of data. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: FRONDINI FRANCESCO
Coordinator	BARCHI MASSIMILIANO RINALDO

Degrees required for admission

Any Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999;
Any Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004;
Any University diploma ('Laurea Vecchio ordinamento') according to the regulations in place before the ministerial decree D.M. 509/1999 came into force.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score in in the evaluation of qualifications for admission to the interview is **15/30.**

Before the interview, the list of candidates admitted to the interview, indicating the marks obtained on qualifications evaluation ,will be posted online on the website www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica" ("Research doctorates - Competitions, notices and forms").

Candidates who do not achieve the minimum score on qualifications evaluation will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The candidate may choose to be interviewed in English. For interviews held in Italian the candidate's knowledge of one among the following foreign languages will be tested: English, French, Spanish, German.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.

The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 36/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**

PhD program name:
HISTORY, ARTS AND LANGUAGES IN ANCIENT AND MODERN EUROPE (INTERNATIONAL PhD)

Duration	3 years
Scholarships within GREEN Action IV.5 **N. 1**	**1 Scholarship - Topic title:** SUSTAINABLE CONSERVATION OF ARCHEOLOGICAL SITES IN ITALY AND ABROAD **Description of the topic to be developed by candidate in his/her research project:** The research is aimed to the creation of new solutions for the environment and economic sustainability of Cultural Heritage, especially in rural contexts. The idea concerns the creation of archaeological parks, both in Italy and abroad, with the valorization of location of cultural interest not yet open to the public. The Department of Humanities is already working on this research topic, thanks to the collaboration of companies specialized in the architectural planning of archaeological parks. In Jordan, in particular, thanks to the support of the Italian Agency for Development Cooperation (AICS), abandoned archaeological areas are going to be rehabilitated. The valorization is aimed not only to the conservation and reading of these areas, but also to their environment sustainability. The proposed research is finalized to the identification of possible green strategies; one of these could be the creation of photovoltaic systems for the covering shelters of archaeological remains. **Period at the company:** 6 months **Stay abroad**: 6 months to be completed by 31.12.2023 **Project contact person**: POLCARO ANDREA
Coordinator	LIZZI RITA

Degrees required for admission

Master's degree ('Laurea Specialistica') in accordance with the ministerial decree D.M. 509/1999: 1/S "Cultural anthropology and ethnology", 2/S "Archaeology", 5/S "Library Studies and Sciences", 10/S "Conservation of architectural heritage and environment", 12/S "Conservation and restoration of cultural heritage", 13/S "Publishing, multimedia communication and journalism", 15/S "Philology and classical literature", 16/S "Modern philology", 17/S "Philosophy and history of science", 18/S "Theoretical, moral, political and aesthetic philosophy", 21/S "Geography", 24/S "Computer Science for humanities", 40/S "Italian language and civilisation", 41/S "African and Asian languages and literatures", 42/S "Modern European and American languages and literatures", 43/S "Foreign languages for international communication", 44/S "Linguistics", 51/S "Musicology and musical heritage", 60/S "International relations", 70/S "Political sciences", 72/S "Religion studies", 73/S "Performing arts and multimedia production sciences", 93/S "Ancient history", 94/S "Contemporary history", 95/S "History of art", 96/S "History of philosophy", 97/S "Medieval history", 98/S "Modern history", 99/S "European studies", 101/S "Communication theory", 104/S "Translation of literary and technical texts";

Master's degree ('Laurea Magistrale') in accordance with the ministerial decree D.M. 270/2004**:** LM-1 "Cultural anthropology and ethnology", LM-2 "Archaeology", LM-5 "Library studies and sciences", LM-10 "Conservation and restoration of cultural heritage", LM-11 "Conservation of architectural heritage and environment", LM-14 "Modern philology", LM-15 "Philology and classical literature", LM-19 "Editorial system and Information", LM-36 "African and Asian languages and literatures", LM-37 "Modern European and American languages and literatures", LM-38 "Foreign languages for international communication and cooperation", LM-39 "Linguistics", LM-45 "Musicology and musical heritage", LM-52 "International Relations", LM-57 "Adult and permanent education", LM-59 "Advertising and business communication", LM-62 "Politic Sciences", LM-65 "Performing arts and multimedia production", LM-78 "Philosophy", LM – 80 "Geography", LM-81 "Social sciences for co-operation to development", LM-84 "History", LM-85 "Educational sciences", LM-89 "History of art", LM-90 "European studies", LM-92 "Communication theory" , LM-93 "Theory and techniques of e-learning and media education, LM/94 "Specialistic translation and interpreting", LMR/02 "Conservation and restoration of cultural heritage", LM-14. "Modern philology (A043 qualification)", LM-37. "Modern European and American languages and literatures (A045 qualification)", LM-45. "Musicology and musical heritage (A032 qualification)";

Any University diploma ('Laurea Vecchio ordinamento') obtained in accordance with regulations in place before the ministerial decree D.M. 509/1999 came into force, deemed equivalent to the Master's degrees ('Laurea Specialistica' or 'Laurea Magistrale') indicated above, in accordance with the current regulations on equivalency of qualifications for the purpose of participation in public calls for Applications.

Selection procedure

The selection procedure will be carried out as follows:

Evaluation of qualifications and interview (out of a total of sixty: 30 + 30).

Evaluation of qualifications will be performed with regard to the candidate's university education, further education, training and research experience as well as to any scientific publication (candidates are advised to attach and/or declare all of their qualifications, along with all the elements that can help in their evaluation, thereby including grades obtained within each course).

The evaluation will also include the drafting of a research project, drawn up using Annex D.

The Research project must be submitted together with the application under penalty of exclusion, and in a maximum number of one for each topic.

All qualifications must be presented according to the conditions described in article 3 of the Call for Applications ("Bando") and in Appendix 2 to avoid non evaluation.

The minimum score in in the evaluation of qualifications for admission to the interview is **18/30.**

Before the interview, the list of candidates admitted to the interview, indicating the marks obtained on qualifications evaluation ,will be posted online on the website www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica" ("Research doctorates - Competitions, notices and forms").

Candidates who do not achieve the minimum score on qualifications evaluation will not be admitted to the interview.

The interview will focus on the topics of the research project presented, on the subjects included in the PhD curricula and will aim at verifying the candidate's aptitude towards research, his/her availabilty to spend periods abroad to gain experience and his/her scientific interests. For this purpose, during the interview the candidate must be prepared to illustrate the research project he/she has presented together with the application for the evaluation of his/her qualifications. The interview, chosen by the candidate, can be held in English. For interviews held in Italian there will also be verification of the candidate's knowledge of a foreign language, specified in the application form by the candidate, to be chosen among the following languages: English, French, German, Spanish.

The interview will be carried out in videoconference unless the selection Committee accepts requests from the candidates to hold the interview in presence.
The passing score for the interview is **21/30**.

Eligibility is obtained with a total mark equal to or above 39/60.

Examination date:

On 8 of November **2021 an announcement** will be posted on the University webpage (**www.unipg.it/didattica under "Dottorati di ricerca" – "Bandi, avvisi e modulistica"**) and on the University online bulletin board, a notice which will communicate **the procedures, dates and hours of the convocation the link to the TEAMS platform, for the remote test which will take place between 9 and 12 November 2021 and any other information concerning the present selection. Such notice shall have the value of a formal convocation and personal communications in this regard will not be sent.** All candidates for this doctoral course are, therefore, strongly advised to check the **notice of the** 8 of November **2021.**