



UNIVERSITÀ
DEGLI STUDI DI BARI
ALDO MORO

Rector Decree N. 3354

THE RECTOR

- CONSIDERING the Statute of the University of Bari Aldo Moro;
- CONSIDERING the Law of 3 July 1998, No. 210, in particular Art. 4;
- CONSIDERING the Legislative Decree of 11 April 2006, No. 198 “Code of Equal Opportunities between men and women”;
- CONSIDERING the Law of 30 December 2010, No. 240 and in particular Art. 19;
- CONSIDERING the D.M. No. 45 of 8 February 2013 “Rules on accreditation of doctoral venues and programmes and criteria for the institution of doctoral programmes by accredited bodies”;
- CONSIDERING the Ethical Code of this University;
- CONSIDERING the Regulations of the University of Bari on PhDs, issued by D.R. No. 1154 of 19 April 2018;
- CONSIDERING the Didactic Regulations of the University of Bari Aldo Moro;
- CONSIDERING the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 (General Regulation on Data Protection);
- CONSIDERING the Italian Ministerial Decree No. 40 of 25 January 2018, which set at € 15.343,28 the annual amount of the doctoral scholarship, starting from 1 January 2018;
- CONSIDERING The National Strategy of Smart Specialization 2014-2020 (SNSI) approved by The European Commission on 12 April 2016;
- CONSIDERING the Tax Regulation on student fees for the academic year 2021-2022;
- CONSIDERING the new National Programme for the Research (PNR) 2021-2027 approved by the deliberation of inter-ministerial committee for the economic programming of 15 December 2020 No. 74/2020;
- CONSIDERING The National Operative Programme (PON) “Research and Innovation” 2014-2020 CCI2014IT16M2OP005, - with the regularity of the University and Research Ministry, approved by CE C (2015) 4972 Decision of 14 July 2015 and consecutive modification and integration;
- CONSIDERING The re-programmation of PON “Research and Innovation” 2014-2020 – “Education and Research for recovery” REACT -EU - approved by the European Commission, with C (2021) 5969 Decision of 6 August 2021, aimed at the realisation of the new

thematic goal of cohesion policies, or rather: Promote the overcome social and economic critical effects caused by COVID-19 and encourage a green, digital and resilient economic recovery, provided by EU Regulation 2020/2021 of 23 December 2020;

CONSIDERING The Ministerial Decree of 10 August 2021 No.1061 about the awarding of PON “Research and Innovation” 2014-2020, Action IV.4: “Ph.D and research contracts on Innovation”, and Action IV.5: “Ph.D on Green”, for XXXVII Ph.D. cycle, in which the University of Bari proved to be the recipient of doctoral scholarships fund for the macro-area “Innovation” and “Green”;

CONSIDERING the activation of doctoral programmes and research projects about the thematic of Innovation and Green development in order to promote a collaborative interconnection between research and production;

CONSIDERING the Deliberation of Academic Board (Senato Accademico and Consiglio di Amministrazione) taken in the sessions: 28-30 September 2021, and 29 September 2021;

CONSIDERING the need to proceed with the call and assignation of the above mentioned doctoral scholarships;

ALLOWING FOR any eventual changes and/or additions to this notice that will be published exclusively at: <https://www.uniba.it/ricerca/dottorati/dottorato-di-ricerca-37degciclo-a-a-2021-2022> and on the website of each doctoral programme, whose link is available on the single profiles.

D E C R E E S

PART I

CALL FOR ADMITTANCE TO ADDITIONAL Ph.D. SCHOLARSHIPS ON SPECIFIC TOPIC “INNOVATION” (Action IV.4) and “GREEN” (Action IV.5).

Art.1 – CALL AND SELECTIONS

As a result of the entry into force of Ministry Decree 10 August 2021, No. 1061, The University of Bari is proved to be recipient of FSE REACT-EU funding for active and qualified Ph.D. training for XXXVII cycle that will be reserve in favor of two specific measures:

- Additional Ph.D. scholarships on “Innovation”, (Action IV.4) in favor of doctoral students selected by specific calls. Measure’s goal is the funding of additional Ph.D. scholarships on topics such as: innovation, technology, digital innovation, in order to promote the valorization of human resources in the field of research and innovation.
- Additional Ph.D. scholarships on “Green” (Action IV.5) in favor of doctoral students selected by specific calls. Measure’s goal is the funding of additional Ph.D. scholarships on topics such as: ecosystem safeguard, biodiversity, reduction of climate change impacts, the promotion of sustainable development.

These Ph.D. Programmes will involve Companies in the definition of the training course, providing, for Ph.D. students, a period of study and research in a Company for a duration of minimum six (6) months and a maximum twelve (12) months.

Thus premised, the University of Bari has established, for academic year 2021/2022, a public call for admittance to **additional Ph.D. scholarships (XXXVII cycle), on specific tied topic (“Innovation” and “Green”) as described in 1-23 single profiles, attached below as integral part of this call.**

In particular, it has been established the following Ph.D. Programmes:

N	Doctoral Programme	Department	Number of scholarships for “Green”	Number of scholarships for “Innovation”
1	Biodiversity, Agriculture and the Environment	Scienze del Suolo, della Pianta e degli Alimenti <i>“Soil, Plant And Food Sciences”</i>	6	2
2	Biosciences and Biotechnology	Bioscienze, Biotecnologie e Biofarmaceutica <i>“Biosciences and Biotechnology and biopharmaceutical”</i>	3	3
3	Rights and Protection in Globalized Markets	Giurisprudenza <i>“Juris Department.”</i>	2	2
4	Mediterranean Rights, Economies and Cultures	Jonico in “Sistemi Giuridici ed Economici del Mediterraneo: società ambiente, culture” “Jonico in “ Legal and Economic systems of the Mediterranean: society, environment and culture””	3	1
5	Rights, Institutions and Safeguards in Transitional Societies	Giurisprudenza <i>“Juris Department.”</i>	2	2
6	Economics and Finance of Public Administrations	Economia e Finanza <i>“Economics and Finance Department”</i>	1	2
7	Economics and Management	Economia, management e Diritto d’Impresa “Economics, Management and Business Law dep.”	2	0
8	Physics (in agreement with	Interateneo di	1	4

	Istituto Nazionale di Fisica Nucleare – Frascati – Roma)	Fisica M. Merlin “Interuniversity of Physics “M. Merlin”		
9	Geosciences	Scienze della Terra e Geoambientali “Earth Sciences And Geoenvironmental Dep.”	4	1
10	Sustainable Land Management (in agreement with Politecnico di Bari)	Scienze Agro-Ambientali e Territoriali “Agri-Food And Territorial Sciences Dep.”	2	3
11	Computer Science and Mathematics	Informatica “ <u>Computer Science</u> ”	0	4
12	Humanities, Languages and Arts	Ricerca e Innovazione Umanistica <u>Research and Humanistic Innovation</u> (ex Lettere Lingue Arti. Italianistica e Culture comparate <u>Ex “Humanities, Languages and Arts and Comparative Culture dep.”</u>)	3	1
13	Metabolism, Aging and Social Medicine	Interdisciplinare di Medicina “ <u>Interdisciplinary Medicine Dep.</u> ”	0	2
14	Applied Neurosciences	Scienze Mediche di Base, neuroscienze e Organi di Senso “ <u>Basic Medical Sciences, Neuroscience And Sense Organs</u> ”	1	3
15	Mediterranean Archaeological, Historical, Architectural and Landscape Heritage: Integrated Systems of Knowledge, Planning, Preservation and Promotion (in agreement with Politecnico di Bari and CNR)	Ricerca e Innovazione Umanistica <u>Research and Humanistic Innovation</u> (ex Studi Umanistici) ex <u>Humanities</u> ”	0	4
16	Animal Health and Zoonosis	Medicina Veterinaria “ <u>Veterinary Medicine</u> ”	2	2

17	Public Health, Clinical Medicine, and Oncology	Scienze Biomediche ed Oncologia Umana <i>"Biomedical Sciences And Human Oncology Dept."</i>	2	1
18	Chemical and Molecular Science	Chimica <i>"Chemical"</i>	4	0
19	Pharmaceutical Science	Farmacia – Scienza del Farmaco <i>"Pharmacy"</i>	2	2
20	Soil and Food Sciences	Scienze del Suolo, della Pianta e degli Alimenti <i>"Soil, Plant And Food Sciences"</i>	3	2
21	Human Relations Sciences	Scienze della Formazione, psicologia, Comunicazione <i>"Education Sciences, Psychology And Communication Dep"</i>	1	3
22	Humanities	Ricerca e Innovazione Umanistica <i>Research and Humanistic Innovation</i> (ex Studi Umanistici) ex <i>Humanities"</i>	1	3
23	Transplantation of Tissues and Organs and Cellular Therapies	Emergenza dei trapianti di Organi <i>"Transplantation OF ORGANS' EMERGENCY"</i>	1	3

In case that the MUR would not pay the doctoral scholarships on specific tied topics, they will not be funded with the consequential decay of the positions assigned at admitted candidates.

The present call for application has value of an official notification. For information about examination procedures, candidates have to follow the guidelines described in each Ph.D. single profile, attached to this call.

The absence of the candidate on the date of the examination, for whatever reason, will be considered as withdrawal from the call.

Any changes, updates or additions to the content of this call will be made available exclusively at the website: <https://www.uniba.it/ricerca/dottorati/dottorato-di-ricerca-37degciclo-a-a-2021-2022> and on the website of each doctoral programme, whose link is available on each single profile.

Art. 2 - ADMISSION REQUIREMENTS

Candidates, holding one of the following qualifications, are eligible regardless of their citizenship and age:

- degree awarded under the system "vecchio ordinamento", "laurea specialistica" or "laurea magistrale"

(second cycle degree) and second-level academic qualification ("titoli accademici di secondo livello") awarded by Institutions belonging to the AFAM sector ("Alta Formazione Artistica e Musicale");

- equivalent academic degree conferred abroad.

A) Admission to the selection for the candidates with an academic degree conferred abroad

Those in possession of a degree from a foreign university, which it has not yet been declared equivalent to an Italian degree, will have to apply for their equivalence solely for the purposes of admission to the Ph.D. programme for which they intend to apply.

In such case, in order to allow for assessment of the qualification, application for participation must be accompanied, by the following documentation:

- **(For Italian and EU citizens)** Self-certification, according to D.P.R. 445/2000 and subsequent modifications, of the academic qualification obtained with details of examinations, the relative results and the legal duration of the programme.
- **(For Non-EU citizens)** A certificate attesting to the academic qualification obtained with details of examinations, the relative results and the legal duration of the programme together **with a translation into Italian. The translation must be signed under the applicant's own responsibility in order to allow the qualification to be recognized.**

The suitability of qualifications obtained abroad will be evaluated by the Judging Commission in accordance with the regulations in force in Italy and in the country where the qualification was obtained and relative treaties and international agreements on the recognition of qualifications for the continuation of studies.

In case of admission to the Ph.D. programme, applicants must submit, within 60 days from the date of registration, the following documentation:

- Curricular qualifications translated into Italian and legalized by the relevant Italian diplomatic or consular representations abroad;
- "Certificate of equivalence of qualification" of the foreign qualification issued by the relevant diplomatic or consular representations abroad.

In case of doubts about the qualification validity, the University also reserve the right to request the "Certificate of equivalence of qualification" to those who have obtained a qualification in a European Union country.

B) Admission to the selection for candidates who have not received the degree yet.

Candidates who are going to obtain the qualification necessary for entry to the Ph.D. programme may also apply if they are to obtain their qualification by and no later than 31 October 2021. Failure to gain the relevant qualifications by this date will result in exclusion from the call.

These candidates will be conditionally admitted and will be required to deliver or send by and **no later than 2 November 2021**, self-certification (or certification in the case of qualifications obtained abroad) with date and signature, accompanied by a copy of a current valid photo ID document to the following address: *U.O. Dottorato di Ricerca, II piano, Palazzo Ateneo, Piazza Umberto I, n. 1 – Bari, Italy* indicating:

- the name of the university issuing the qualification;
- date of completion of the qualification;
- type of qualification (specialist/master/old cycle degree, second level academic degree issued by institutions belonging to AFAM);
- final result.

Candidates who, for whatever reason, do not communicate the obtainment of the relevant qualification by the deadlines indicated, or who send incomplete, incorrect applications, by different means or to different addresses other than those indicated above will **be excluded from the call**.

Art. 3 - APPLICATION AND ENTRY TO THE CALL

The application for participation in the selection must be submitted using only the appropriate procedure made available at: <https://pica.cineca.it/uniba/dottorati37-bis/domande/> **no later than 25 October, 2021 at 12.00 pm (Italian time) under penalty of exclusion from the selection.**

For the elaboration of their proposal, candidates have to take into account the specific criteria according to the D.M. 1061 of 10.08.2021, Art.3.

Access to the procedure takes place on the PICA portal (Integrated University Competition Platform) which can be accessed upon registration or with SPID credentials, as indicated in the Guidelines.

Applications received in a different way will be considered invalid.

The registration fee for the competition is € 50.00; for foreign applicants residing abroad, no payments due. The entry fee is non-refundable for any reason.

The candidate must pay the fee by clicking on the "Paga con Pago PA" button and choosing as the payment method:

- Credit/debit card: for card payment
- Current account: for direct debiting your account
- Other payment methods: such as PayPal or Satispay

Candidates wishing to participate in more than one call must submit multiple applications each showing the relevant qualifications and necessary attachments along with payment for each individual application made.

Candidates may apply only for one doctoral scholarship about a specific topic ("Green", "Innovation"), under penalty of exclusion.

All candidates are admitted to the competition.

The procedure for completing and submitting applications online can be carried out on any computer connected to the network.

Please note that any technical issues regarding the completion of call applications should be notified by sending a message to uniba@cineca.it.

Applicants are invited to complete the application for participation in the call with sufficient time prior to the deadline of this call.

It is the responsibility of candidates to verify the correct conclusion of the procedure. Complaints will not be considered in the case of the malfunctioning of the IT system due to application overloads near the deadline. The payment of the €50,00 call fee does not constitute right to admission to the call in the absence of a formal application, even if made by the deadline of the call notice.

To the application form must be attached, in pdf format, the documents required by the profile of the chosen course as well as:

1. substitute self-certification Statement relating to degree certificates:
 - **for graduate candidates:** self-certification statement (Art. 46 TU - DPR No. 445 of 28 December 2000) signed and dated, specifying the qualification type (old degree cycle/specialist/Master degree etc.), the date of award, the final result and the indication of the university issuing the qualification;

- **for candidates who are to obtain their qualification by 31 October 2021:** self-certification statement (Art. 46 TU - DPR No. 445 of 28 December 2000), signed and dated indicating the university at which they are enrolled, the qualification type (old degree cycle/specialist/Master degree etc.), the name of the degree program, the list of the examinations taken along with their relative results and the expected graduation date. The same self-certification must also specify the weighted average of the marks of all exams taken up to the expiry date of this call (the weighted average is obtained by multiplying each result by the corresponding examination credits, adding the results obtained and dividing that sum by the total credits earned through exams with results);
- 2. signed and dated curriculum vitae;
- 3. numbered, signed and dated list of qualifications deemed useful for the call attached to the application;
- 4. numbered, signed and dated list of publications deemed useful for the call attached to the application;
- 5. qualifications the candidate considers relevant to the call;
- 6. single copy of scientific publications, numbered progressively; publications listed but not uploaded will not be considered;
- 7. photocopy of a valid ID document of the applicant;
- 8. **a research project concerning a tied topic chosen by the candidate.** The subject of the research project must be one of the topic indicated in the art.2 letter a) and b) of the DM (Action IV.4 – Ph.D concerning the topic of innovation, and Action IV.5 Ph.D concerning the topic of Green for the safeguard of ecosystem, biodiversity, reduction climate change impact, promotion of sustainable development). The research project must have maximum 3500 words (**except different indications included in the PhD single profile**) and it must include:
 - Scientifics bases and related bibliography
 - Goal, methods and expectations of the research
 - If needed: experimental methods and data analysis.

From the moment of the application, candidates are aware that, in case of admission to the doctoral scholarship, they have to carry out a period of study and research in a company, for a period of minimum six (6) months and a maximum of twelve (12) months, **under penalty of doctoral scholarship revocation.**

The application is to be considered in all respects by law as a self-certification, pursuant to Art. 46 and 47 of DPR 445/2000 and consecutive integration and modification, the data contained there in and in the documents annexed there to.

Once completed, the application must be printed, signed and reloaded in the procedure following the indications described in the online procedure. The lack of signature and/or ID is a reason for exclusion from the selection.

In the case of authentication with the use of SPID (Public Digital Identity System) credentials, it will not be necessary to sign the application.

The application is submitted to the University automatically with the definitive closure of the online procedure. Therefore, no delivery or shipment of paper material to the Offices should be made.

At the end, the application will be registered and the submission confirmed by e-mail by the system.

The University may, at any time, on the basis of a reasoned decision by the Rector, exclude an application due to failure to meet the prescribed requirements.

Candidates with sensory and motor impairments (as recognized in accordance with Law 104/1992 and successive modifications), candidates with a disability percentage of 66% or more (in accordance with Law 68/1999) and candidates with recognized learning disabilities (“DSA”) in accordance with Law 170/2010 may, depending on their situation, apply for the support auxiliaries necessary for the carrying out of the call

examination and/or additional time. Interested candidates must submit to this University, **by the deadline of 25 October 2021 at 12.00 pm (CET Italian time)** the request completed on the application accompanied by appropriate medical certification issued by the competent health authorities. The necessary aids cannot be guaranteed if the application is received after the deadline of this call. It should be noted that for candidates qualifying as having “DSA” learning disabilities and candidates with sensory and motor impairments in accordance with ex-Law 104/1992, the certification attached must have been issued within the last three years by organisations accredited by the national health service. Additional time will be granted upon request as governed by current legislation.

The administration assumes no responsibility for misdirected communications due to the improper indication of addresses by the applicant, missing or late notification of a change of address indicated in the application, or for any postal or delivery issues attributable to third parties, due to either accident or force majeure.

Art.4 – JUDGING COMMISSION

The Judging Commissions for the Ph.D. programme call will be nominated through a Decree by the Rector in compliance with rules governing research Ph.D. programs at the University of Bari Aldo Moro.

The composition of individual Commissions will be published on the site following the deadline for the call at: <https://www.uniba.it/ricerca/dottorati/dottorato-di-ricerca-37degciclo-a-a-2021-2022>.

Art.5 – THE CALL SELECTION PROCEDURE BASED ON QUALIFICATIONS AND EXAMS: CRITERIA FOR THE ASSESSMENT OF QUALIFICATIONS

With regard to the call based on qualifications and exams, a total score of 20 points will be awarded for qualifications.

The categories of qualifications will be evaluated in terms of their relevance to the Ph.D. programmes and for which you apply, the maximum score attributable to each is as follows:

- ◆ Graduation assessment up to a maximum of **10 points** determined as follows:

Up to 100	0 points
101-104	4 points
105-107	6 points
108-110	8 points
110 with honours	10 points

For candidates who are to obtain their qualification by 31 October 2021, assessment will be calculated based on the weighted average of the results of all exams up to the expiry date of this call. If the candidate holds more than one degree, relevant to the course for which he wishes to compete, he must indicate the title to be taken into account for the evaluation by the Judging Commission.

- ◆ Up to a maximum of **4 points** may be awarded for scientific qualifications relevant to the subjects covered by the Ph.D. programme for which application is made:
 - Scientific publications (monographs, articles in scientific journals)
 - Minor Publications (national and international dissemination conferences, specific volume contributions, etc.)
- ◆ Up to a maximum of **4 points** may be awarded for academic and study qualifications relevant to the

subjects covered by the Ph.D. programme for which application is made:

- 1st or 2nd Level University Master, post-graduate specialization qualifications, specialised diploma qualifications;
- ◆ Up to a maximum of **2 points** may be awarded for:
 - Documented research activities at qualified Italian and foreign institutions relevant to the subjects covered by the PhD programme for which application is made.

The assessment of qualifications, after identification of the criteria, will be carried out before the evaluation of the project.

Documents and certificates must be produced on unstamped paper according to Article 1 of Law No. 370 of 23 August 1988; if produced in a foreign language they must be accompanied by a certified Italian translation in accordance with the foreign text, produced by the competent diplomatic or consular representation or by an official translator.

Reference to documents and publications already submitted to this University is not permitted for any reason. Documents, qualifications or publications will not be considered in the call if they will not be uploaded in the platform.

ART. 6 – THE CALL SELECTION PROCEDURE BASED ON QUALIFICATIONS AND EXAMS: EXAMPROCEDURES

With regards to the call based on qualifications and exams, the admission test consists of a proper examination in order to ensure a comparative evaluation and to ascertain the aptitude of the candidates for scientific research.

In the evaluation process, especially for the evaluation of the research project submitted by candidates, the Commissions will consider the following criteria, in reference to Art.3 of DM 1061 of 10.08.2021:

A) ADDITIONAL DOCTORAL SCHOLARSHIPS ON THE TOPIC OF “INNOVATION” (Action IV.4)	B) ADDITIONAL DOCTORAL SCHOLARSHIPS ON THE TOPIC OF “GREEN” (Action IV.5)
<p>a.a) relevance of the doctoral project in relation to the ability to create high added value in matter of scientific, social economic repercussions at national level that can encourage both favorable research models and professional profiles as requested by the entrepreneurial system, by means of: promotion of research in the field of innovation, digital technologies, enabling technology, the enhancement of human resources as a decisive factor for the development of research and innovation in Italy.</p>	<p>b.a) relevance of the doctoral project in relation to the ability to create high added value by means of the enhancement of human resources in matter of scientific, social economic repercussions at national level that can encourage: favorable research models, knowledge contamination and skills, in order to foster the development of innovative products and services with a reduced impact on the environment and with a focus on the safeguard of ecosystem, biodiversity, reduction of the impact on climate change, promotion of sustainable development, as a contribution to promote a green recovery, and overcome the COVID 19 pandemic crisis.</p>
<p>a.b) research project in compliance with SNSI and PNR; coherence of the project with Law 240/2010 and DM 45/2013 in matter of Ph.D.</p>	<p>b.b) research project in compliance with SNSI and PNR; coherence of the project with Law 240/2010 and DM 45/2013 in matter of Ph.D. by means of</p>

Programme in order to promote innovation as well as the interchange between production and project qualification in the field of innovation (Law. 240/2010, art.24, co. 3 and consecutive modification and integration).	the funding of doctoral programme in the field of “Green”.
a.c) measurability of expected outcomes; potential impact of the project with respect to REACT-EU goals: presence of measurable target in coherence with markers provided by the PON actions.	b.c) measurability of expected results; potential impact of the project with respect to REACT-EU goals: presence of measurable target in coherence with markers provided by the PON actions.

Without prejudice to the assessment of qualifications under art. 5, **the exam procedure will involve in the evaluation of the research project, in accordance with art. 3, attached in the application under penalty of exclusion and also in an oral examination.**

The scores related to the various tests are given as follows:

Qualification Score : 20
Research Project Score: 40
Oral exam: 40

The subjects covered within the examinations are related to the **tied topic chosen by the candidate (Innovation or Green) as well as the discussion of the research project.**

In order to be admitted to the examination, candidates must have one of the following validation documents: National ID card, passport, driving license, boat license, weapons license, identification document, provided they include photographs and stamps or other equivalent marks issued by a state administration.

For foreign applicants, written and oral tests may, upon prior request, be carried out in English or in any of the other foreign languages specified in the Ph.D. programme.

An examination of the knowledge of at least one foreign languages indicated by the applicant is included in the oral examination from among those listed in the Ph.D. programme profile.

Evaluation of the research project and oral examination

Each Commission, for the evaluation of each candidate, in addition to the qualifications score, may award up to forty points for the project evaluation and up to forty points for the oral examination.

The Judging Commission will formulate the list of candidates admitted to the oral test. Before the oral examination, candidates will be informed of the scores obtained in the evaluation of qualifications and in the evaluation of the project.

Candidates obtaining a score of no less than 27/40 in the project evaluation will be admitted to the oral examination. The oral examination will be considered passed in cases in which the candidate has scored no less than 27/40.

At the end of each oral examination session, the Judging Commission will formulate the list of candidates examined with an indication of results awarded.

This list, signed by the President and the Secretary of the Commission, will be posted on the same day on the notice board of the exam venue or published on the PhD web page specified in the profile.

ONLINE EXAMINATION

The examination, due to the ongoing COVID-19 epidemiological emergency, may be taken online. In such

cases, the email address specified by the candidate will be used by the Judging Commission to invite the candidate to join a “team” created via MICROSOFT TEAMS platform or other digital platform and thus allow him/her to take the exams. The operational indications will be provided close to the test and at least three days before, by public notice on the PhD programme web page specified in the profile of the doctoral course the candidate is interested in. Candidates are required to verify admission to the test on the date set for the communication of the results of the research project and, in the event that the examination is online, they must connect on the day and at the time specified in order to take it by videoconferencing via MICROSOFT TEAMS platform or similar, they must install the specified platform software on their own device and equip themselves with a webcam to allow for their identification before the test.

For those Courses that do not provide for a written examination, foreign candidates who are resident or domiciled abroad and all candidates who prove, giving an adequate reason, the impossibility of being in person at the place and time scheduled for the oral examination may require to take such examination online. In such cases, the candidate must submit a written request to be sent to the PEC address of the Department which is the administrative headquarters of the Course, specified in the single PhD programme profile as well as to the email address dottorato@uniba.it, by and no later than the third day before the examination date.

Art. 7 – RANKING MERIT LIST FOR THE ADMISSION TO THE Ph.D. PROGRAMME

Having carried out the call examinations, the Commission will compile a general merit ranking based on the sum of the results awarded to each candidate in each examination.

At the end of the call procedure, the Rector, having ascertained procedure regularity, will approve the call acts and the relevant merit ranking and declare the successful candidates.

The merit ranking will be produced according to the order of the overall points for each candidate in the examinations and in the evaluation of qualifications.

The Ranking merit list of successful candidates related to tied topic (Innovation, Green) will be merged in a unique and general ranking, with the indication of curricula. It will be declare as successful candidate who have reach the highest score for each Ph.D. scholarship on tied topic.

In the case of parity in the merit ranking lists for positions with scholarship, the evaluation of the economic condition prevails, determined in accordance with the D.P.C.M. 9.4.2001 and D.P.C.M. 5.12.2013 n. 159. In this case the candidate must declare his/her economic and patrimonial status (ISEE PhD). This declaration must be received within 20 days from the date of the publication of the ranking list. After the a forementioned 20 days, the candidate will be placed in the least favourable position in the merit ranking list. The candidate can present the ISEE declaration on his/her restricted family in accordance with D.P.C.M. n. 159/2013 art 8 co. 4.

The declarations of approval of the acts and the relative merit rankings will be made public, through their communication on the notice board of the U.O. Ph.D., Ateneo Building of the University of Bari Aldo Moro, II floor, and through publication on the website following the selection procedure, at: <https://www.uniba.it/ricerca/dottorati/dottorato-di-ricerca-37degciclo-a-a-2021-2022>.

The above methods of publication act as formal notification to successful candidates. No communication will be sent to individual addresses.

Art. 8 – ADMISSION TO THE PhD PROGRAMME

Candidates will be declared successful as established by the art.7 of this call.

In the case of withdrawal by successful call candidates, the call administration will proceed to nominate the next most successful candidate according to the order of the merit ranking. In such cases the nominated candidate must register within three working days otherwise the nomination will be void.

In the case of a candidate being declared successful in more than one merit ranking, the candidate must select only one Ph.D. programme.

All candidates are admitted to the call subject to the verification of self-certified declarations under D.P.R. 445/2000 and subsequent modifications.

Art. 9 - SCHOLARSHIPS

The scholarships available in accordance with the profiles attached to this call, will be awarded with the Rector Decree in order of the merit ranking lists of each PhD course.

The annual scholarship is of € 15.343,28 subject to INPS social security contributions.

The duration of the scholarship is equal to the entire duration of the programme.

The scholarship will be paid in deferred monthly instalments and the maximum total annual gross income limit necessary in order to qualify for a scholarship is set at € 16.000,00 (sixteentousand/00).

The determination of this income limit includes income from property and assets as well as income of any other nature.

Exceeding the income limit will lead to the loss of the right to the scholarship for the year in which the excess occurs and obliges the repayment of any monthly payments already received.

The scholarship cannot be combined with other scholarships or grants, except for those intended to supplement research during stays abroad.

The scholarship cannot be awarded in the case of a suspension of more than thirty days, or exclusion from the programme.

During the programme, the doctoral candidate may, for research needs, be authorized by the Coordinator for periods of up to six months, or by the Academic Board, for periods of more than six months, to complete a period of study in Italy and/or abroad or to carry out an internship with either public or private bodies. This period may not, however, exceed half of the duration of the programme.

The amount of the scholarship is increased by 50% in the case of periods spent abroad.

Those who have already received a scholarship for a Ph.D. programme (including for a single year or part of year) may not apply for a second scholarship.

Those entitled to a scholarship must, at the time of application, submit a declaration of expected gross personal income as well as declaring the absence of any eventual incompatibilities as outlined in the present article. Scholarship beneficiaries will be required to set up an INPS contribution profile, enrolling in the "Gestione separata" scheme of that Institute.

Scholarships shall be subject to tax relief provisions in accordance with Art. 4 of Law 13.08.1984 No. 476.

In any case, the special provisions indicated in The National Operative Programme (PON) "Research and Innovation" 2014-2020, Action IV.4 "Ph.D. and research contracts on Innovation" and Action IV.5 "Ph.D. on Green", remain valid.

Remain valid that: in case of a non-eligible doctoral scholarship, for reasons verified by the competent ministry office, the corresponding candidate assigned at that scholarship will be declared decayed.

Art. 10 – Ph.D. COURSES AND MEDICAL SPECIALIZATION SCHOOLS

Joint programme attendance between the Ph.D. programme and medical specialization programmes is permitted in compliance with the general criteria of Art. 7 of D.M. No.45 of 8 February 2013.

Students enrolled at university medical specialization schools with headquarters at the University of Bari, having successfully completed the admission procedure, will be eligible to enroll in the Ph.D. programme if:

- they are enrolled in the final year of the specialization school;
- they have been authorized to attend the joint degree by the Council of the Specialization School and such attendance has been approved by the Academic Board.

Successful call applicants for admission to the Ph.D. programme will, at the time of enrolment to the Ph.D. programme, have to:

- submit a statement signed by the Director of the Specialization School attesting that joint attendance has been declared compatible and authorized by the Council of the Specialization School;
- engage in research and training activities as specifically defined by the Academic Board of the programme.

Within one month prior the end of the joint degree, the applicant will have to request the recognition of the period of joint attendance to the Academic Board. The Academic Board, evaluating the research and training activities during the joint attendance period and attested by the Council of the Specialization School, may thus recognize the validity of this period for the purpose of obtaining the Doctorate of Research qualification. During joint attendance periods, students enrolled in specialization schools will not be eligible for doctoral scholarships or other forms of funding.

Art. 11– ENROLMENT

Successful call applicants have to enroll by the dates to be announced at the time of the publication of the merit rankings.

Notification will not be sent to successful call applicants regarding the deadline of enrolment.

The application for enrolment and relative attachments must be downloaded on the operative system ESSE3, with the following documentation:

1. signed photocopy of a valid ID document;
2. proof of payment of the registration fee for non-scholarship holding public employees admitted to the Ph.D. programme;
3. receipt of payment of the regional tax for the right to University Study (Guidelines on <http://w3.adisupuglia.it/pagamenti-pa/>);
4. photocopy of fiscal code card;
5. a passport-sized photographs signed on the rear;
6. a payment of € 16,00 for duty fee (payment by means of PagoPa on operative system ESSE3),
7. a payment of € 5.00 for the student card (payment by means of PagoPa on operative system ESSE3).

In phase of enrolment, the successful call applicants have to declare and undersigne, under penalty of exclusion, the following specific statements:

- A Formally commitment to carry out the scheduled period of research by a company, or abroad (where applicable), as indicated in the research project, aware that the failure to carry out it will cause the revocation of doctoral scholarship;
- Awareness of the fact that: a modification of the research project goals and expected outcomes will cause the revocation of the scholarship and the refund of the amounts already paid (save in case of prior MUR authorization of project modification);
- Awareness of the fact that: a negative evaluation of Professors' Commission, and the consequential non-admission to the next year of doctoral programme, will cause the revocation of the sum already paid for the attending year, as well as the failure to obtain the doctoral qualification will cause the revocation of the sum already paid for the last year of doctoral programme;
- Declaration that: the admitted candidate doesn't benefit of any other grant/scholarship since the doctoral programme beginning (1 January 2022); and a formally commitment to not receive any other kind of grants/scholarship during the whole duration of doctoral programme, (excepted those allowed by the national legislation in force);

A formally commitment to carry out the following activities:

- a bimestrial reporting of doctoral activities using the online platform <http://dottorati.miur.it>;
- an annual reporting of doctoral activities following the Forms provided by MUR.

Non-EU citizens must submit a valid permit of stay or a copy of the required application to the competent authorities as well as an Italian fiscal code document.

Foreign nationals not resident in Italy must submit the following certificates within 30 days of enrolment:

- a) birth certificate;
- b) certificate of citizenship;
- c) certificate of civil and political rights status in the state of origin or provenance;
- d) a certificate equivalent to the general certificate of judicial records issued by the competent authority of the state of which the foreign candidate is a citizen.

Certificates issued by the competent authorities of the state of which the foreign applicant is a citizen must comply with the provisions in force in that state and signatures must be legalized by the competent Italian consular authorities. Foreign language translations must be accompanied by a certified Italian translation of the foreign text produced by the competent diplomatic and consular representation or by an official translator. Documentation relating to the above-mentioned requirements will also be made available online at the website: <https://www.uniba.it/ricerca/dottorati/dottorato-di-ricerca-37degciclo-a-a-2021-2022>.

Art. 12 – TAXES AND FEES

Ph.D. students with disabilities with a recognized disability of 66% or more, even if already in possession of an academic degree, are exempted from taxes and fees.

All doctoral students are required to pay the regional tax for the right to university study except doctoral students with a disability of at least 66%.

All doctoral students are required to pay the Regional Tax, determined on the basis of the income of their family unit (ISEE Module), according to the amounts indicated in the table below:

ISEE REGIONAL TAX	
from € 0 to € 23.000,00	= € 120,00
from € 23.000,01 to € 46.000,00	= € 140,00
over € 46.000,01	= € 160,00

Students who do not present the ISEE declaration are placed in the maximum band of the regional tax.

Doctoral students already in possession of the title of Research Doctor are required to pay maximum fees.

Doctoral students who do not renew enrolment for the years following the first year of the programme will be excluded from the Ph.D. programme.

In all cases, the sum of € 67,60 is payable per diploma, in addition to the duty stamp in force in a given period. Late payments will incur a penalty of € 20,00 for payments made within 30 days of the payment deadline, € 40,00 for payments made within 60 days of the payment deadline and € 80,00 for payments made more than 60 days after the payment deadline.

PART II

SUPPLEMENTARY INFORMATION

Art. 13 - TRANSLATION AND LEGALIZATION OF DOCUMENTS

Acts and documents in a foreign language must be translated and certified by the relevant Italian diplomatic or consular representations in the foreign state in question and must comply with the provisions in force in that State.

Art. 14– INSURANCE COVER

The University guarantees insurance cover for civil liability and accident for the entire duration of the programme for activities strictly related to the Ph.D. programme itself and will arrange the stipulation of the relevant policy.

Art. 15 – RIGHTS AND OBLIGATIONS OF DOCTORAL STUDENTS

Remaining valid the obligations and rights provided in force regulation in matter of Ph.D. and by DM 45/2013, the approval of the scholarships, object of this call, implies, a mandatory period of education and training in a company for a duration of minimum six (6) months and a maximum of twelve (12) months, as regulated by the D.M. No. 1061 of August 8, 2021. For some positions is provided a period of education and training abroad for a duration of minimum six (6) months and a maximum of twelve (12) months (optional).

Since the application of this call, candidates are aware that, in case of admission, they will carry out the above mentioned mandatory period of education and training in a company, under penalty of scholarship revocation.

The activities linked to the doctoral research project will end within 36 months from the start of doctoral scholarship. In compliance with the spending commitments and reporting obligations, established by community regulations in matter of European Social Fund, the beginning of Ph.D. programmes is scheduled on January 1, 2022.

The doctoral scholarship may be revoked in some cases established by: Ateneo's Regulation; the Disciplinary Regulation in the attachment of D.M. No.1061; the following cases:

- Realization of the PhD programme in a manner different from the project admitted for funding, except in case of MUR acceptance of modification requested;
- Failure to carry out the minimum period of education and training in a company, or abroad (where applicable), within the end of doctoral programme (three years);
- Negative evaluation by the professors' commission (Collegio dei Docenti) and the subsequent non-admission to the next year of Ph.D. programme;
- Renounce to Ph.D.

Art. 16 – CONFIDENTIALITY AND INTELLECTUAL PROPERTY

In the case in which a doctoral student has, during the Ph.D. programme, developed research products which may qualify for the granting of industrial rights or intellectual property, or for which it may be possible to obtain the designation of industrial property, such as inventions (whether patentable or not), know-how, utility models, designs and drawings, software, data or data collections, these will be regulated in accordance with current university inventor regulations and University of Bari regulations, without prejudice to particular agreements concluded on the basis of particular types of relationships.

The doctoral candidate must undertake a specific commitment to confidentiality and the recognition of industrial and/or intellectual property rights in relation to confidential information, data, and documents that the doctoral student should become familiar with in the course of his or her activities, including those carried out by a company, an Institution or an University.

The doctoral student is, in any case, given the opportunity to perform standard publishing activities as foreseen by the programme, which will take place in compliance with the commitment to confidentiality assumed with the University for their work including that carried out within a company, as well as any specific agreements concluded on the basis of particular types of relationships.

Art. 17 – AWARDING OF TITLE

The title of Doctor of Research (Dott. Ric) or Ph.D. is awarded following positive evaluation of a research thesis that contributes to the advancement of knowledge or methodologies in the chosen field of enquiry. The

doctoral thesis, accompanied by a summary in Italian and in English, may be written in either Italian or English or, with prior permission from the Academic Board in another language.

The examining Commissions for the final exam will be formed and nominated, for each Ph.D. programme, according to the doctoral regulations. The examination may not be resit.

Art. 18– BACKGROUND CHECKS

The University carries out the necessary background checks on the authenticity of the substitute statements made by the candidate. In case the audit establishes falsehoods in the content of such statements, the candidate is excluded from applying to the call or, if already enrolled as a successful call candidate, withdrawn from the programme subject to the criminal penalties provided for in Art. 76 of Law no. 445/2000.

Art. 19 - TREATMENT OF PERSONAL DATA AND RIGHT OF ACCESS

The personal data contained in the application form (and in the curriculum) will be processed for the purposes of the management of this procedure and in application of the current regulations concerning the processing of personal data. The data will be processed - by the parties authorized to process it - with manual, computer tools and telematic tools within and for the purposes specified above, in compliance with the security measures adopted by the University and in compliance with the provisions of EU Regulation no. 2016/679 on the protection of individuals with regard to the processing of personal data and the free movement of such data, as well as legislative decrees to adapt the national legislation to the provisions of the afore mentioned Regulation. The Data Controller is the University of Bari Aldo Moro, with registered office in Piazza Umberto I, n. 1, 70121 - BARI. The designated Data Protection Officer can be contacted at the e-mail address rpd@uniba.it.

The full text of the information is available at: <https://www.uniba.it/ateneo/privacy/aggiornamento-informativa-regolamentoUE-2016-679/informativa-selezioni>.

The documents of the selection are public.

The candidates may exercise the right of access the documents of the selection according to the legislation in force.

Art.20 – RESPONSIBLE PARTIES FOR CALL PROCEDURE

Pursuant to Law No. 241/1990 subsequent modifications and integrations, the Head of Call Proceedings is Dr. Maria Luisa Loiudice - Head of U.O. – Doctoral Research (PhD Office).

Any clarifications may be requested at the following e-mail address: dottorato@uniba.it.

Art. 21 – LAWS OF REFERENCE

For any specific issues not provided for in the present notice, reference should be made to the current legislation in force and, in particular, to University of Bari Regulations on doctoral research published at www.uniba.it.

Foreign students may obtain more information at <http://www.studiare-in-italia.it/studentistranieri/>.

This call notice translated into English is to be considered informative in nature. In the event of any dispute, the original Italian version of this call notice will prevail.

This call notice will be published on the University website www.uniba.it, as well as on Euroaxess website and on the website of Ministry.

This decree will be ratified by the Governing Bodies in their next assemblies.

Bari, October 12th, 2021

THE RECTOR
Signed Prof. Stefano BRONZINI

ANNEX 1)

PROFILE

PhD PROGRAMME IN BIODIVERSITY, AGRICULTURE, AND ENVIRONMENT

CUN Scientific Areas: 07 - Agricultural and Veterinary Sciences; 05 - Biological Sciences.

Scientific Subject Codes: AGR/01, AGR/02, AGR/03, AGR/04, AGR/05, AGR/07, AGR/11, AGR/12, AGR/17 e AGR/19; BIO/03, BIO/04, BIO/05, BIO/06, BIO/07, BIO/19

Coordinator: Prof. Enrico de Lillo

Administrative office: Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti

PEC: disspa@pec.uniba.it

Duration: 3 years

Curricula:

- 1) Genetics and Plant Biotechnology (Scientific Subject Code: AGR/07)
- 2) Environmental Sciences (Scientific Subject Codes: BIO/03, BIO/04, BIO/05, BIO/06, BIO/07, BIO/19)
- 3) Mediterranean sustainable agriculture (Scientific Subject Codes: AGR/01, AGR/02, AGR/03, AGR/04, AGR/05, AGR/17, AGR/19)
- 4) Crop Protection (Scientific Subject Codes: AGR/11, AGR/12)

- Curriculum 1: n. 2 positions
- Curriculum 2: n. 1 position
- Curriculum 3: n. 3 positions
- Curriculum 4: n. 2 positions

Total number of positions with fellowships n. 8:

n. 6 theme GREEN

- n. 1 PhD fellowship for the research activity “**Development of green technologies for reducing the impact of the phytosanitary management of the wine grape on the agroecosystem and the risk of mycotoxin contamination**”

Development of green and innovative technologies to reduce the impact on the agro-ecosystem of wine grape management and the risk of contamination by ochratoxin A (OTA), through the use of new biomolecules searched in natural biological matrices and the evaluation on the use of nano-/microcarrier for moving plant protection products useful for fungal disease management; the evaluation of the impact on the grapevine ecosystem of natural substances and microbial antagonists by using innovative analytical approaches; the validation of forecasting models for the development of DSS on wine grapes, as well as the understanding of the genetic determinants involved in the biosynthesis of OTA and the related phenotype also to develop rapid techniques for the detection of mycotoxigenic fungi.

- n. 1 PhD fellowship for the research activity “**Marine zoo-remediation by means of commercially exploitable filter-feeder invertebrates**”

Zoo-remediation is a sustainable aquatic bioremediation system which involves the use of invertebrate filter-feeders in the marine environment which have been proved as effective bioremediators of microbial and/or chemical pollutants. The use of bioremediators potentially exploitable in different sectors (e.g. animal feed, pharmaceuticals, antifouling, biofuels) represents a suitable by-product as part of a circular economy. The aim of this project is to test new species of porifera (sponges) of commercial interest as bioremediators for mitigation of marine pollution due to mariculture plants through bacterial and chemical bioremediation tests at laboratory scale and in situ, in situ experimental cultivation of marine sponges; biological assays (e.g. antibacterial activity) of sponges' extracts.

- n. 1 PhD fellowship for the research activity “**Sustainable pest control in Mediterranean agroecosystems**”

Agricultural expansion and intensification has contributed to the decline of farmland biodiversity with negative repercussions for the provision of important ecosystem services such as the biological control of pests. The identification of management strategies able to protect biodiversity and support biological pest control is hence urgently needed. This project aims at quantifying the effects of agricultural intensification at the local and landscape scale (e.g., conventional vs organic management, abundance of seminatural habitats in the landscape) on the control of plant feeders and (invasive) weeds in the agricultural landscapes of Apulia region. The monitoring will be carried out for (preferably two) locally important crops, such as grapevine and olive.

- n. 1 PhD fellowship for the research activity “**Sustainable protein crops supply chain for an ecological transition pathway**”

The project aims to enhance protein crops and pseudocereals to recovering agrobiodiversity and enhancement of vegetable proteins through the following lines of action.

Adaptability - The Apulian germplasm and the commercial cultivars will represent the basis for evaluating the adaptability of pulses, quinoa and amaranth to regional soil and climatic conditions.

Sustainable cropping systems - Innovative agronomic practices will be evaluated in terms of profitability, productivity, competitiveness, sustainability and environmental impact (quality of soils, CO₂ sequestration, etc.).

Protein isolates and concentrates - Innovative processes for the preparation of protein isolates and concentrates will be evaluated for technological, nutritional and organoleptic qualities.

- n. 1 PhD fellowship for the research activity “**Characterization of grain legume biodiversity for stress adaptation and innovative industrial applications with low environmental impact**”

The project is aimed at characterizing two germplasm collections of pea and lentil, together encompassing more than 400 accessions of different geographic origin. Emphasis should be given to the characterization for adaptation to water deficit and resistance to *Orobanche crenata* Forsk. The protein content and cotyledon color will be evaluated in order to have qualitative traits and considering the needs of the industrial partner involved.

Phenotypic data will have to be merged with data on SNP polymorphism, which are available for the above-mentioned collections following the application of genotyping by sequencing (GBS), aiming to identify chromosomal regions governing phenotypic traits under study.

- n. 1 PhD fellowship for the research activity “**Biodiversity of Apulian Fruit Vegetable Species (BiodiverSO Karpos).**”

The 'BiodiverSO-KARPOS' project plans to carry out actions in continuity and as a complement to what has already been achieved in the previous 'BiodiverSO' project (Rural Development Program 2007-13 and 2014-20) to help significantly reduce the erosion rate of biodiversity of vegetable from Apulian fruit, through recovery, characterization, conservation and registration of genetic resources, in line with and in support of the provisions of Regional Law no. 39/2013 (and related Intervention Program 2020-2022) and by the Law of 1 December 2015, n. 194 "Provisions for the protection and enhancement of biodiversity of agricultural and food interest".

n. 2 theme of research INNOVATION

- n. 1 PhD fellowship for the research activity “**Agri-voltaic: from the sun to both agricultural and energy production**”

The agri-voltaic is characterized by a balance between agricultural production and energy production, both of which are fundamental in terms of climate change. The present study is aimed at verifying the effects of a photovoltaic system in covering vineyards/orchards. In detail, the effect that a partial shading of the photovoltaic panels produces on the vegetative-productive aspects of the plant (biological and physiological aspects) will be quantified, highlighting both the secondary effects connected to them concerning the change in microclimatic patterns (light radiation, temperature of soil and air, soil water potential) in the soil-plant interaction and the qualitative-quantitative results of production.

- n. 1 PhD fellowship for the research activity “**A new wheat for an healthy nutrition**”

In recent years, the consumer is increasingly attentive to food safety and nutritional composition. Hence the need to introduce innovations in the traditional cereal supply chain aimed at improving its health quality and making it more attractive. The project proposal is based on process and product innovation, with the enhancement of durum wheat production through the identification and development of varieties with higher nutritional value with particular attention to the fiber content such as glucans and arabinoxylans. The activities will be aimed at the production of flours with a high fiber content and low glycemic index and gluten. The intervention will concern

the areas of varietal selection, agronomy-management and processing.

Admission procedures:

The selection will be made following the art. 6 of the call.

The examination will be based on the evaluation of candidate qualification, proposed project, videoconference interview, and foreign language knowledge checking (English).

Admission tests for foreigners:

The videoconference interview of foreign candidates will be in English.

Admission exam dates and time:

Videoconference interview: 3rd November 2021 at 3 p.m.

The videoconference interview will be conducted by using Microsoft Teams platform (free tool). The enter code to the platform will be published on the website: <https://www.uniba.it/ricerca/dipartimenti/disspa/dottorato-di-ricerca/biodiversita-agricoltura-e-ambiente/xxxvii-ciclo>

For more information see the website:

<https://www.uniba.it/ricerca/dipartimenti/disspa/dottorato-di-ricerca/biodiversita-agricoltura-e-ambiente/xxxvii-ciclo>

PROFILE

PHD PROGRAMME IN BIOSCIENCES AND BIOTECHNOLOGIES

CUN Scientific Areas: CUN: 05-Biological Sciences, 06-Medical Sciences, 07-Agricultural and Veterinary Sciences, 03-Chemical Sciences

Scientific Disciplinary Sectors: BIO/04, BIO/05, BIO/06, BIO/07, BIO/09, BIO/10, BIO/11, BIO/12, BIO/13, BIO/14, BIO/16, BIO/17, BIO/18, BIO/19, MED/04, AGR/17, VET/10, CHIM/11,

Coordinator: Prof. Giovanna VALENTI

Administrative office: Department of Biosciences, Biotechnologies and Biopharmaceuticals

PEC: direzione.bioscienze@pec.uniba.it

Duration: 3 years

Curricula: YES

1. Biomolecular Sciences and Bioinformatics (grants: 1)
2. Cellular and Molecular Physiology and Biotechnology (grants: 2)
3. Biochemical Sciences and Cell Biology (grants: 1)
4. Genetics, Microbiology and Molecular Evolution (grants: 1)
5. Morphofunctional Biology (grants: 1)

Total positions with scholarship no.: 6, of which:

n. 3 GREEN theme

- No. 1 scholarship for the research activity "**Olive leaves: from waste product to source of polyphenols as bioactive compounds and potential calcium receptor agonists (CaSR) in the prevention of chronic and cancer diseases**"

Olive leaves, derived from pruning or defoliation, have long been considered waste products. It has recently been shown that a green extract obtained from olive leaves (OLE) stimulated the expression and functionality of the calcium-sensing receptor (CaSR) which is deregulated in certain diseases such as hypertension and colon cancer. In the present proposal, we aim to characterize some compounds in OLE such as oleuropein, tyrosol, hydroxytyrosol and, lutein as possible agonists or activators of the signaling pathways regulated by the CaSR. Part of the research activity will be carried out in collaboration with the company Bioentra Srl which deals with the valorization of waste products deriving from olive oil production.

- No. 1 scholarship for the research activity "**SUSTAIN4GREEN: sustainable development at the service of companies for a green restart**"

In the field of industrial biotechnology (agri-food and life science sectors), new green platforms will be investigated to support innovation and promote sustainable development. The research activities will be related to industrial microbiology, microbial fermentation technology, biochemistry, and metabolic engineering. The goal of the project will be the design of a systematic approach based on biomass cascading principle in which residual biomasses are bioconverted into high value added products. The impact of SUSTAIN4GREEN relies both on the industrial application of the innovative cascading approach and on the uptake and commercial exploitation of the bio-based end products, identifying potential industrial stakeholders for an exploitation strategy.

- No. 1 scholarship for the research activity "**Study of the molecular mechanisms of response to biotic and abiotic stress in grapevine and plant microbiome interaction**"

Grape production and quality, and the relative revenues, is strongly impacted by climate changes that affect both yield and

quality potential and, in turn, the resulting wine or table grape. General objective of the present project is to improve knowledges about the defense mechanism to cope with biotic and abiotic stresses in grapevine, aiming to develop new tools for the early selection of resistance genotypes and increase the *Vitis* resilience to environmental changes, thus favoring a more sustainable viticulture. To reach this the project aims to: i) Study the microbial biodiversity to identify and select antagonist microorganisms and/or promoters of root growth; ii) evaluate the effect of the beneficial microorganisms in field condition; iii) study the molecular mechanism of grape responses to biotic and abiotic stresses by whole transcriptomic and genomic studies.

n. 3 theme INNOVATION

- No. 1 scholarship for the research activity "**Development of a new accurate and efficient methodology for the characterization of the intestinal microbiota and the determination of a predictive index of the state of eubiosis**"

The microbiome establishes a physiological homeostasis with our organism known as eubiosis whose alteration, known as dysbiosis, is associated to several pathologies. The most used approach for microbiome investigation is the metabarcoding, relying on the sequencing of hypervariable regions of the 16S rRNA gene and subsequent data analysis. Considering the drawbacks of this approach, one of the goals of this project will be the development of an experimental and analytical methodology to get the whole sequence of the 16S rRNA gene. The second objective of the project will be the identification of a predictive index of the state of eubiosis, analyzing the microbiome of an extended cohort of healthy subjects stratified by age, sex and lifestyle. Considering the large number of required samples, the third goal will be the development of an automation platform in partnership with the Masmec Spa.

- No. 1 scholarship for the research activity "**Diode Lights (LED) as an Innovative Technology for Quality Control and Safety of Fruit and Vegetable Products**"

The project aims to achieve an integrated description of the effects of LED lighting in the pre- and post-harvest treatments with the aim of extending the shelf-life of some fruits and vegetables and optimizing the use of LED lighting for plant productivity. The research will combine the use of an innovative Green technology with the environmental sustainability paradigms. The PhD student will develop knowledge-based models that might assist the development of new lighting applications and offer opportunities for obtaining plant species- and cultivar-specific "light recipes" for optimal and targeted enhancement effects.

- No. 1 scholarship for the research activity "**Sepsis: pathophysiological study, identification of new biomarkers and pharmacological targets and machine learning applications for personalized medicine**"

Sepsis and septic shock represent a public health problem and a major expense for health systems. Despite advances in the clinic, in-hospital mortality related to sepsis remains above 10%, while in cases of septic shock it exceeds 40%.

The results that may arise from the project will improve the prevention, monitoring and treatment of sepsis. The work will also facilitate cross-border cooperation for access to national and European funding.

The project has three objectives:

1. study of two aquaporins, AQP3 and AQP9, in the activation of the NLRP3 inflammasome and as pharmacological targets of sepsis
2. study of long non-coding RNA and AQP3/AQP9 as diagnostic and prognostic markers of sepsis
3. development of Machine Learning (ML) tools for the personalized prediction of the onset of sepsis/septic shock.

Admission procedures (ordinary places):

The selection will take place pursuant to art. 6, with verification of knowledge of the language: ENGLISH

Methods for completing the tests in English for foreign candidates:

Foreign candidates can choose to take the entrance exam in Italian or English.



UNIONE EUROPEA
Fondo Sociale Europeo



Admission exam calendar and location:

Oral exam: November 3, 2021 at 9.30 am

Exam site: Department of Biosciences, Biotechnologies and Biopharmaceuticals - Seminar room, 4th floor

Should the test be carried out electronically, due to the epidemiological emergency in progress, the provisions of art. 6 of the announcement.

For more information see the website:

<http://www.uniba.it/ricerca/dipartimenti/bioscienze-biotecnologie>

PROFILE

PhD PROGRAMME IN RIGHTS AND PROTECTION IN GLOBALIZED MARKETS

CUN Scientific Areas: 12 – Legal Sciences; 13b – Economics and business sciences

Scientific Subject Code: IUS/01, IUS/02, IUS/03, IUS/04, IUS/05, IUS/07, IUS/13; IUS/14; IUS/15; IUS/17; IUS/20; SECS-P/07.

Coordinator: Prof. Vito Sandro Leccese

Administrative office: Dipartimento di Giurisprudenza

PEC: direzione.giurisprudenza@pec.uniba.it

Duration: 3 anni

Curricula: NO

Total Available PhD positions with scholarship n.: 4 among which:
n. 2 topic GREEN

- N. 1 scholarship for the research activity: **“Legal framework of food labelling and consumers’ information on animal welfare on farms”** (Scientific Subject Code IUS/03)
The research involves the legislative framework aimed to enhance the sustainable production process of the entire agri-food chain, with special regard to meat productions. The project will study in deep the responsibilities of business operators referred to the compliance with the production rules (on animal welfare, hygiene and safety at work); furthermore, consumers’ information rules on labelling and certification of animal welfare. The current review of the legislation on food labelling in view of development sustainability goals will be focused, taking into consideration both mandatory and voluntary food information on animal welfare as well as private standard certification.
- N. 1 scholarship for the research activity: **“Blockchain and smart contracts: applications in the field of agri-food industry”** (Scientific Subject Code IUS/02)
In order to develop a sustainable agri-food chain, the project will aim at the elaboration of new legal models for product traceability through the use of new technologies. In this perspective, the project will investigate the applicability of blockchain technologies to business-to-business relations in order to reduce the environmental impacts of production. Through the blockchain system, it is possible to guarantee the traceability of the production chain, certifying quality and origin. In addition, the usability of smart contracts in the field of agricultural contracts will be assessed: with smart contracts it is possible to guarantee the performance of automated services when certain conditions are met, with consequent environmental effects on reducing waste.

n. 2 topic INNOVATION

- N. 1 scholarship for the research activity: **“Adequacy of business structures in company applications of new technologies (algorithms, blockchain, Artificial Intelligence)”** (Scientific Subject Code IUS/04)
Given the principle of adequacy of corporate structures, the research will investigate the interactions between corporate governance and artificial intelligence systems (i.e. algorithms, blockchain

technologies, DLT and smart contracts), with the aim of deepening the legal issues that derive from them. Research must take into account specific issues such as: *i)* the ability of new technologies to ensure a more active and widespread participation of shareholders in decision-making processes; *ii)* the suitability of the same tools to make the action of the directors more efficient and transparent, also by delegating management functions to an AI; *iii)* the possibility of replacing traditional accounting systems with blockchain or other DLT-based technologies.

- N. 1 scholarship for the research activity: **“Digitalization and automation: restructuring of organizational paradigms and labor protection”** (Scientific Subject Code IUS/07)

The research aims to deepen the several issues of interest in labor law on the topic of innovation in the technological field and, specifically, those relating to the impact on employment dynamics, models of organization of production activity and the development of human capital in labor relations, both individual and collective. The following issues may be addressed: the impact of new technologies on the number of employees as well as on quality of work, wages, working conditions; the adoption of technologies attributable to “Industry 4.0” and the spread of non-standard contractual forms; the relationship between new technologies and training needs; the risks and opportunities related to the development of artificial intelligence algorithms.

The available positions will be assigned according to the order in the merit ranking for each topic, up to their exhaustion.

Admission test (ordinary positions):

The exam procedures will be taken in accordance with art. 6.

The knowledge of English or any other foreign language among French, German or Spanish will be checked as a part of the oral examination.

Admission test in English language for foreign applicants:

Foreign candidates can choose to do the admission test in Italian or English language

Admission test date and time:

Oral exam: 8th November 2021, h 15:00.

Venue: Meeting Room Private Law– 1st floor - Dipartimento di Giurisprudenza – Corso Italia, 23 - Bari

If the exam, due to the ongoing epidemiological emergency, may be taken online, it will be carried out in accordance with art. 6.

For more information please see:

<https://uniba.it/ricerca/dipartimenti/lex/post-laurea/dottorati-di-ricerca>

PROFILE

PHD PROGRAMME IN MEDITERRANEAN RIGHTS, ECONOMIES AND CULTURES

CUN Scientific Areas: 11a Historical, philosophical and pedagogical sciences, 12 - Legal sciences, 13a - Economic and statistical sciences- 13b – Economics and business sciences

Scientific Subject Code: IUS/01, IUS/02, IUS/03, IUS/04, IUS/05, IUS/06, IUS/07, IUS/10, IUS/11, IUS/12, IUS/13, IUS/16, IUS/17, IUS/21, SECS-P/01, SECS-P/06, SECS-P/07, SECS-P/08, SECS-P/11, SECS-P/13, SECS-S/01 e M-PED/01

Coordinator: prof. Paolo Pardolesi

Administrative Office: Dipartimento Jonico in "Sistemi Giuridici ed Economici del Mediterraneo: società, ambiente, culture"

PEC: segreteria.djsge@pec.uniba.it

Duration: three years

Curricula: NO

Total available PhD positions with scholarship n.4 of which: N. 3 GREEN thematic

- N. 1 scholarship for the research activity on "**Renewable energies and protected areas: civil profiles**": the particular objectives of the research line concerning sustainable development with reference to those legal assets represented by energies. The peculiarities of energy sources - renewable and non-renewable - have so far led to a strong environmental impact and, more generally, to environmental non-sustainability with reference also to natural and protected areas. The development of renewable energies raises the question of the protection and environmentally sustainable management of protected areas and contiguous areas. In fact, the regulatory solutions implemented so far have not always proved satisfactory and there is an urgent need to prepare additional tools and identify the best practices from the reference community.

- N. 1 scholarship for the research activity on "**Access to sustainable energy sources and essential services in the Mediterranean and neighboring regions**": this research line aims to provide a detailed map of the best locations for decentralized investments in renewable energy (solar / photovoltaic) by adopting both a country-level approach and an approach with a higher level of geographic disaggregation. To this end, the research project will have to provide for the definition of a composite socio-economic indicator (concerning health, education, gender equality, quality of life and economic development), which makes it possible to identify the geographical areas where decentralized investments in renewable energy sources would generate the greatest socio-economic impact.

- N. 1 scholarship for research on "**Application of UAV based methods to environmental monitoring for the identification and measurement of airborne pollutants**": this research line aims to deepen the "application of UAV based" methods to the monitoring of airborne pollutants by identifying and estimating their concentrations in different types of sites. The aim is to find the best technical setups useful for an optimal performance of the monitoring outputs, together with the aim of highlighting the limits and vulnerabilities of the monitoring systems reasoned about them in a resolute perspective aimed at identifying protocols and hardware/software solutions to be able to further improve both the activity and the survey results.

N. 1 thematic INNOVATION

- N. 1 scholarship for the research activity on "**IED - Inclusive Educational Design 3.0**": the line of research in question, concerning design models and synchronous and asynchronous transmission strategies for distance learning and the development of environments inclusive of learning, shifts the focus from teaching to training the

pedagogist expert in planning and online training. The latter will have to be rethought taking into account the most recent pedagogical achievements on adult education, distance learning models and online communication strategies. The goal is to overcome the traditional "frontal" transmissive approach by envisaging new scenarios through actions, tools and activities with new devices and hypermedia built with Web 3.0 tools and methodologies that draw on pedagogical research and Adult-education.

The available positions will be assigned according to the order in the merit ranking for each topic, up to their exhaustion.

Admission test (ordinary posts):

The selection will take place pursuant to art. 6, with verification of knowledge of the language: English.

Methods of conducting the tests in English for foreign candidates:

Foreign candidates may choose the admission exam in Italian or English

Admission test date and time:

Oral exam: 4th November 2020, 10:00 am

Exam location: Classroom 4, Dipartimento Jonico in "Sistemi Giuridici ed Economici del Mediterraneo: società, ambiente, culture", Via Duomo n. 259, Taranto.

For more information see the website:

<https://www.uniba.it/ricerca/dipartimenti/sistemi-giuridici-ed-economici/postlaurea/dottorato-di-ricerca>

SCHEDA

PhD PROGRAMME IN RIGHTS, INSTITUTIONS AND SAFEGUARDS IN TRANSITIONAL SOCIETIES

CUN Scientific Areas: 12 – Scienze Giuridiche; 10 – Scienze dell'antichità, filologico-letterarie e storico-artistiche

SSDs: IUS/01, IUS/08, IUS/09, IUS/10, IUS/11, IUS/12, IUS/13, IUS/14, IUS/16, IUS/19, IUS/20, IUS/21, L-LIN/12

Coordinator: Prof. Alessandro Torre

Administrative Office: Law Department

PEC: direzione.giurispudenza@pec.uniba.it

Time: 3 years

Curricula: NO

Total scholarships: 4 (2 in Area GREEN e 2 in Area INNOVATION).

Area GREEN:

n. 1 scholarship for a Project in SSD IUS/12

“Agriculture, food and rural tourism: the contribution of the Tax System to a sustainable model of relations between business, man and nature”

Starting from an interdisciplinary (and interdepartmental) project on the themes of ‘agri-food systems, nutrigenetics and nutrition’; already candidate for the Horizon Europe Seeds Call, we intend to verify the contribution of tax law to the definition of rules for the agricultural enterprise and for adequate consumers to the development of a productive sector in ferment after the confused pandemic phase. The contribution of the Tax System to the affirmation of a more mature and aware agri-food system, capable of enhancing the quality of agricultural products (in terms of informing consumers and formulating conscious choices) and to ensure respect for the environment and of the landscape. The Project is supported by Feline SAR.l. of Manduria (TA) and Delinat A.G. (St Gallen, Switzerland)

n. 1 scholarship for a Project in SSD IUS/13 e 14

“The company implementation of principles on corporate social responsibility as settled by the international and EU law”

In order to review the system of production, UN and EU well-known acts regulate corporate social responsibility (CSR) as undertakings' activities shall protect human rights and environment (EU New Green Deal), and fight against corruption. This regulation is functional to a competitive and sustainable development (UN Agenda 2030). Hence, Italy transposed EU Directive 2014/95/EU (Law Decree no. 254/2016) and required the disclosure of non-financial information by undertakings in compliance with UE law. On these bases, the research, that will in part be carried out abroad, will analyze CSR activities of Exprivia spa, partner of the research proposal. This examination will allow the participation to the current debate about the review of the mentioned EU Directive (COM(2021)199) with the aim to understand and advance the undertakings' contribution in such development.

Area INNOVATION:

n. 1 scholarship for a Project in Progetto in SSD IUS/08

“A database for the collection of information of cultural heritage sites in Apulia in the view of their better benefit and enhancement”

In the light of a new assessment of art.9 of the Italian Constitution and of a better enhancement of the national cultural heritage and of a huge digitization and online availability of data, the Project is aimed to settle a database where a wide information will be collected with a view to the implementation of the public benefit of cultural heritage in Apulia. According to the Legislative Decree 22/1/2004 n.42 (Cultural Heritage and Natural Landscape Code), the survey will focus

on the private property of cultural heritage “whose rehabilitation or preservation has been supported by the State, in a direct way or through interest accounts” (sect.38), and because of that have been made available to the public on the ground of peculiar agreements or conventions. Connections: The Factory (leading company in online communication and advertising – Bari, 54, Emanuele Mola Street) and the Apulian regional board for cultural heritage and landscape.

n. 1 scholarship for a Project in Progetto in SSD IUS/16

“Technological innovation as applied to the re-educational purpose of the punishment”

The survey - supported by Engineering Research and Practices s.r.l. - aims to observe, in a transversal sense, how and to what extent technological development can create a dialogue or interact with the prison system to ensure the rehabilitation function of the sentence. Tools such as video surveillance, electronic bracelets and remote controls, can foster the path of empowerment and interaction with the outside world. Both can enable social and work reintegration, and preservation of intimate and family relationships. The object of study is the use of predictive algorithms of the risk of recidivism (HART algorithms in the U.K. and COMPAS in the U.S.A.) that could favor or discourage access to alternative measures to detention. The research focuses on the country’s economic growth, through the reduction of the costs of detention deriving more from the recovery and re-education of human capital, than from an intervention aimed at prison construction.

Admittance tests:

The selection shall be carried out according the art. 6 of the competition notice, on scientific titles, research project and oral examination, and by a test on the knowledge of English.

Provided scholarships will be assigned according to the ranking list for fixed topic, up to their depletion.

English-language test for foreign applicants:

Foreign applicants are free to choose to carry on the admittance test in Italian or English.

Timetable and admittance examination:

Oral test: 2 and 3 November 2021

Place: Meeting Room Private Law– 1st floor - Dipartimento di Giurisprudenza – Corso Italia, 23 - Bari

So far as – because of some kind of epidemiological emergency, the examination will be asked to be carried out online, the test will be fulfilled under art. 6 of the competition notice.

For further information please see:

<https://uniba.it/ricerca/dipartimenti/lex/post-laurea/dottorati-di-ricerca>

PROFILE

PHD PROGRAMME IN ECONOMICS AND FINANCE OF PUBLIC ADMINISTRATIONS

CUN Scientific Areas: 13 – Economic and statistical science; 12 - Law; 02 – Physical sciences

Scientific sectors: SECS-P/01, SECS-P/02, SECS-P/03, SECS-P/06, SECS-P/07, IUS/05, IUS/09, IUS/10, IUS/12, IUS/21, SEC-S/01, SEC-S/06, FIS/01, FIS/07

Coordinator: Prof. Nicola Daniele Coniglio

Administrative Unit of the PhD course: Dipartimento di Economia e Finanza

Duration: 3 years

Curricula: NO

Total PhD positions with scholarships for this Call for Applications: n. 3

n. 1 Theme 'Green'. PhD scholarship on the following research theme: **“Evaluation of biodiversity, biological resources and sustainability of fisheries in Ionian Sea”**, Area/scientific sector: Area 13/SECS S01;

The Mediterranean basin is subjected to human activities that cause effects on marine ecosystems and biodiversity, sources of ecosystem goods and services. The research project aims to develop statistical models aimed at evaluating the spatial diffusion and temporal distribution of biodiversity and fishery resources in the Ionian Sea, highlighting the effects of risk factors related to fishing activities, the release and accumulation of marine litter, the spread of non-indigenous species, the warming of waters. The project will address the integration of data from different sources (physical, biological, ecological, economic) identifying and quantifying ecosystem functions, goods and services through statistical modeling that allows to simultaneously incorporate multiple sources of information and to take into account the related sources of uncertainty. Specific additive and/or mixed effects spatial-temporal models in the Bayesian hierarchical context will be developed for the analyzes.

n. 1 Theme: Innovation. PhD scholarship on the following research theme: **“Digitalisation and automation: heterogeneous effects of new technologies in the job market”**; Area/scientific sector: Area 13/SECS P01;

This project is part of the recent debate on the heterogeneous effects that the adoption of new technologies has on work and workers. Heterogeneous impacts that affect the following dimensions: (i) the adoption of different technologies: not all technologies have the same impact (it is a matter of abandoning the principle of technology neutrality); (ii) industrial sectors; (iii) the types of company; (iv) territories; (v) the types of workers. Research questions addressed in the project:

1. Will the ongoing transformations, induced by technological developments, lead to a world with less work?
2. What will be the impacts of these transformations on the quality of work?
3. What are the impacts on the level of disparity between workers?
4. What are the new skills needs required by technological change?
5. How to re-orient the educational system not only towards technical-specialist skills but also towards transversal skills (soft skills) useful for change management?

The research activity will try to suggest new evidence-based policy measures.

n. 1 Theme: Innovation. PhD scholarship on the following research theme: **“The evolution of the cooperative model”** Area/scientific sector: Area 13/SECS P01;

Cooperation is an instrument of social aggregation of constitutional stature (Art. 45). In the early 90s the cooperative was the preferred legal form, especially by young people, for the start of new business activities. In recent years, however, the choice is oriented towards other models, considered more simplified and flexible (simplified srl, for example).

The main objective of the research activity is to carry out a comparative reconnaissance of the cooperative instrument, compared to other European systems, in order to identify elements to propose innovations aimed at updating the "Institute" of cooperation and harmonizing the rules in the fiscal, tax, civil, bankruptcy fields.

The final goal is to suggest policy interventions aimed at making more efficient and competitive the cooperative model.

PhD course with a single curricula:

Admission pre-requisites:

Candidates with a degree in the following areas are admitted.

LM-16 Finanza

LM-52 Relazioni internazionali

LM-56 Scienze dell'economia

LM-62 Scienze della politica

LM-63 Scienze delle pubbliche amministrazioni

LM-76 Scienze economiche per l'ambiente e la cultura

LM-77 Scienze economico-aziendali

LM-81 Scienze per la cooperazione allo sviluppo

LM-82 Scienze statistiche

LM-83 Scienze statistiche attuariali e finanziarie

LM-87 Servizio sociale e politiche sociali

LM-90 Studi europei

LM-92 Teorie della comunicazione

LM/SC-GIUR Scienze Giuridiche

19/S (specialistiche in finanza)

22/S (specialistiche in giurisprudenza)

49/S (specialistiche in metodi per la ricerca empirica nelle scienze sociali)

60/S (specialistiche in relazioni internazionali)

64/S (specialistiche in scienze dell'economia)

70/S (specialistiche in scienze della politica)

71/S (specialistiche in scienze delle pubbliche amministrazioni)

83/S (specialistiche in scienze economiche per l'ambiente e la cultura)

84/S (specialistiche in scienze economico-aziendali)

88/S (specialistiche in scienze per la cooperazione allo sviluppo)

90/S (specialistiche in statistica demografica e sociale)

91/S (specialistiche in statistica economica, finanziaria ed attuariale)

92/S (specialistiche in statistica per la ricerca sperimentale)

99/S (specialistiche in studi europei)

101/S (specialistiche in teoria della comunicazione)

102/S (specialistiche in teoria e tecniche della normazione e dell'informazione giuridica)

LMG/01 (Giurisprudenza)

The available positions will be assigned according to the order in the merit ranking for each topic, up to their exhaustion.

Selection criteria (ordinary PhD positions):

The exam procedures will be carried out in accordance with art. 6.

Evaluation of academic titles, research project (max 4 pages), interview.

The selection of PhD candidates will be carried out considering the academic titles/professional experiences of the applicants, the evaluation of a research project (submitted jointly with the candidature; max 4 pages) as well as an interview.

During the interview the research project submitted by the candidate will be discussed and the interview will also be finalized to test proficiency in English language.

Foreign candidates might decide to take the written test and the interview in Italian or in English.

Selection dates for ordinary PhD positions:

Interview: 3/November/2021 (time 9.00 am)

Location: Dipartimento di Economia e Finanza, Università degli Studi di Bari Aldo Moro, Largo Abbazia Santa Scolastica, 70124 Bari. (or organized in videoconference according to the provision of art. 6 of the call for applications)

For further information:

<https://www.uniba.it/ricerca/dipartimenti/dse/dottorato>

PROFILE

PhD PROGRAMME IN ECONOMICS AND MANAGEMENT

Subject area CUN: 13a Economic and statistical science, 13b Economics and business sciences

Coordinator: Prof. Angela S. Bergantino

Administrative location: Dipartimento di Economia, Management e Diritto dell'Impresa

PEC: direzione.demdi@pec.uniba.it

Email: angelastefania.bergantino@uniba.it

Duration: 3 years

Curricula:
- Economics

Total PhD scholarships: 2

n. 2 thematic area GREEN

N. 1 PhD Scholarship on “**Digitisation and green transformation of the tourism sector after the pandemic. Opportunities and models for regions and businesses**” (Applied Economics - SECS-P06)

NRP THEMATIC AREA: 5. CLIMATE, ENERGY and SUSTAINABLE MOBILITY

SNSI TRAJECTORY: TOURISM, CULTURAL HERITAGE AND CREATIVITY INDUSTRY: TECHNOLOGICAL DEVELOPMENT TRAJECTORIES WITH A NATIONAL PRIORITY

The research project aims to identify innovative models, business practices, techniques, and tools useful to realize a green and digitized recovery of the tourism sector, to analyze the economic, environmental and social impacts of the COVID-19 pandemic on the sector. Some aspects that will be analyzed will concern the contribution of the green transformation of the tourism sector to the reduction of impacts on the environment (with particular focus on the transport sector); the relationship between tourism and agriculture and ecosystem conservation; tourism and protected natural areas and the role of new technologies for the sustainable management of tourist destinations.

N. 1 PhD Scholarship on “**Innovation as a response of companies and territories to natural disasters. Resilience and sustainability**” (Applied Economics and Public Finance - SECS-P06 e SECS-P03)

NRP THEMATIC AREA: 5. CLIMATE, ENERGY and SUSTAINABLE MOBILITY

SNSI TRAJECTORY: INTELLIGENT AND SUSTAINABLE INDUSTRY, ENERGY AND ENVIRONMENT: TECHNOLOGICAL DEVELOPMENT TRAJECTORIES OF NATIONAL PRIORITY

The research project aims to investigate the impulses for transformation and innovation, on a technological level, but also, more generally, of the social-economic assets, that can be generated by natural disasters. This is what recent studies have called “blessings in disguise”: external shocks which, in themselves, are the cause of high private and social costs, but that can also produce positive, transformative and structural effects. The analysis will cover the reactions to the pandemic to the various economic actors. Families, in terms of residents, workers and consumption choices; firms, in the adoption of eco-sustainable technologies and processes; institutions, for two main aspects: a) the adoption of policies that can, at the central and local government level, accompany and support the tendencies towards regeneration and change; b) possible changes to its organizational structures considering the asymmetric shocks induced by the pandemic in the area.

Both scholarships are for the Curriculum in Economics.

Admission procedures (ordinary places):

The selection will take place according to art. 6, with verification of the knowledge of the language: English

Method of carrying out the tests for foreign candidates:

Foreign candidates may choose to sit the entrance examination in Italian or in English.

Timetable and location of the admission examination

Examination dates:

2 November at 11.00 a.m. (assessment of qualifications and projects, only Commission);

3 November at 8.30 a.m. (oral test in telematic mode)

Examination venue: Microsoft Teams platform

Should the test be held in telematic mode, due to the epidemiological emergency in progress, the provisions of art. 6 of the call will be observed.

For further information please refer to:

<https://www.uniba.it/ricerca/dipartimenti/demdi/ricerca/dottorato-di-ricerca-1>

PROFILE

PhD PROGRAMME IN PHYSICS

in agreement with ISTITUTO NAZIONALE di FISICA NUCLEARE, FRASCATI - ROMA

CUN Scientific Area: 02 – Physical sciences

Scientific subjects codes: FIS/01, FIS/02, FIS/03, FIS/04, FIS/07

Coordinator: Prof. Giuseppe Gonnella

Administrative head quarters: Dipartimento Interateneo di Fisica “M. Merlin”

PEC: direzione.fisica@pec.uniba.it

Scholarship duration: 3 years

Curricula:

- 1) Nuclear and subnuclear physics (FIS/01, FIS/04);
- 2) Condensed matter Physics, Photonics and Quantum technologies (FIS/01, FIS/03);
- 3) Applied physics (FIS/01, FIS/07);
- 4) Theoretical physics (FIS/02).

Total positions available: n. 5

n. 1 for the project field GREEN

- N. 1 position on the research project **Optimization of thermodynamic processes in drying and composting processes**

Curriculum 4)

The main objective of the project is to outline and describe with numerical and analytical techniques the thermodynamic processes that characterize the drying and composting processes, identifying the factors that play a key role in increasing efficiency and improving the product, using the dryer used by the company Tersan Puglia SpA.

The afore-mentioned issues are in line with the guiding ideas of the Ministerial Decree: improvement of the efficiency of the thermal process and energy saving (the processes are very expensive in terms of the electricity used), composting, reduction of environmental impact, green economy and the so-called “green recovery”, in particular on issues relating to the circular economy and sustainable development (reuse of raw materials, efficiency of recycling processes, reduction of emissions, both odor and dust).

n. 4 for the project field INNOVATION

- N. 1 position on the research project **Sensors based on functionalized interfaces of electrolytic gate devices**

Curriculum 2)

In-situ and operando investigation of the structural and physico-chemical properties of the surface of inorganic, chemical or biological nanometric materials and films, both self-assembled and made using nanotechnologies. This is crucial for the identification of bio-markers and applications to the bio-medical industry. Particular attention will be paid to the mechanisms of film-molecule interaction and to the amplification of the transduction signals up to the physical limit of a single binding event. Main experimental investigation techniques and related modeling: atomic force and Kelvin probe microscopies (AFM); electron beam microscopy (SEM); micro-Raman and surface-enhanced FT-IR imaging.

- N. 1 position on the research project **Development of laser based welding and additive manufacturing processes**

Curriculum 2)

The PhD project intends to explore the potential of multi-kW laser welding and additive manufacturing technologies

of metallic materials for the manufacture of “secure storage” devices. The aim is to manufacture structures of complex geometry using different types of materials characterized by high mechanical and fire resistance. In order to improve the productivity of laser-based processes, advanced beam shaping technologies and intelligent sensors and algorithms will be implemented to detect process deviations and develop control strategies capable of reducing or preventing defects. The research and development activity will be carried out in collaboration with the Gunnebo Innovation Hub of Bari and with the University West of Trollhättan in Sweden.

- N. 1 position on the research project **Development of innovative techniques for in vivo measurement of the absorbed dose in radiotherapy with BNCT (Boron Neutron Capture Therapy)**

Curriculum 3)

Boron Neutron Capture Therapy is an innovative radiotherapy technique with high tissue selectivity which takes profit of neutron capture reaction $^{10}\text{B}(n, \alpha)^7\text{Li}$. Reconstructing the isodose curves in-vivo image is a primary topic. In this framework, we propose the use of new 3D CdZnTe solid-state sensors for gamma spectrometry, and due to the layered layout of the sensor, use Compton effect to track-back the secondary gamma radiation coming from capture reaction obtaining the 3D dose absorbed distribution. The doctoral activity involves the spectroscopic characterization of CZT sensor prototypes as well as the study of imaging performance using Monte Carlo methods and experimental measurements; it will be carried out at the Physics Department of Bari in in collaboration with DUE2LAB company, Lena nuclear reactor at Pavia University, and University of Birmingham.

- N. 1 position on the research project **Innovative gamma-ray detectors for environmental and space monitoring**

Curriculum 1)

This research activity will be focused on the development of modular detectors, each consisting of a thin CsI(Na) or LYSO scintillating crystal coupled with wavelength shifting (WLS) fibers, readout with silicon photomultipliers (SiPMs) for gamma rays in the MeV energy region. These detectors can find application in the scientific field as well as in the field of environmental monitoring, for the detection of gamma rays from astrophysical sources or from environmental radioactivity. The activity is aimed to the development of a detector prototype equipped with a dedicated readout electronics. The detector design and the development of the readout electronics will be carried out in the Physics Department in Bari and the laboratories of CAEN and Omega Microelectronics.

Admission procedures:

The selection will take place pursuant to art. 6.

Selection will be based on the CV evaluation, a research project and an interview.

The interview will concern arguments related to the project. The knowledge of the English language will be also verified.

Foreign candidates can choose to take the admission exam in Italian or English.

Admission exam timetable:

Oral exam: November 8th 2021, H: 11.00

Depending on the status of the ongoing epidemiological emergency, if possible, the oral exam will be held at Dipartimento di Fisica, Aula A, Campus Universitario, via Orabona 4, Bari, Italy

Otherwise, the examination may be taken online, in accordance with art. 6.

Additional information at:

<https://dottorato.fisica.uniba.it>

PROFILE

PhD PROGRAMME IN GEOSCIENCES

CUN Subject area: 04 Earth Sciences

Scientific Subject Codes: GEO/01, GEO/02, GEO/03, GEO/04, GEO/05, GEO/06, GEO/07, GEO/08, GEO/09, GEO/10 and GEO/11

Coordinator: Prof. Massimo MORETTI

Administrative location: Dipartimento di Scienze della Terra e Geoambientali

Duration: 3 years

Curricula: NO

Total number of positions available: n. 5

n. 4 positions on GREEN topics

- n. 1 scholarship for the research activity: **The reuse of industrial and anthropic wastes for the valorisation of the mineral content in fertilizer production field within a circular economy approach.**

Aim of the project is the development of methodologies for the reuse and valorisation of the mineral content present in industrial and anthropic wastes in the fertilizer production industry. In a first steps, different types of wastes (mining processing waste, waste sludge, ...) will be characterized with the aim of evaluating the content of the elements essential for plant nutrition. The subsequent experimentation will concern the development of physico-chemical pre-treatments for the removal of possible harmful elements and transformation of the waste in order to reuse its "useful" mineral content in the production of fertilizers. The project which show an extremely multidisciplinary character combining skills, techniques and methods proper of geo-sciences, chemical and agronomic sciences, will be conducted in collaboration with TIMAC AGRO Italia S.p.A, a worldwide leader in the production of fertilizers.

- n. 1 scholarship for the research activity: **Analysis of the sedimentological characteristics of bioconstructions in the Apulian seas (Adriatic and Ionian Seas).**

The research project concerns the study of the physical processes that regulate the evolution of present-day marine environments with widespread bioconstructions and reefs. The project is aimed at mapping bioconstructions through the indirect methods of Marine Geology (SSS, Multibeam and SBP) and sampling procedures aimed at establishing their meso-microscopic structural features. These analyzes will be carried out in the coastal areas and in the shelf of the Adriatic and Ionian Seas. The project involves a close collaboration with Environmental Surveys s.r.l. which boasts a long scientific experience in monitoring coastal environments. The doctoral program will develop in the areas of biodiversity protection in marine environments with different anthropogenic impacts.

- n. 1 scholarship for the research activity: **Water and effects of climate changes in High Murgia: evaluation of water resources and mitigation of geo-hydrological disasters.**

The project goals are the analysis of the different hydrogeological conditions in High Murgia, starting from the study of geology, stratigraphy and of the structural setting, aimed at evaluating the qualitative and quantitative status of water resources. The variations induced by climate changes will be taken into account, together with other anthropogenic factors and potential sources of pollution of the water tables (pesticides, zootechnics, etc.). Further, natural and anthropogenic hazards in the fragile karst territory of Murgia will be examined, together with the reduction of the impacts of climate changes to promote a sustainable development as concerns the use of water resources.

- n. 1 scholarship for the research activity: **Enhancement of the "geological natural capital" to promote tourism (geotourism) in the Alta Murgia National Park (UNESCO Geopark candidate) and creation of digital platforms and websites for visitors and the community of smart workers (Puglia, Italy).**

The “UNESCO Geopark nomination” and the “Digitization” are two goals on which the Alta Murgia National Park (Puglia, Italy) is strongly committed. The project is therefore based on the synthesis and collection of data about the geological heritage of the area and on the development of cultural itineraries for hikers and/or digital visitors, bringing geotourists to sustainability issues. The objectives are: to promote education, training, information and awareness of visitors on the issues of sustainable tourism and the critical consumption of resources; to propose a new lifestyle that, starting from the enhancement of the territories, can reach new communities of travelers, i.e. “smartworkers” and digital nomads from all over the world; to create conditions for an economy based on the natural capital.

n. 1 position on INNOVATION topic

- n. 1 scholarship for the research activity: **Innovative materials from and for the management of municipal and industrial wastewater.**

The project is aimed to test sustainable and innovative materials developed through the geopolymerization technology that could support and/or improve the current technologies used in wastewater treatment plants and, at the same time, valorising industrial and anthropogenic wastes in order to produce materials in line with circular economy models. The study will be carried out with the partnership of AquaSoil SrL, an Apulian company innovator in the design and management of environmental integrated services, especially regarding the R&D of processes and technologies for the treatment of contaminated matrices. The PhD student will acquire innovative skills through a multi-analytical approach, based on the consolidated research techniques and methodologies used in Geo-sciences and materials sciences investigations.

The available positions will be assigned according to the order in the merit ranking for each topic, up to their exhaustion.

Evaluation of applicants:

The selection will take place pursuant to art. 6, through qualifications, research project and oral exam with verification of knowledge of the language: English

Exam in English for foreign applying candidates:

Foreign applying candidates can choose Italian or English language for their admission exam.

Admission exam calendar and location:

Oral exam: 3rd November 2021, at 10:00 am

Exam site: online on Teams

Should the test be carried out electronically, due to the epidemiological emergency in progress, the provisions of art. 6 of the announcement.

For more information, please visit the web site of the PhD in Geosciences:

<http://www.geo.uniba.it/dottorato-presentazione.html>

PROFILE

**PhD PROGRAMME IN SUSTAINABLE LAND MANAGEMENT
in convention with POLYTECHNIC UNIVERSITY OF BARI**

Scientific Areas CUN: 07 – Agricultural and Veterinary Sciences, 08b – Civil Engineering, 02 – Physical sciences, 04 – Earth Sciences, 05 - Biological Sciences, 08b – Architecture, 09 - Industrial and information engineering.

Scientific Disciplinary Sectors: AGR/01, AGR/03, AGR/04, AGR/05, AGR/08, AGR/09, AGR/10, AGR/11, FIS/01, FIS/07, BIO/03, GEO/05, ICAR/01, ICAR/02, ICAR/03, ICAR/06, ICAR/07, ICAR/20, ING-IND/16, ING-IND/22, ING-IND/35 e ING-INF/07.

Coordinator: Prof. Francesco GENTILE

Administrative headquarters: Dipartimento di Scienze Agro-Ambientali e Territoriali (Department of Agricultural and Environmental Science)

Affiliated headquarters: Polytechnic University of Bari

PEC: direttore.disaat@pec.uniba.it

Duration: 3 years

Total number of positions: n. 5, of which:

n. 2 positions on GREEN theme

N. 1 scholarship for the research activity:

Driving the transition toward sustainable management of reclaimed wastewater reuse in agriculture.

The reuse of reclaimed wastewater is a great example of the circular economy principle. Wastewater management from the point of view of circular economy translates into the reuse of water, mainly in agriculture, as well as into the recovery of material (phosphorous and nitrogen) and energy resources contained in wastewater sludge. Wastewater treatment plants are seen as bio-refining plants that convert waste substances into useful products, such as biogas and bio methane, fertilizers (nitrogen, phosphorus) as well as water. Such circular pathway allows enhancing natural resources, to develop innovative products and services with reduced impact on the environment.

N. 1 scholarship for the research activity:

Knowledge and enhancement of native and exotic species for urban reforestation in the Mediterranean environment.

The project aims at the knowledge and enhancement of native and exotic species for urban reforestation in the Mediterranean environment. In particular, based on field surveys and bibliographic research, trees and shrubs suitable for urban reforestation will be identified. The research will be carried out in synergy with a nursery company and with local administrations to create pilot green areas in urban areas. The multiplication tests of the selected plants will be carried out at the partner nursery while at the foreign research institution will be deepened from the eco-physiological point of view the plant-soil relationships, in order to improve the living conditions of plants in urban environment by increasing the chances of rooting.

n. 3 positions on INNOVATION theme

N. 1 scholarship for the research activity:

Explainable artificial intelligence for the study of the impact of environmental factors on health

The proposed research topic aims to study Explainable Artificial Intelligence (XAI) methods that integrate environmental data with physiological and genetic data to identify health risk factors, focusing on the impact of the environment on neurodegenerative diseases and some types of cancer. Federated learning methods will be used to integrate different types of information for multidimensional analysis. Data collected by ARPA and the Copernicus Atmosphere Monitoring Service will be used. XAI models provide interpretable values to explain risk values and understand the factors that most influence risk scores at the individual and personalized level.

N. 1 scholarship for the research activity:

Implementation of enabling technologies in the assessment of hydrological processes at the urban scale, aimed at monitoring, protecting and increasing the resilience of metropolitan areas at hydraulic risk

Joining topographic and satellite data with the IT and OT technologies, the research proposal aims to improve the assessment of hydrological processes on an urban scale, for monitoring, protecting and increasing the resilience of metropolitan areas with respect to flood risk. The new data, integrated with advanced numerical simulation models, will allow both a rational use of the two-dimensional approach in the domain of urban application, as well as refining the ability to describe and forecast urban flood phenomena. This will address choices and emphasizing the role of "Nature based solutions" and "storm water management" in the application of "adaptive design" solutions in the case of building aggregates and open spaces.

N. 1 scholarship for the research activity:

New Models of Industrial Symbiosis for Manufacturing Sustainability

The research project intends to study new sustainable production models based on the concept of the 8Rs (recycle, reuse, reduce, recondition, reproduce, redesign, regulate, revitalize) applied to production resources. The idea is to create a new, complex, process-related maturity model that provides a univocal and systemic view of manufacturing sustainability, to assess the potential for process improvement in the direction of resilient and sustainable innovation. The model, once fine-tuned, should serve as a methodological guideline to create a repository of technological best practices and thus facilitate potential sustainable innovations in terms of industrial symbiosis spread across the Apulian and national territory.

The available positions will be assigned according to the order in the merit ranking for each topic, up to their exhaustion.

Admission procedure:

The selection will be carried out through qualifications, research project and oral exam. The knowledge of a foreign language (English) will be evaluated during the oral test.

Admission procedures for foreign candidates:

Foreign candidates can choose to take the admission exam in Italian or English.

Admission exam dates and time:

The evaluation of qualifications will take place on November 2, 2021. The oral exam will begin on November 4, 2021 at 9.00 am until the completion of the evaluation of all candidates and will take place online on the Teams platform. The oral exam calendar and the methods for accessing the platform will be published on the phd Course website on 3 November 2021.

Should the test be carried out online, due to the epidemiological emergency in progress, the provisions of art. 6 of the announcement will be observed.

For further information see the PhD Course website:

<https://www.uniba.it/ricerca/dipartimenti/disaat/dottorato>

PROFILE

PhD PROGRAMME IN COMPUTER SCIENCE AND MATHEMATICS

Subject area CUN: 01 Mathematics and Computer Science, 09 Industrial and Information Engineering

Scientific Subject Codes: INF/01, ING-INF/05, MAT/03, MAT/04, MAT/05, MAT/06, MAT/07, MAT/08

Coordinator: Prof. Maria Francesca COSTABILE

Administrative office: Dipartimento di Informatica

PEC: direzione.di@pec.uniba.it

Duration: 3 years

Curricula: Yes

- Curriculum 1 Computer Science
- Curriculum 2 Mathematics

Total number of positions with fellowship: n. 4, all for Curriculum 1 Computer Science and for the theme INNOVATION

N. 1 fellowship for the research activity “**Artificial Intelligence in malware and intrusion detection**”

Despite Machine Learning (ML) produces effective solutions to protect IT devices from the “newest” malware, the reliability of these security systems may be compromised by adversarial attacks that slightly change malware commonly detected with ML techniques, in order to lead to their misclassification as legitimate software. Based on this, the main goal of this research is to develop adversarial-aware machine learning security controls to oppose the effects of adversarial attacks in malware detection. The solutions will be also tested in intrusion detection. The activities will include a 12-month internship at the Joint Research Centre (JRC) of EU in Ispra (Varese).

N. 1 fellowship for the research activity “**Biometrics for Security and Health in real contexts**”

The aim of the research is to study systems able to report anomalies and indexes related to them, in order to support the choices of decision makers in contexts such as monitoring of security, social systems but also early diagnosis of various types of diseases. These objectives shall be achieved by using techniques related to Behavioural Biometrics, Pattern Recognition, Signal Processing. Behavioural Biometrics is a specific branch of Artificial Intelligence employed for processing data derived from human behaviour, specifically the analysis of speech, writing, motion performances etc. Moreover, Behavioural Biometrics is also used to quantify human physiology and pathophysiological mechanisms, or for classification tasks related to diseases’ detection. The activities will include a 6-month internship at Digital Innovation Srl.

N. 1 fellowship for the research activity “**Methodologies and techniques for creating Human-centred intelligent systems**”

The current emphasis on Artificial Intelligence (AI) systems has led to a new research area called Human-Centred Artificial Intelligence (HCAI), whose goal is to promote an innovative vision of intelligent systems, equipped with powerful algorithms and also useful and usable, capable to balance system autonomy and user control. The project aims to investigate how HCI methods and principles can help designing human-centred intelligent systems. The goal is to provide AI experts with proper knowledge on user interaction and usability and UX, and to define and test appropriate methodologies and techniques to create effective intelligent systems

that may better satisfy human beings. The activities will include a 6-month internship at Experis Srl.

N. 1 fellowship for the research activity “Quantum Software Engineering for Security”

Computer systems are increasingly interconnected and supported by forms of Artificial Intelligence that require massive computational resources. Recent technological advances have focused on Quantum Computing because it introduces a new computing paradigm that allows problems that were previously impossible to solve in practice. The introduction of computers with a new architecture imposes new software development processes to make them more systematic and controlled, and that consider aspects such as quality and evolution of the software. The research will investigate new software engineering techniques to make software suitable for quantum computing that considers scenarios on security. The activities will include a 6-month internship at SER&Practices Srl.

The available positions will be assigned according to the ranking obtained by the applicants for each one of the 4 research activities, until all positions are covered.

Admission procedure

The applicants will be evaluated according to art. 6, i.e. on the basis of: a) the documents presented with the application, b) a research project (max 800 words) presented by the applicant about the fellowship research of interest, c) an oral examination that will discuss the topics of the presented research project and will also include the assessment of the applicant’s knowledge of English. The oral examination will be online.

Admission procedure in Italian or English for foreign students

For the admission procedure, the foreign students can select either Italian or English language.

Admission exam date and time:

The oral examinations will be conducted starting on November 5th 2021. Exact date and time will be communicated to each applicant via email by November 4th 2021; the examination schedule will also be available from by November 4th 2021 on the website of the PhD Programme in Computer Science and Mathematics (<http://dottorato.di.uniba.it>).

For more information, see:

<http://dottorato.di.uniba.it>

PROFILE

PHD PROGRAMME IN HUMANITIES, LANGUAGES AND ARTS

CUN Scientific Areas: 10 Antiquity Studies, Philology, Literary Studies, Art History

Subject Areas/*Curricula*: YES

1. Literatures and Philology (Academic Disciplines for Research and Teaching: L-FIL-LET/02, L-FIL-LET/04, L-FIL-LET/09, L-FIL-LET/10, L-FIL-LET/11, L-FIL-LET/14; L-LIN/03, L-LIN/10, L-LIN/13, L-LIN/21, L-LIN/05).
2. Languages, Linguistics and Translation (Academic Disciplines for Research and Teaching: L-LIN/04, L-LIN/07, L-LIN/12, L-LIN/14 e L-LIN/21);
3. Arts, Theatre, Music and Performing Arts (Academic Disciplines for Research and Teaching: L-ART/01, L-ART/02, L-ART/03, L-ART/05, L-ART/06, L-ART/07, L-FIL-LET/02, L-LIN/05, L-LIN/10, L-LIN/11 e L-FIL-LET/10).

Coordinator: Professor Olimpia Imperio

Administrative Office: Department of Research and Humanistic Innovation (ex Dip. Studi Umanistici)

PEC: direzione.lingue@pec.uniba.it

Duration: 3 years

Total number of PhD positions: 4

n. 1 position, topic: INNOVATION - CURRICULUM 3: Arts, Theatre, Music and Performing Arts

“Stone Scenes”. Performances of classical texts in ancient theatres, archaeological sites and digital archives.

Thanks to the use of digital technology, this project aims to carry out a systematic and constantly updated survey of the performances of Greek and Latin literary texts in stone theatres and in archaeological sites of Southern Italy, which represent a key cultural and economic asset for the territory. Despite that, they have neither been adequately surveyed yet, nor included in the broad international circuits of classical theatre festivals. The research will be aimed at carrying out a historical and critical study of the scenic rewritings in archaeological spaces. Moreover, the research will be aimed at building an online database of modern performances of ancient drama in open-air theatres, and a second online database of the Southern Italian stone theatres and of their potential uses.

n. 1 position, topic: GREEN - CURRICULUM 2: Languages, Linguistics and Translation

The “Green” Terminology: research project for a digital multilingual archive of sustainability.

The main aim of the activities related to the research project concerns the fields of sustainability and is to set up a series of digital, adaptable and open access terminology tools, i.e. online database, digital records and even software applications designed to run on mobile devices. The project is meant to organize the green terminology database in different sections connected to sustainability, such as terminology concerning different ecosystems, legislation, climate change, up to sustainable tourism. Either public or private local and national institutions working on/for sustainability can be considered as the target of this project.

n. 1 position, topic: GREEN curriculum 1: Languages, Linguistics and Translation

Wild space and urban space: the relationship with nature in the Europe of the origins and of the romantic age.

The necessity of establishing a new kind of relationship with nature provides the ground on which the new 'green' urban spaces and a new idea of sustainable development between the technology-market and the natural environment could be built. The heavily urbanized industrial Occident is founded on the development of the idea of the city and of the market which emerges between early and late Middle Ages. The principal aim of the project is to investigate this transition and how the romantic culture reshapes it, by analysing on the one hand early chivalric novels, allegorical novels, troubadour lyric, chronicles, *cartulari* and statutes of the Italian municipalities between twelfth and fourteenth century, and authors such as Goethe, Novalis, von Eichendorff, Alexander von Humboldt on the other. In those more recent authors the idea of a dialectical complementarity between nature and spirit clearly emerges.

n. 1 position, topic: GREEN – CURRICULUM 1: Languages, Linguistics and Translation

"Green que te quiero green": poetry as a space for assimilation, recycling and regeneration of the word and ecological thought.

This research project has the dual ambition of launching a campaign to raise awareness of green issues and at the same time give poetry a central role. The project involves: a census of all those Spanish-language texts that are particularly relevant to the ecological discourse and environmental sustainability; the creation of a database on the themes of ecosystem conservation, biodiversity and ecological awareness, including the original texts and bio-bibliographical data sheets of the authors; the systematic and progressive creation of Italian translations of all the texts (an aspect that requires special philological and linguistic skills), to make the poetic and ecological message more accessible.

Admission:

The verification procedures as to ordinary positions take place pursuant to Article 6 with knowledge of foreign language: English.

Exam procedures in English for foreign candidates:

Foreign candidates may be examined in Italian or in English.

Interview: November 5th 2021.

Timetable: at 9.00 am.

Location: Sala riunioni Palazzo Lingue 2° piano

If the interview would take place from remote owing to the on-going Covid-19 emergency, the procedure pursuant to Article 6 of the call will be followed.

Further information on the interview and suggested readings at the following web site:

<http://www.uniba.it/ricerca/dipartimenti/lelia/ricerca/dipartimenti/lelia/offerta-formativa/dottorato>

PROFILE

PhD PROGRAM IN METABOLISM, AGING AND SOCIAL MEDICINE - METABOLISMO, INVECCHIAMENTO E MEDICINA SOCIALE

Scientific Areas CUN: 06 – Medical Sciences; 07 – Agricultural and veterinary sciences

Scientific disciplinary sectors: MED/04; MED/06; MED/09; MED/28; MED/36; MED/43; MED/44; MED/50; AGR/15; VET/04

Coordinator: Prof. Antonio Moschetta

Administrative office: Interdisciplinary Department of Medicine

PEC: direzione.dim@pec.uniba.it

Duration: 3 years

Curriculum: Yes

Curriculum:

- 1) Clinical and experimental research (Scientific disciplinary sector: MED/06; MED/09; MED/28; MED/36; MED/43; MED/44)
- 2) Translational research (Scientific disciplinary sector: MED/04; MED/50; AGR/15; VET/04)

Total number of positions n.2 of which:

n. 2 INNOVATION Topic

- N. 1 scholarship for the research project: **Med-Index: a food product labeling system to promote adherence to the Mediterranean diet by encouraging producers to create healthier and more sustainable food products**

Curriculum 2

The aim is to create a front pack labeling to be associated with a Mediterranean Diet Model, inclusive for the entire European population without penalizing the different cultures and traditions, called Med Index. It will be a new FOP nutritional labeling system that will make it possible to recognize healthy food products and to incentivize producers towards better products and sustainable processes in line with the European Goals of the Green Deal and the “Biodiversity” and “Farm to Fork” strategies. The Med Index is based on the scientific evidence that the Mediterranean Diet is a sustainable and effective dietary model in reducing the risk of the onset of chronic diseases such as metabolic, cardio-vascular, neurodegenerative and oncological diseases. The doctorate focuses on innovation issues and includes a period of 6 months outside Italy and 12 months in a Company.

- N.1 scholarship for the research project: **Study and development of genetic predisposition tests for impaired Vitamin D and lipid metabolism.**

Curriculum 2

The project aims to develop predictive genetic tests for the metabolism of vitamin D and the metabolism of lipids by analyzing genomic variants directly involved in the biological processes that absorb vitamin D, lipids (as triglycerides and cholesterol) and the main drugs for the cholesterol control, the statins. These tests will provide information on the body's "weak points", allowing you to take effective personalized



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preventive measures and increasing the likelihood of staying healthy. They will provide indications to prevent early hypercholesterolemia and alterations in vitamin D metabolism through specific supplementation, diet/lifestyle correction, and early diagnosis in genetically predisposed individuals. The doctorate focuses on innovation issues and includes a period of 6 months in a company.

Admission procedures (ordinary places):

The selection will take place pursuant to art. 6, with verification of knowledge of the language: English

Methods for completing the tests in English for foreign candidates:

Foreign candidates can choose to take the selections in Italian or English.

Admission exam calendar and location:

Oral exam: 05/11/2021, 10.00 am

Location: Interdisciplinary Department of Medicine - University of Bari Aldo Moro, “Chini” building – “Frugoni” classroom, Piazza G. Cesare 11 - Polyclinic

Should the test be carried out electronically, due to the epidemiological emergency in progress, the provisions of art. 6 of the competition notice will be followed.

For more information see the website:

<https://www.uniba.it/ricerca/dipartimenti/dim/dottorato/home-dottorato>

PROFILE

PhD PROGRAMME IN APPLIED NEUROSCIENCES

Scientific CUN areas: 05 Biological Sciences, 06 Medical Sciences e 11b History, Philosophy, Pedagogy And Psychology Sciences.

Coordinator: Prof. Domenico RIBATTI

Administrative office: Department of Basic Medical Science, Neuroscience and Sense Organs

PEC: segreteriadirezione.smbnos@pec.uniba.it

Duration: 3 years

Curricula: Yes

Curricula:

- 1) Basic Sciences (Scientific disciplinary sector: BIO/09, BIO/10, BIO/11, BIO/12, BIO/13, BIO/14, BIO/16 e BIO/17;)
- 2) Clinical Sciences (Scientific disciplinary sector: MED/05, MED/10, MED/25, MED/26, MED/27, MED/30, MED/31, MED/33, MED/34, MED/39, MED/48, MED/50, M-PSI/01, M-PSI/08 e M-EDF/02)

Total number of positions available as PhD students: n.4

Number 1 position for GREEN theme:

- n. **1 position** with scholarship for the project entitled “**Physical activity in an outdoor environment and psychophysical empowerment of practicing populations**” - (curriculum # 2)

This research project follows an eco-systemic model and the main objective is the study of the bio-psycho-social variables. These variables define good practices based on evidence and experimental methods that promote well-being, the maintenance of health status, and the strengthening of the psycho-physical defenses in a larger population, residents or travelers, through a physical and sports practice in the natural environment, sustainable, with zero environmental impact, and outdoor. The hypothesis is that the intervention on the variable under investigation, can improve the habits and lifestyles, ever more active and healthier, in all age groups. In the project, the “Technogym Village Lab” plays a crucial role, both at national headquarter and affiliated centers distributed throughout the Apulian territory. The most modern installations will be tested and applied in the organization of outdoor and indoor spaces, public or private, in which to carry out action research, also considering the period of "green recovery" and overcoming the "well-being" crisis in the post-pandemic scenario of COVID-19.

Number **3 positions** for INNOVATION theme:

- n. **1 position** with scholarship for the project entitled “**Innovative systems for detection and high density EEG-graphic analysis**” - (curriculum # 2)

This project aims at implementing brain functional analysis with medium - high density EEG, equipped with flow sensors for detecting signals in the near infrared range. This constitutes a flexible and low-cost system for capturing subtle functional changes relating to the early stages and the evolution of neurological diseases. Specific purposes are

- 1) Optimize the detection systems of high-density EEG signals (250 channels), by implementing easy-to-use head cups models with integrated FNIRS sensors
- 2) Develop innovative systems for the integrated analysis of electrical-metabolic signals
- 3) Validate the registration systems on samples of normal subjects for various ages and on samples of subjects suffering from neurological diseases such as migraine, neuropathic pain, multiple sclerosis, long Covid.

- n. **1 position** with scholarship for the project entitled **“The e-health approach in remote rehabilitation of patients with cochlear implant” - (curriculum # 2)**
Combining the advanced clinical expertise of audiologists and otolaryngologists with the technological ones of IT and e-health engineering, this project has a triple objective:
 - 1) validate a telemonitoring platform capable of interfacing the Cochlear Implant of each user with a control room capable of simultaneously managing an interaction channel and a monitoring channel
 - 2) To measure the benefit of a telehealth intervention in terms of non-inferiority with respect to common rehabilitation at outpatients specialized clinics.
 - 3) Use the platform to administer 3 specific types of intervention, cognitive training, integrated visuospatial rehabilitation and musical training and measure the outcomes after 12 months of observation in a multicentric cohort in various areas of Italy.

- n. **1 position** with scholarship for the project entitled **“Deep-learning for prediction of chemical space chromatographic behaviour” - (curriculum # 1)**
This project aims to develop an innovative system that allow automated identification of chromatographic peaks in research field involving complex mixtures of chemicals (e.g. metabolomics, food composition identification), or immediate identification by chromatographic techniques by:
 - 1) The construction of a chromatographic data base (e.g., food-derived, potential and already approved drugs) using either ready available libraries (e.g., NIST), or experimentally analyzing the chromatographic behaviour of substances of interest (creating a dataset dedicated for the purpose);
 - 2) The development of deep-learning algorithms to predict the chromatographic behaviour of the chemical space (or a subspace of interest) using the retention data obtained in step 1.

Arrangements for admission: The exam procedures will be carried out in accordance with art. 6, with a verification of the knowledge of the English language.

Exam procedures in English for foreign candidates:

Foreign candidates can do the exam in Italian or in English.

During the oral exam, knowledge of the Italian language will also be ascertained.

Calendar of admission exams:

Oral exam: **Thursday, November 4, 2021 at 10:00 AM**

Venue of the exams: Classroom “A” - “New Complex of Biomedical Sciences” – Policlinico Consorziale di Bari – Piazza Giulio Cesare, 11 – Bari – 70124.

For more information, see:

<http://www.uniba.it/ricerca/dottorati>

<https://www.uniba.it/ricerca/dipartimenti/smbnos/ricerca/nuovo-corso-di-dottorato-di-ricerca>

PROFILE

PHD PROGRAMME IN MEDITERRANEAN ARCHAEOLOGICAL, HISTORICAL, ARCHITECTURAL AND LANDSCAPE HERITAGE: INTEGRATED SYSTEMS OF KNOWLEDGE, PLANNING, PRESERVATION AND PROMOTION

in agreement with the POLYTECHNIC of BARI and the National Research Council (CNR)

Scientific Areas CUN: 10 - Ancient History, Philology, Literature and Art History, 08a - Civil Engineering, 08b Architecture.

Coordinator: Prof. Giuliano VOLPE

Administrative office: Department of Research and Humanistic Innovation (ex Dep. of Humanities)

PEC: segreteria.disum@pec.uniba.it

Affiliated offices: Bari Polytechnic and National Research Council (CNR)

Duration: 3 years

Total number of positions: 4.

1 position with scholarship (Curriculum 1):

N.1 scholarship for the following research activities: **The eye of the machine in the time of travel: application of machine learning algorithms to satellite datasets for the detection of potential new archaeological sites linked to the mobility of prehistoric and protohistoric groups. Case studies between Southern Italy and the Sahara.**

The project aims to develop and apply an innovative and integrated approach of remote sensing and digital analysis for the identification of new archaeological sites in arid or subject to desertification environments. This approach involves the use of multi-temporal satellite imagery and the development of machine learning algorithms for image-recognition. The features of interest are: 1) slab structures and steinplätze pertinent to the semi-sedentary and mobile groups of the Egyptian Western Desert (Early and Mid-Holocene); 2) reinforced trenches of the inhabited areas and domestic buildings related to the Neolithization process in Sicily and the Central Mediterranean islands (5th-4th millennia BC); 3) keyhole and croissant tumuli associated with the mobility of Pre-Berber pastoralism in the Central and Western Sahara (4th-2nd millennia BC).

3 positions with scholarship (Curriculum 2):

N. 1 Scholarship for the research activity: **Archaeological maps and *renovatio forma urbis*.**

The theme of the research is the study of an innovative methodology of writing archaeological maps as operational tools for the transformation of the city. The close interrelation between archaeology and city form will be the foundation of the research, based on the ability of the archaeological fragment to shape the construction of the future city. The *forma urbis* is assumed as the main tool to get to the focus: the relationship between city-archaeology and urban transformations. The research foresees innovative activities linked to the conservation, fruition and valorisation of cultural heritage, both in its tangible dimensions (museums, libraries, archives, etc.) and in its intangible ones (management of historical places, buildings or monuments). Starting from these premises, the study aims at the elaboration of a practical and innovative tool able to prefigure the future transformations to be undertaken in the city.

N. 1 scholarship for the research activity **New technologies for the architectural heritage in raw earth.**

There is a renewed interest in the raw earth because of its sustainable qualities in terms of thermal and acoustic insulation. Its use is still not widespread. Recently, however, there has been an increase in interest from research and government agencies that aim to preserve the built heritage in earth, widespread in rural areas and arid territories of the Mediterranean basin. This research aims to provide an appropriate technical tool in this regard,

using a computational approach to be able to census and monitor this fragile cultural heritage. The Building Information Modeling (BIM) appears today as an essential tool in the construction sector and applicable to the historical building. By applying a comparative study to an exhaustive corpus, a more effective approach for the sustainable preservation of the earthen architectural heritage can be outlined.

N. 1 scholarship for the research activity *Technical, technological and social innovation in Valpolicella. An archaeological park for the Villa dei Mosaici at Negrar.*

For centuries, Valpolicella has preserved traces of a villa rustica with a residential and productive nature dating back to the 3rd century, which has been coming to light in recent years following the decision to encourage a series of extensive systematic excavation campaigns, led by SAP, promoted and supported by the Municipality of Negrar and the Soprintendenza Archeologia Belle Arti e Paesaggio per le Province di Verona, Rovigo e Vicenza. The landscape, with its renewed and still transforming geography, is intended both to maintain the productive vocation of its land and to allow the accessibility of archaeological sites by in situ musealisation. The work required is theoretical as well as practical and needs an analytical and analogical investigation, seeking to explore with adequate scientificity the ways in which the theme of technical, technological and social innovation has been declined until today in archaeological parks.

Curricula:

1. Archaeological, historical, architectural and landscape heritage: knowledge, methods and techniques (Scientific Subject Code: L-ANT/01, L-ANT/06, L-ANT/07, L-ANT/08, L-ANT/09, L-ANT/10, L-FIL-LET/01, ICAR/15, ICAR/18 e ICAR/21)
2. Archaeological, historical, architectural and landscape heritage: project methods and techniques (Scientific Subject Code: ICAR/08, ICAR/14, ICAR/15, ICAR/16, ICAR/18, ICAR/21, L-ANT/07, L-ANT/08 e L-ANT/10)

Admission procedure (ordinary positions):

The exam procedures will be carried in accordance with art. 6.

The selection procedure consists of the evaluation of qualifications, the research proposal and an interview, during which the knowledge of one of the following foreign language will be examined: English, French, Spanish.

In support of the research proposal, the candidate may also submit two letters of recommendation from accredited scholars in the proposed research field.

Admission procedure for foreign candidates:

Foreign candidates can choose to take the interview in Italian or English.

Access requirements:

“Laurea specialistica” or “Laurea magistrale” (second cycle university degree, e.g., M.A., M.Sc.) in:

LM-2 Archaeology

LM-3 Landscape architecture

LM-4 Architecture and construction engineering

LM-11 Conservation and restoration of cultural heritage

LM-15 Ancient philology, literature and history

LM-43 Information technology methods for the humanities

LM-48 Regional, urban and environmental planning

LM-84 History

LM-89 Art history

LMR/02 Conservation and restoration of cultural heritage

2/S Archaeology

3/S Landscape architecture

4/S Architecture and construction engineering

10/S Conservation of architectural heritage and environment

12/S Conservation and restoration of cultural heritage

15/S Philology and classical literature

54/S Regional, urban and environmental planning



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93/S Ancient history

95/S Art history

97/S Medieval history

98/S Modern history

Degree taken under the old Italian university system (prior to the one introduced by the Italian Ministerial Decree No. 509/99) in Humanities and Architecture

Admission interview date and time:

Interview in videoconference (Microsoft Teams).

Date: 05 November 2021. Time: 9:00 a.m.

For more information see the website:

<https://www.uniba.it/ricerca/dipartimenti/disum/post-laurea/patrimoni-archeologici-storici-e-paesaggistici-mediterranei-sistemi-integrati-di-conoscenza-progettazione-tutela-e-valorizzazione>

PROFILE

PhD PROGRAMME IN ANIMAL HEALTH AND ZOOZOSES

Scientific areas CUN: 07 - Agricultural and Veterinary Sciences, 06 - Medical Science

Scientific Subject Code: VET02, VET04, VET05, VET06, VET08, MED44

Coordinator: Prof.ssa Maria Tempesta

Administrative location: Department of Veterinary Medicine, Strada Prov.le 62 per Casamassima Km. 3 – Valenzano (Bari), 70010

PEC: direttore.dimev@pec.uniba.it

Duration: 3 years

Curricula: NO

Total number of positions available: 4:

No. 2 GREEN theme

- No. 1 scholarship for research activity: **Sustainable use of antibiotics and animal welfare in the primary production field.**

The research aims to analyze the AMR phenomenon with a global approach that refers to all microbial populations of cattle breeding and considers the various organisms as environmental indicators. The study plans to carry out sampling in cattle farms and to develop innovative business practices and Health Management Plans. These procedures will be aimed at achieving higher animal welfare standards and at the same time rationalizing the use of antimicrobials. Positive effects of the study are expected in the field of primary production. Farms will be able to use new tools to adapt operational procedures and protocols and reduce the use of drugs on farms, by implementing levels of animal health and welfare.

- No. 1 scholarship for research activities: **Identification of infectious agents responsible for hypo / infertility and reduction of the quality of production in indigenous donkey breeds through the development and use of innovative technologies for screening the microbiota of the reproductive system.**

The recovery of indigenous donkey breeds allows the enhancement of biodiversity and the sustainability of low environmental impact productions. Being the donkey a rustic and versatile specie (use in pet therapy, use of milk for intolerances), its breeding can support the economy of communities and marginal areas. To guarantee animal welfare and consumer health and, moreover, to limit the use of antibiotics and losses from lost production, it is necessary to start a health surveillance based on the integrated use of conventional (cultural tests, cPCR and qPCR) and innovative methods to investigate the microbiota with particular attention to infectious and contagious agents correlated with the reduced performance of the reproductive sphere and of the mammary gland.

No. 2 INNOVATION theme

- No. I scholarship for research activities: **Canine idiopathic epilepsy and gut microbiota**

Idiopathic epilepsy (IE) is defined as two or more unprovoked seizures at least 24 h apart with no identifiable underlying etiology other than a suspected genetic origin. The pathogenetic mechanism of IE remains poorly understood, but environmental and developmental factors are presumed to influence the disease. In human medicine, a relationship between gut microbiota (GM) and epilepsy has been established. In idiopathic epileptic dogs (IED), this relationship has not strictly investigated. The first aim of the study (on a 3 years basis) is to compare the differences between GM of IED and not-affected dogs. Moreover, the GM of dogs under antiepileptic therapy will be evaluated.

- No. 1 scholarship for research activity: **ISAAC (Innovative SeAfood AuthentIcation)**

The research activity will experiment with an innovative system of traceability / traceability and digitized molecular authentication, applicable by companies in the fishing sector for the analysis of multi-species products. Different types of multi-species fish products, sampled at the partner company and selected on the basis of processing method, complexity



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and difficulty of morphological recognition of the fish species used, will be analyzed using an advanced molecular approach (metabarcoding). The molecular results, integrated with the data relating to the production chain of the products under study, will be digitized using QR code technology and placed on the market associated with a specific brand that identifies them, to guarantee authenticity and safety.

Admission procedure (ordinary positions):

The exam procedures will be taken in accordance with art. 6. The selection procedure will be based on the evaluation of the candidate qualifications, a research project and the oral examination. The oral examination will consist of an interview to discuss the candidate's qualifications and skills and the presented research project. The knowledge of the English language will be also verified.

Examination of foreign candidates:

For foreign candidates the oral examination will be carried out in Italian or English.

Admission exam calendar and location:

Oral exam: 4 November 2021 at 10.00

Exam location: The oral exam will be held in video conference using the Skype platform

For more information see the website:

http://www.uniba.it/ricerca/dipartimenti/dipmedveterinaria/post-laurea/dott_ric

PROFILE

PhD PROGRAMME IN PUBLIC HEALTH, CLINIC MEDICINE AND ONCOLOGY

Scientific areas CUN: 06 - Medical Sciences, 05 - Biological Sciences

Scientific-disciplinary branches: MED/42, MED/09, MED/18, BIO/14, MED/38, MED/17, MED/16, MED/06, MED/01, MED/40

Coordinator: Prof. Maria Teresa Montagna

Administrative Headquarters: Biomedical Sciences and Human Oncology Department

Certified e-mail: segreteriaamministrativa.dimo@pec.uniba.it

Duration: 3 years

Curricula: NO

Total amount of positions with scholarship: 3, of which:

-n. 2 scholarships on “GREEN” subject matter

n. 1 research activity: **From the medical-surgical product to advanced hospital micrologistics: innovative proposals and solutions.**

The research project aims to allow the PhD student to obtain a high degree of education about the development of innovative and environmentally sustainable medical devices and about the evaluation of their impact. This objective will be achieved through constant educational activities and fieldwork.

The project has been developed in partnership with Hospital Scientific Consulting company and provides for a 6-month internship at the company itself.

In particular, the research topics concern:

- Optimization of high-cost drugs' and single-use medical devices' management processes;
- Evaluation of the effectiveness and environmental sustainability of the use of drones for air and surfaces disinfection;
- Evaluation of environmental treatment and purification procedures;
- Analysis of healthcare facilities' procedural packages;
- Analysis of the safety procedures for healthcare workers exposed to diffuse radiation during therapeutic actions performed on the patient.

The research activity that will be developed during the PhD is cross-sector, involving analysis of clinical, economic and workplace hygiene and safety nature.

n. 1 research activity: **Sustainability's criteriology in a “Green Hospital” mindset through the Health Technology Assessment method.**

The idea of a “Green Hospital” points forward to redesigning the development of healthcare facilities, reconciling the need for saving human lives with the safeguard of the environment; this objective requires the Health Technology Assessment methodology to comply with the so-called “Green world” principles.

The PhD project, developed in partnership with “Me.di.com.” company, provides for a 6-month internship at the company itself with two study branches: 1) a retrospective analysis of the environmental impact of technologies acquired by healthcare services since 2017 and 2) the experimentation of a new Health Technology Assessment methodology that will be able to complete the existing processes with sustainability evaluation elements in compliance with a “Green Hospital” mindset.

The PhD student will acquire a background suitable for use in applied healthcare research, in the National Healthcare System and in industrial realities working in service to healthcare facilities.

-n. 1 Scholarship on “INNOVATION” subject matter

n. 1 research activity: Lipo-Metabolic Ultrasonography and Prevention (U-LipoMet)

The increasing incidence of obesity determines an increase of non-transmissible diseases' and tumors' morbidity and mortality, due to the accumulation of visceral fat.

This project will study the multi-district accumulation of visceral fat in subjects with high cardio-metabolic risk (both in healthy weight range and in overweight/obesity weight range), with or without sarcopenia. The subjects will undergo the following procedures:

- Clinical history and anthropometric indicators collection;
- Analysis of both the general and metabolic bio-humoral framework;
- Multi-district ecography for the study of visceral fat's characteristics via innovative techniques completed with ecographic algorithms;
- Questionnaires about nutrition, lifestyle and quality of life.

The project will be carried out in partnership with Eurisko Technology Srl, and provides for a 6-month internship at the company itself. It aims to decrease both adiposity and clinical risk, improve the population's quality of life and contain healthcare expenses.

Provided scholarships will be assigned according to the ranking list for fixed topic, up to their depletion.

Admission modality (ordinary positions):

Selection will be carried out according to art. 6, verifying the candidates' knowledge of English language.

Exam fulfillment modalities for foreign candidates:

Foreign candidates may choose to carry out the admission exam in either Italian or English.

Date and place of the admission exam:

Oral test: 8 November 2021, 12:00.

Exam location: Zoom application.

If the current epidemiological emergence requires the exam to be held online, according to art. 6 of this announcement.

For further information, please visit the following website:

<https://www.uniba.it/ricerca/dipartimenti/scienzebiomediche>

PROFILE

PhD PROGRAMME IN CHEMICAL AND MOLECULAR SCIENCE

Scientific area CUN: 03 Chemical Science

Scientific Subject Codes: CHIM/01, CHIM/02, CHIM/03, CHIM/06 e CHIM/12

Coordinator: Prof.ssa Luisa Torsi

Administrative location: Dipartimento di Chimica

PEC: direttore.chimica@pec.uniba.it

Duration: 3 anni

Curricula:

- 1) Advanced chemical processes (Scientific Subject Codes CHIM/01, CHIM/02, CHIM/03, CHIM/06)
- 2) Chemistry of innovative materials (Scientific Subject Codes CHIM/01, CHIM/02, CHIM/03, CHIM/06)
- 3) Chemistry of biological systems (Scientific Subject Codes CHIM/01, CHIM/02, CHIM/03, CHIM/06 and CHIM/12)

**Total number of available positions n.: 4:
n. 4 theme GREEN**

- N. 1 scholarship for the research project **“Biomass from micro- and macroalgae for environmental remediation, nutraceutical and agricultural applications”**
The project is focused on the development of new and sustainable methods for: 1. High efficiency extraction and isolation of bioactive compounds from micro- macroalgae for nutraceuticals, pharmaceuticals, agronomy and nanotechnology; 2. *In vivo* or *in vitro* chemical modification of algae organisms and components, to enhance their photosynthetic efficiency, improving the productivity, and promote their ability to operate a decontamination towards persistent organic pollutants (POPs).
Company: SouthAgro, Foreign Institution: University of Nantes.
- N. 1 scholarship for the research project **“Soluzioni organiche di sintesi o di estrazione vegetale per l’energy storage (RedOrg)”**
The project aims to develop new molecular systems, both synthetic and from plant extraction, for the energy storage. Two electro-active species will be developed and characterized: inert free-radicals, and polyphenolic molecules obtained from lignocellulosic wastes such as lignin. Such systems, due to their different structure and properties, offer the possibility to cover a deep range of energy storage devices, spacing from supercapacitors to metal-free batteries, including hybrid organic-inorganic systems. In this way it will be possible to improve the performance and the sustainability of the state of the art in the field of energy storage.
Company: BETTERY SRL, Foreign Institution: ICMAB-CSIC Barcelona.
- N.1 scholarship for the research project **“Valorisation of steelworks by-products for “Energy & Sustainability Challenge””**
The project is focused on the sustainability and circular economy behind the valorisation of waste produced in industrial processes by exploiting new catalysis strategies, in particular towards CO₂ removal, production of biofuels and hydrogen and purification of industrial wastewater.

Although one of the best examples of circularity would be the integral cycle of steel production, it is possible to improve the circularity through symbiosis with other production cycles that are external to the production cycle within steel and iron industry.

Company: Centro di Ricerca dello stabilimento di Taranto della Società Acciaierie d'Italia S.p.A,
Foreign Institution: Department of Catalysis and Chemical Reaction Engineering- National Institute of Chemistry Ljubljana Slovenia.

- N.1 scholarship for the research project: **“Green hydrogen production by using photocatalysts based on perovskites halides and fullerene derivatives”**

The project is focused on the development of photocatalytic systems based on hybrid perovskites halides without lead and fullerene derivatives to directly produce hydrogen from aqueous solutions under solar irradiation.

Company: Italy Nanocage srl, Foreign Institution: Universitat Rovira i Virgili University (URV, Tarragona, Spain)

The available positions will be assigned according to the order in the merit ranking for each topic, up to their exhaustion.

Arrangements for admission (ordinary candidates)

The exam procedures will be taken in accordance with art. 6. The selection process will include the evaluation of the knowledge of English language

Methods of accomplishment for the exams in English for foreign candidates

For foreign candidates, the oral exam can be done in Italian or in English.

Admission Exam dates and time:

Oral exam: November 4th, 2021 at 09:00 a.m.

Venue: Microsoft Teams platform

If, due to pandemic situation, the exam procedure should take place telematically, prevision of art. 6 will be observed.

For more information:

<https://www.uniba.it/ricerca/dipartimenti/chimica/ricerca/dottorato-di-ricerca>

PROFILE

PhD PROGRAMME IN PHARMACEUTICAL SCIENCE

Scientific areas CUN: 03 Scienze Chimiche, 05 Scienze Biologiche

Scientific Disciplinary Sectors: CHIM/06, CHIM/08, CHIM/09, BIO/14

Coordinator: Prof. Nicola Antonio Colabufo

Administrative headquarters: Dipartimento di Farmacia – Scienze del Farmaco

Number of fellowships: n. 4: 2 positions in Green Field and 2 positions in Innovation Field

PEC: direzione.farmacia@pec.uniba.it

Study period: 3 years

Curricula: NO

GREEN FIELD

1) REcovery through green extraction methods of MEDicinal waste ingrediEnts as Starting materials for the synthesis and preclinical study of new drugs (REMEDIES)

In the Bari area 40 tons/year of medical waste are produced. The destruction of this waste represents a waste of valuable molecules. This project proposes to recover, through green extraction processes, the ingredients of such waste and to transform them into fine chemicals and pharmaceutical products with high added value, for research and development, also at the industrial level, of innovative products. The project represents an innovative service model that can be extended to other national realities with obvious scientific, social, and economic implications. The partner company would have the opportunity to support the green resumption of activities, conditioned by the COVID-19 pandemic, and to develop new services to the area by creating a new production and commercial branch.

2) Green Chemistry and Biocatalysis for Innovative and Eco-sustainable Synthetic Procedures for the Preparation of APIs (Active Pharmaceutical Ingredients) and Food Supplements

The aim of this project is the development on an industrial scale of new sustainable synthetic protocols for the preparation of APIs and sweeteners/food supplements by using chemo-enzymatic/fermentation approaches or readily attainable and cheap biodegradable eutectic mixtures based on natural metabolites (e.g., sugars, amino acids, vitamins), in order to minimize the environmental footprint of traditionally used Volatile Organic Compounds (VOCs). In synergy with the Dieffeti Cosmetici s.r.l.s. company, the research Team aims at introducing the technological innovation necessary to reduce the employment of toxic VOCs and at improving the efficiency of processes, in accordance with the European Commission guidelines and policies for the EU's transition towards a sustainable economy.

INNOVAZION FIELD

1) Development of food supplements using plant active ingredients obtained with an innovative extraction method

The research activity aims to create food supplements based on active ingredients from plants using innovative extraction methods and excipients capable of increasing extractive yields, stability of the active ingredients during the processing phases in a completely aqueous environment and their rapid solubilization in liquid formulations or biological fluids.

For the realization of this project the PhD student must:

- 1) devote himself to the bibliography research to acquire the notions inherent to the project;

- 2) experiment with the conditions for the optimal extraction of the active ingredients and formulation of the food supplements;
- 3) carry out studies to guarantee the quality of the formulated products;
- 4) disseminate the results obtained in conferences and scientific publications.

2) **Epigenetic modulators and advanced therapies in Duchenne muscular dystrophy: towards innovative preclinical studies using 3D organoids.**

Synopsis

The research activity will be focused on the identification of novel, personalized therapies in Duchenne muscular dystrophy and other rare neuromuscular diseases, with high medical need. The project will evaluate the effects of new epigenetic modulators and their possible synergy with genetic and molecular therapies in 3D skeletal muscle organoids, obtained from patients-derived cells, followed by tests in proper animal models. Thanks to the collaboration between the University and Italfarmaco drug company, the PhD student will acquire the following multidisciplinary competences:

- Realization of innovative platforms for preclinical studies;
- Validation of novel therapeutic targets and efficacy assessment of novel epigenetic modulators, alone or in combination with traditional/advanced therapies;
- Study of new drug delivery formulations for advanced therapies as well as design and in silico screening of new drugs.

Modality of admission:

The exams procedures will be taken in accordance with art. 6.

The selection will be performed on qualifications and exams with the assessment of the knowledge of the foreign language: English.

Procedures for the oral exam for candidates:

Candidates can choose to take the entrance examination in Italian or English

Calendar of admission exams:

Oral Proof: November 4, 2021, at 9 o'clock CET

Where: Room 6, Department of Pharmacy, Campus E. Quagliariella, via E. Orabona 4, Bari

If the exam, due to the epidemiological emergency, will be carried out electronically, the provisions of art. 6 of the announcement.

For further information, please consult the following Web address:

<https://www.uniba.it/ricerca/dipartimenti/farmacia/ricerca/dottorati-di-ricerca/dottorato-di-ricerca-in-scienze-del-farmaco/offerta-formativa-scienze-del-farmaco-xxxvii-ciclo>

PROFILE

PHD PROGRAMME IN SOIL AND FOOD SCIENCES

CUN Scientific Areas: 07 – Agriculture and veterinary sciences; 03 – Chemical sciences; 06 – Medical sciences; 05 – Biological Sciences; 02 - Physical Sciences

Academic Fields and Disciplines: AGR/16, AGR/15, AGR/13, CHIM/01, MED/38, BIO/12, CHIM/10, AGR/19, AGR/01, AGR/02 e FIS/07

Coordinator: Prof. Maria De Angelis

Administrative site: Department of Soil, Plant and Food Sciences

PEC: disspa@pec.uniba.it

Duration: 3 years

Curricula: YES

Curriculum 1: Food microbiology, technology, safety and chemistry

Curriculum 2: Agricultural chemistry

Total number of positions to apply for: n. 5 of which:

n. 3 GREEN

N. 1 positions for the following research activity:

Evaluation of socio-economic impacts of international and regional local development projects on the coastal territory: the case of the lower Salento area

The assessment of the socio-economic impact of international and regional projects for local development, carried out in a defined territorial context, is the subject of increasing attention for the purpose of promoting sustainable development.

Evaluating the impacts means verifying the effects - both unexpected and foreseen - of a policy / intervention, identifying the success and failure factors.

The research activities concern:

- the evaluation of mission related programs, projects and investments, through the measurement of results and impacts;
- support for the structuring of interventions in order to make them measurable and maximize their impact;
- the creation of monitoring and evaluation paths of the results of mission related projects and investments, with the involvement of stakeholders.

N. 1 positions for the following research activity:

From weed waste to a health resource: research and enhancement of Salicornia Herbacea for new formulations of nutraceutical interest

The project enhances a product of the Mediterranean area, Salicornia herbacea, a weed species, as a matrix for the formulation of supplements with antioxidant and anti-proliferative activity. It is used in traditional folk medicine for the treatment of obesity, diabetes and cancer and its consumption, as a functional food, is widespread. Local varieties of Salicornia will be sampled, their bioactive components identified using green extraction techniques (ultrasounds, microwaves and eutectic solvents), their activity tested on HepG2 and A549 cells, conducting bioavailability studies and proposing an innovative formulation as a nutraceutical supplement to be placed within the national and international market.

N. 1 positions for the following research activity:

Enhancement of agricultural by-products and co-products in animal feed to reduce the environmental impact of farms, the use of antimicrobials and improve the quality of livestock production

In recent years there has been a raising interest in agricultural by-products use as animal feed. They could have positive effects production performance and quality as well as on animal health. The use of these products has multiple benefits:

- reduction of the need for natural resources
- improvement of the digestive efficiency of animals and reduction of environmental impact
- improvement of immune and antioxidant function
- improvement of qualitative, nutritional, and functional standards of livestock production.

All this reduces the competition between the use of food for humans and animals. The research activity has the aim to reuse waste biomass in the diets formulation for ruminants.

n. 2 INNOVATION

N. 1 positions for the following research activity:

Winery by-products for the production of innovative foods with high nutritional features in a circular economy perspective

Wine-making lead to the production of different by-products (grape pomace, seeds, stalks, lees) that being a potential source of bioactive molecules (polyphenols, antioxidant fibers, β -glucans, oligosaccharides) can be exploited in the food industries. The bioactive compounds can be added into the formulation of innovative foods, such us tailor-made innovative baked goods for specific consumers. The innovative healthy foods require also the reduction of the load/glycemic index, the increase of the fibers content and bioactive compounds, without neglecting their acceptability from a social and sensory point of view.

N. 1 positions for the following research activity:

Design of new formulations of functional foods through the preservation of fermented and non-fermented vegetable matrices and evaluation of their effect

The research project aims to characterize raw matters of vegetable origin and to set-up novel functional foods. Among the strategies used to improve digestibility and increase bioavailability of nutrients and bioactive compounds in the novel foods, fermentation will be scouted. Healthy effects of the novel foods will be assessed through in vitro dynamic digestion. In addition, data about the response of gut microbiota to the novel functional foods will be useful to increase knowledge about potential healthy effect of those foods. Metabolomics and metagenomics will be used for both identifying metabolites produced during fermentation and evaluating the effect of bioactive compounds on gut microbiota.

Application Requirements (Ordinary positions):

The exam procedures will be taken in accordance with art. 6. The selection is based on qualifications, project and oral exams.

Exam procedures in English for foreign candidates:

Foreign candidates can choose Italian or English language for their admission exam.

Admission exam dates, time, and place:

Oral interview: **5th November 2021**

The oral exams will be held in: **ROOM VII** of the Department of Soil, Plant and Food Sciences, street Giovanni Amendola 165/A, 70126, Bari. Further details will be published on the following link:

<https://www.uniba.it/ricerca/dipartimenti/disspa/dottorato-di-ricerca/scienze-del-suolo-e-degli-alimenti/xxxvii-ciclo/green-e-innovazione-fse-react-eu>

ON-LINE by Teams (cod. kes2029; <https://teams.microsoft.com/l/meetup-join/19%3asVFTIoYoPB9IUMXl4orjhFRXlE5o8NkFzke-H0x3SBg1%40thread.tacv2/1633446802721?context=%7b%22id%22%3a%22c6328dc3-afdf-40ce-846d-326ead86d49%22%2c%22oid%22%3a%2207cacad3-3605-45ea-93e7-867351517fb9%22%7d>)

Should the test be carried out on-line, due to the epidemiological emergency in progress, the provisions of art. 6 of the call will be followed.

For further details please visit the website:

<https://www.uniba.it/ricerca/dipartimenti/disspa/dottorato-di-ricerca/scienze-del-suolo-e-degli-alimenti/xxxvii-ciclo/green-e-innovazione-fse-react-eu>

PROFILE

PhD PROGRAMME IN HUMAN RELATION SCIENCES

CUN Scientific Areas: 06 Scienze Mediche; 10 Scienze dell'antichità, filologico-letterarie e storico-artistiche; 11A Scienze Storiche, filosofiche, pedagogiche; 11B psicologiche; 13A - Scienze economiche e statistiche; 14 Scienze politiche e sociali

Coordinator: Prof. Andrea Bosco

Administrative Office: Dipartimento di Scienze della Formazione, Psicologia, Comunicazione (Department of Education, Psychology, Communication)

Duration: 3 years

Curriculum: Yes

Total number of positions available: 4

- 1 position for the curriculum 1)
- 2 positions for the curriculum 2)
- 1 position for the curriculum 3)

Curricula:

- 1) Historical and social policies (scientific sectors: M-STO/02, SPS/01, SPS/02, SPS/06, SPS/07, SPS/08, SPS/11 SPS/12, L-LIN/03, L-LIN/10, M-FIL/05, M-FIL/01)
- 2) Educational dynamics and education to politics (scientific sectors: M-PED/01, M-PED/02, M-PED/03, M-PED/04, SECS-S/01)
- 3) Psychology: cognitive, emotional and communicative processes (scientific sectors: M-PSI/01, M-PSI/02, M-PSI/03, M-PSI/04, M-PSI/05, M-PSI/06, M-PSI/08, L-LIN/01, L-LIN/12, MED/43)

nr. 1 position on the topic "GREEN"

- Nr. 1 scholarship for the research activity: **Arti@ttive for the environment (curriculum 2)**

Description: The project involves a research-action approach that aims to create technological prototypes to increase family-friendly and educational use of the heritage of history and art present in minor museums, perfecting innovative forms of smart and technological design. It intends: to promote the knowledge of new tourist itineraries by enhancing the natural landscape, to increase the level of accessibility of families, even with small children, to tourist itineraries designed for them, to promote accessibility to tourism for students, even the disabled, already at starting from kindergarten. The project will involve the target of 10-16 year old children and their families in an inclusive and participatory perspective, a sample of students from the local schools that will operate, with a sample of university students from the ForPsiCom Department of the University of Bari. research expects to have important repercussions in the environmental education sector and in that sector on the border between educational sciences and technologies that deals with e-learning, immersive learning, psycho-educational activities in augmented reality. The technical feasibility of the project is guaranteed by the expertise that the company involved in COOPERATIVA RE ARTU S.c.a.r.l has in the reference sector.

n. 3 positions on the topic "INNOVATION"

- Nr. 1 scholarship for the research activity: **E-service learning for Gal Nuovo Fior D'olivi (curriculum 2)**

Description: The project intends to focus on the creation of a prototype educational device of territorial e-Service Learning for the learning of civic culture and social support for fragile targets (childhood-elderly) by transforming the network of first and second cycle schools in the territory into a hub. civic learning

and prevention of risk and deviance behaviors. It is an educational-didactic proposal that combines 'Service' (citizenship development actions) and 'Learning' (acquisition of professional, didactic-methodological and social skills) so that students develop knowledge and skills aimed at the civic growth of their own community. We intend to create a platform prototype for the e-SL that supports the design, implementation and dissemination of SL micro-projects to support all those situations in which face-to-face communication is not feasible both to build networks of comparison and aggregation between institutions. The general purpose is to promote cultural "responsiveness". The areas of educational and social intervention will be legality and the environment in the interaction between the territory of the communities residing in the municipalities of the GAL Nuovo Fior D'Olivi and the institutional realities of the Universities (Bari, Salamanca) and schools.

- Nr. 1 scholarship for the research activity: **Alleviate social isolation and its consequent neurological deterioration in pathological aging through electrical and musical stimulation in a virtual and augmented reality environment (curriculum 3)**

Description: Social relationships can affect mental health in aging up to increasing the risk of Alzheimer's disease (AD) for those who live in solitude. Music permits to reduce social isolation and therefore AD risk and symptoms, especially when combined with other treatments such as transcranial electrical stimulation (tES). During the COVID19 pandemic, a traditional musical intervention represents a health risk. Here we want to adopt virtual and augmented reality (VR + AR) in synergy with southern companies to propose a music treatment at home combined with tES. The research will aim to identify neurological alterations related to social isolation in AD patients in a neuroimaging study and subsequently, in a longitudinal clinical study, the alleviation of these alterations through musical and electrical treatment carried out in a safe VR+AR environment.

- Nr. 1 scholarship for the research activity: **Media convergence in open source publishing platforms, based on the creation of thematic community for small groups (prisoners, migrants, ecofeminists) (curriculum 1)**

Description: The present project aims at investigating the relationships occurring between the collective subject's dynamics and the communication's ones, in the midst of the so-called "crisis of the humanities", i.e., the Galassia Gutenberg crisis (MacLuhan 1976) associated with the crisis of individualism within postmodern societies (Maffesoli 2004). The aim is the study and the implementation of a new web-based publishing system, endowed with a drag-and-drop interface for augmented reality. Specifically, the objective is enhancing the experience of accessing at information contents through 360° pictures and videos, rendering, 3D animation, 3D interactive infographics, real time and georeferenced contents. The new system allows specific people, for instance impaired subjects, to build a "newspaper" by means of augmented reality contents along the ordinary communication flow.

Admission procedure (ordinary positions):

The exams procedures will be taken in accordance with art. 6.

Scientific qualifications + original research project to be attached to the registration form + oral examination.

The selection will be based on scientific qualifications, original research project, to be attached to the application, and oral examination on theoretical and methodological insights inherent in the contents of the project presented, and the assessment of the knowledge of a foreign language: English. The must have a maximum length of 15000 characters, spaces and bibliography included. The project must include four sections: 1) state of the art / rationale and aims of the project, 2) method, 3) expected results, 4) potential threats to project success.



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The candidates' admission to the oral examination will be conditional upon a positive evaluation of the original research project.

The research project will be discussed and the knowledge of the English as a foreign language will be assessed during the oral examination.

Examination for foreign candidates:

Foreign candidates can choose to take the exam either in Italian or English.

Calendar of the admission exams for ordinary positions:

November 2nd 2021 10.00 a.m. Evaluation of scientific qualification and research projects. Only for the members of the Examining Committee.

November 3rd 2021 4.00 p.m. Publication on the following website of the list of candidates admitted to the oral examination:

<https://www.uniba.it/ricerca/dipartimenti/forpsicom/didattica/formazione-postlaurea/dottorato>

Oral examination: November 4th, on MS Teams platform. Candidates will be invited to share the platform by an e-mail notification by the Examination Committee. The address of the e-mail is that they have declared on the registration form.

For more information, visit the website:

<https://www.uniba.it/ricerca/dipartimenti/forpsicom/didattica/formazione-postlaurea/dottorato>

PROFILE

PhD PROGRAMME IN HUMANITIES

Scientific Areas CUN: 11 – History, Philosophy, Education, Psychology; 10 – Philology, Literature, Arts of Antiquity; 02 – Physics; 14 – Politics and Social sciences.

Scientific Fields: M-FIL/06; M-FIL/01; M-FIL/05; L-FIL-LET/02; L-FIL-LET/04; L-FIL-LET/05; M-STO/08; FIS/07; M-STO/05; M-STO/02; M-STO/09; M-STO/01; SPS/07; L-ANT/08; L-ANT/03; L-ANT/07; M-STO/07; M-STO/04; SPS/02; M-FIL/08.

Coordinator: Costantino Esposito

Head Office: Department of Research and Humanistic Innovation (ex Dip. Studi Umanistici)

PEC: segreteria.disum@pec.uniba.it

The length of the PhD Program: 3 years.

Curricula:

- | | |
|---|--|
| 1. Philosophy and History of Philosophy | n. 1 of grant-assisted positions on GREEN topics |
| 2. Philology and Literature of Antiquity | |
| 3. History and Archaeology of Antiquity | n. 1 of grant-assisted positions on INNOVATION topics |
| 4. History from Middle Ages to Present Time | n. 1 of grant-assisted positions on INNOVATION topics (A)
n. 1 of grant-assisted positions on INNOVATION topics (B) |
| 5. History of Science | |

Total number of positions: 4, of which:

n. 1 on GREEN topics/Curriculum 1: **Linguistic innovation, performative communication and gender-based identity claims.** The project aims to enhance social sustainability by promoting active policies of respect and integration of gender minorities through the activation of good communication practices in the workplace. With this goal, it proposes an analysis of the relationship between linguistic performativity and gender-based power relations within the workplace. Referring to the Austinian theory of the performative and its re-elaborations by Butler, Derrida, Nancy, this analysis will bring to light the stereotypes and forms of hate speech that circulate in the daily use of language, with particular reference to gender discrimination, in order to raise the awareness of the involved subjects about the role of the language we use in the processes of marginalization and exclusion.

n. 1 on INNOVATION topics/Curriculum 3: **Monitoring rural cultural heritage by applying modern digital technologies.** The project includes and expects: identification of a homogeneous landscape sector on both Adriatic sides (Apulia and Montenegro); census of the historical rural architectural taxonomy attested in the two sectors; functional study of some types of buildings (residential, productive, religious, etc.) chosen according to criteria suggested by the examination of the contextual data collected (state of conservation; marginality/centrality within the anthropic space; socio-economic value; identity consistency, etc.); systematic analysis of 'case studies' conducted through the application of innovative technological processes ('Historical Building Information Modelling') and implementation of digital reconstructive models useful for knowledge, monitoring, conservation, use, enhancement of the architectural structures considered.

n. 1 on INNOVATION topics/Curriculum 4, (A): **EDHER. Study of an integrated Digital Ecosystem for sustainable innovation of digital HERitage.** The project aims to activate a training and research path focused on the study of phygital models and solutions, based on the concept of Digital Cultural Monument (MCD), in which physical environments and multimedia digital expansions in Mixed Reality are integrated. A fundamental focus for the project will be centered on the study of innovative User eXperiences with a high interactive, cognitive, and emotional impact, aimed at creating an ecosystem with a high experiential impact, usable by multiple and different communities of users (including

Fragile Subjects). The candidate will also study citizen engagement processes to promote the sustainability of MCDs, in a user-centered perspective with which to characterize the sustainability of the model.

n. 1 on INNOVATION topics/Curriculum 4, (B): **OFFIS - Officine di Innovazione Sostenibile: Internal Areas as activators of cultural interest for the resilient regeneration of villages.** Aligned with the PNRR strategies, the OFFIS project will activate a training and research path focused on the aware use of digital innovation for the regeneration of inland areas and their villages, aiming to make them activators of interest for triggering processes of sustainable repopulation and re-functionalization, also by actively involving local communities. The candidate will study a resilient model of Sustainable Innovation Workshops that will be centers of cultural, social, and economic regeneration on a human scale, which will interact with their territories by expanding themselves through digital innovation.

The project involves the analysis and comparative study of similar situations in other internal European areas with characteristics like those of our country, in order to assess the scalability of the model on a European scale.

Admission criteria:

The exam procedures will be taken in accordance with art. 6. Candidates will have to prove their knowledge of foreign language skills on the basis of what has been indicated in the application (English, French, German and Spanish).

Procedures for the exam for foreign candidates:

Foreign candidates can choose to take the entrance examination in Italian or English.

Calendar of admission steps (ordinary):

Oral exam 5 november 2021, h. 9.00, videoconference using Microsoft Teams.

Further information can be found on the website at the following link:

<https://manageweb.ict.uniba.it/ricerca/dipartimenti/disum/post-laurea/ammissione-al-xxxvii-ciclo>

PROFILE

PhD PROGRAMME IN ORGANS AND TISSUES TRANSPLANTATION AND CELLULAR THERAPIES

CUN Scientific Area: 06 Medical Sciences, 07 Agrarian and Veterinary Sciences, 05 Biological Sciences
Scientific Disciplinary Sectors: BIO/17, VET/09, MED/15, MED/12, MED/13, MED/14, MED/18, MED/19, VET/08, VET/01, MED/41 and MED/15

Coordinator: Prof. FRANCESCO STAFFIERI

Administrative office: Department of Emergency and Organ Transplantation

PEC: direzione.deto@pec.uniba.it

Duration: 3 years

Curricula: NO

Total positions with scholarship n. 4 of which

n.1 GREEN topic

N.1 scholarship for research activity: **Evaluation of spermatogenesis and characterization of the germinal staminal male cells of ictic species susceptible from the conservationist end-points and of breeding.**

This project includes research activities aimed at the conservation of fish species and at sustainable fish production and, therefore, is consistent with the "green" theme of the D.M. 10 August 2021, n. 1061, PON Resources "Research and Innovation" 2014-2020. The consumption of fish in recent years has grown exponentially and its growing demand from the markets has led to an increase in fishing effort and a consequent depletion of fish stocks of different species, to the point that many of them are classified by the International Union for the Conservation of Nature in the categories "vulnerable" or "at risk of extinction". An alternative source of fish supply is aquaculture. However, aquaculture production in Europe is limited to a few species and the sector does not yet represent a real alternative to fishing which, in fact, is the main source of fish products. The diversification of the aquaculture supply is hindered by various problems, first of all the onset of reproductive dysfunctions in fish confined in captivity and the consequent inability to lay fertile gametes. In addition, large fish species such as bluefin tuna or amberjack, despite being highly demanded by the market, require several years to reach puberty and high costs for the management of the spawners, making them unattractive for farmers. The way to control the reproductive cycle of a new species is complex and it is important to find increasingly innovative and 'attractive' solutions in terms of cost-benefits for breeders. The xenograft of germ cell stem cells of difficult-to-breed fish species into surrogate species is a highly innovative technology with great potential. Several international researches are underway on the xenograft of stem spermatogonia of fish species, and one of the main problems is constituted the complexity of the preliminary phase of isolation and characterization of these cells, due to the high variability of stem cell markers. A second problem for putting a point of this technology is the standardization of cryopreservation procedures spermatogonia stem, a fundamental process for these cells to be isolated from a fish species vulnerable or at risk of extinction can be collected and constitute a bank of viable gametes from to draw on for their transplantation in bred surrogate species. This project aims to study the spermatogenesis of some fish species of commercial interest classified as vulnerable or at risk of extinction, such as bluefin tuna, swordfish, croaker, turbot and various species of grouper, with the aim of characterizing, by means of techniques biomolecular, immunohistochemical and immunofluorescence, stem spermatogonia, identify suitable stem cell markers and develop protocols for the isolation of these cells. Also, they will come tested protocols for the cryopreservation of stem spermatogonia, thawing and the subsequent proliferation in vitro to test its viability. The starting point of the activities will be the use of a model species on which to carry out the isolation, characterization and cryopreservation tests. This species will be represented by the interspecific perch-sea bass hybrid (*Morone saxatilis* x *Morone chrysops*) bred at the breeding plant of the Fratelli Lidonnici Agricultural Society of Rocca di Neto (KR). The doctoral student will attend the breeding facility for a minimum of six months to acquire skills related to all stages of breeding, follow the path of reproductive development of the fish until puberty and study their spermatogenesis and reproductive cycle in order to identify the most suitable size and seasonal period for taking stem spermatogonia samples. Laboratory protocols will then be developed and subsequently applied to over-exploited species whose conservation is at risk.

n.3 INNOVATION topic

N.1 scholarship for the research activity: Genetic therapy for the treatment of the dilative cardiomyopathy in veterinary medicine

Dilated cardiomyopathy (CMD) is a primary or secondary disease of the heart muscle that affects both humans and dogs and is characterized by contractile deficit and dilation of the heart chambers. Despite the progress of drug therapy and biomedical devices, CMD, which has a very aggressive evolution, remains with a very poor prognosis compared to other cardiac pathologies, and is responsible for 50% of heart transplant cases in humans, even in pediatric age. Equally in the veterinary field, CDM represents an important clinical problem especially in young large breed dogs with rapid and fatal progression. The ineffectiveness of current therapies requires the search for new solutions. One of these is gene therapy, or the administration, through viral or synthetic vectors, of genes capable of producing biological factors capable of acting on the origin of the problem, slowing down myocardial wasting and therefore the evolution of the disease. Gene therapy has been used in many clinical trials on human patients (consider for example its enormous success in COVID vaccination), although not sufficiently proven for the treatment of CMD. In the veterinary field, however, it is practically semi-unexplored and could rightly be considered highly innovative. Among the possible therapeutic factors conceivable for the treatment of CMD, our group chose the vascular endothelial growth factor-B (VEGF-B). Indeed, it possesses a marked anti-apoptotic and cytoprotective rather than angiogenic activity (Li et al., 2008) which makes it particularly suitable for gene therapy of non-ischemic myocardopathies such as CMD, in which the increased frequency of apoptosis seems to play a key role (Narula, Haider et al., 1996; Olivetti et al., 1997; Saraste, et al., 1999). Adeno-associated virus type 9 (AAV-9) is used to carry the VEGF-B gene, a vector with known tropism for cardiac cells, high cell penetration efficiency and excellent safety profile (Zacchigna et al., 2014). Previously published laboratory studies by our project collaborators have demonstrated a clear efficacy of administering AAV9-VEGF-B in dogs with experimentally induced CMD (Pepe et al., 2010, Woitek et al., 2015), offering results that can be called exciting, as gene therapy markedly delayed the progression of CMD to congestive heart failure. More recently, the feasibility and tolerability of the same procedure has been demonstrated in dogs with natural CMD (Paradies et al., 2019). The study was carried out at the University of Bari in collaboration with the Scuola Superiore Sant'Anna of Pisa and the Faculty of Medicine of Leipzig, Germany (Ministerial Authorization No. 180946122, 2016). The efficacy data from the same study seem exciting (not yet published, in final processing). The study of the research project in question aims to verify the applicability and efficacy of cytoprotective gene therapy in CMD through AAV-VEGF-B administered both with the more traditional method of intra-coronary infusion via catheter, and through devices latest generation which allow intra-myocardial injection under fluoroscopic guidance and which could further improve the effectiveness of the proposed therapy. The demonstration of the applicability and effectiveness of gene therapy based on VEGFB under fluoroscopic guidance it would represent a strong innovative element for the treatment of CMD in dogs, with undoubted scientific (ie dog as a model for studies on human CMD), social and economic (ie role of the dog as a companion animal in society modern, owners willing to pay important expenses for the health of their pets). Positive results could have important implications not only in the veterinary scenario but also for the treatment of CMD in human medicine. The project is configured in a research path that is based on innovation and technologies enabling and enhancing human capital in terms of training for the application of technology.

N.1 scholarship for the research activity: Modulation of the mucosal immunity and improvement of the intestinal permeability as therapeutic strategy in the IgA nephropathy: application and development of food integrator based on symbiotic of high quality.

IgA nephropathy (IgAN) is the most common primary glomerulonephritis. The pathogenesis is not yet fully known as predisposing genetic factors and environmental factors, including diet and lifestyle, contribute to it. In recent years, the role of mucosal immunity and intestinal microbiota have aroused great interest in the pathogenesis of IgAN. Impaired immune tolerance could promote an abnormal immune response to the microbiota with alterations of the intestinal barrier, including increased absorption of food antigens and bacterial toxins, triggering the activation of intestinal mucosal associated lymphoid tissue (GALT) and intestinal inflammation subclinical. The intestinal microbiota is able to influence the immune response in IgAN subjects, contributing to the activation of B lymphocytes that synthesize and release polymeric IgA1 into the bloodstream, causing renal deposits. The strong gut-kidney connection in the pathogenesis of IgAN opens up a broad scenario for new therapeutic options, targeting subclinical intestinal inflammation or microbiota modifications. Our group demonstrated a different composition of the fecal microbiota and some fecal metabolites in IgAN affected subjects compared to healthy individuals. In addition, an increase in serum levels of intestinal flora factors, including APRIL, which correlated with renal function (eGFR and serum creatinine) was observed in IgAN patients compared to control groups. Finally, the increase in the different subpopulations of B lymphocytes activated in the intestinal mucosa and secreting IgA in IgAN patients compared to control subjects, confirms the hypothesis that the hyper-

responsiveness of the intestinal mucosa plays a crucial role in this pathology. The project is characterized by a strong impact in the field of innovation as there is currently no effective treatment available for the onset and evolution of this pathology and the possibility of slowing its progression represents a great challenge for the scientific community. To have a highly positive social and economic impact for the patient and for daily clinical practice. The aim of the project is therefore to develop and test a symbiotic food supplement, possibly enriched with other functional components, aimed at improving the integrity of the mucosal barrier in subjects affected by IgAN. The reduction in the hyper-responsiveness of the intestinal mucosa may be decisive in delaying the loss of renal function. During this project, patients with confirmed IgAN diagnosis and specific therapy in progress and healthy subjects will be enrolled. The assessment of intestinal permeability will be carried out through non-invasive methods. A peripheral blood sample will allow the serum dosage of BAFF and APRIL and the isolation and phenotypic characterization of activated B lymphocytes in the intestinal mucosa and secreting IgA through flow cytometry studies. Enrolled subjects will then be given a food supplement based on high quality symbiotics, produced by the partner company Farmalabor. During the project, the formulation of the compound may undergo changes to the composition, preferring more effective synergies for the target of selected patients. At defined times, the analyzes and clinical and biological assessments (assessment of intestinal permeability, BAFF and APRIL serum levels) will be repeated on the target of patients and to correlate the results obtained and the specific outcomes on the effectiveness of the supplement taken. During the project, the doctoral student will be supported by a multidisciplinary team of doctors and biologists, who will guide him in the enrollment of patients and in the subsequent stages of production and analysis of the data obtained. In addition, thanks to the collaboration with the Farmalabor company, it will be possible to evaluate the formulation of the symbiotic compound and possibly make changes, preferring more effective synergies for the target of selected patients. This study will train professionals experienced in the analysis and management of the results of a clinical study, and could have a strong innovative impact on current clinical practice in the IgAN patient.

N.1 scholarship for the research activity: **antibiotic resistances in the helicobacter pylori infection: creation of a database to guide the therapy**

Helicobacter pylori (*H. pylori*) is a Gram negative, spiral-shaped, microaerophilic bacterium that colonizes the human stomach. It is the most important infectious agent among the causes of chronic active gastritis and peptic ulcer. Therapy is based on a combination of antibiotics, however the increasing rate of antibiotic resistance at present makes eradication particularly difficult. A 100% eradication rate is a utopian goal that is unlikely to be achieved. Resistance to clarithromycin may lower the likelihood of eradication with conventional triple therapy to below 60%, while widespread resistance to fluoroquinolones has reduced the efficacy of levofloxacin regimens to below 80%. Therefore, the "perfect" treatment is still far from being found. However, a knowledge-based approach to antibiotic susceptibility is promising. A meta-analysis showed that, on the first line, antibiotic susceptibility-driven regimens were more effective than standard 7- or 10-day empirical therapies. The antibiotic susceptibility test is recommended by the guidelines when two or more eradication regimens have already failed. However, it should be noted that the culture of *H. pylori* is often challenging for the microbiologist and, moreover, involves high costs and requires an invasive approach by gastroscopy, therefore it is only recommended after multiple therapeutic failures. On the other hand, methods based on molecular biology, in particular real time polymerase chain reaction (RT-PCR), are becoming widely used in the diagnosis of infectious diseases, due to the high sensitivity in detecting small amounts of nucleic acids. Their increasing use also reduces their costs, thus making their use on the front line more feasible. In addition, it allows the determination of the bacterium's genome even on the faeces, bypassing the problem of invasiveness. RT-PCR is capable not only of detecting bacterial DNA, but also of detecting mutations that confer resistance to antibiotics. Our group developed the THD kit, designed to easily extract bacterial DNA from stool samples. *H. pylori* DNA, searched for in patients with confirmed infection, was found in all with 100% concordance between gastric tissue and faeces. Furthermore, there was full agreement between stomach and fecal samples for each point mutation that conferred resistance to clarithromycin. The aim of this research protocol will be to evaluate the genotypic antibiotic resistance of *H. pylori* in patients who have already failed at least one eradication regimen. In addition, a rescue regime, based on the susceptibility profile, will be proposed and the eradication rate will be estimated. This study will be a prospective, pilot, multicenter and uncontrolled study. Consecutive patients will be enrolled in our geographical area (southern Italy) with at least one eradication failure. Patients will collect fecal samples using the THD fecal test™ (THD spa Correggio (RE), Italy). In our experience, it showed a sensitivity of 90.2%, a specificity of 98.5%, a positive predictive value of 96.5%, a negative predictive value of 95.6% and an accuracy of 95.9%. The recruitment center will then send the kit by fast mail to the central laboratory in Bari, where genotypic analysis by RT-PCR will be performed. Resistance to amoxicillin, clarithromycin, metronidazole, levofloxacin and tetracycline will be analyzed by point mutation analysis of the PBP-1A, 23S rRNA, RdxA / FrxA, gyrA and 16S rRNA genes, respectively. Then, patients will receive personalized therapy based on the resistance profile. At least 6 weeks after the end of therapy, patients will undergo UBT to verify the success of eradication. The eradication rate will be estimated both by intention-



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to-treat (ITT) and by per-protocol (PP) analysis.

The available positions will be assigned according to the order in the merit ranking for each topic, up to their exhaustion.

Modalities of admission:

The selection will be performed based on the art. 6 with the evaluation of the knowledge of the English language

Modalities of the examination in English language for foreign candidates:

Foreign candidates could choose to perform the admission examination in Italian or in English.

Date and place of the examination

Oral Examination: November 4th 2021 at 10:30 am

The place of the examination: Campus di Medicina Veterinaria, Section of Veterinary Surgical Clinic

In case the examination will be performed on line, due to the epidemiologic emergency, it will take place based on the art 6 of the call.

For further information please go on the website:

<https://www.uniba.it/ricerca/dipartimenti/deto/ricerca/dottorato-di-ricerca-in-trapianti-di-tessuti-ed-organi-e-terapie-cellulari-1>