



Ministero dell'Università
e della Ricerca



Università
degli Studi di
Messina

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

THE RECTOR

- IN VIEW OF the Law of 3rd July 1998, No. 210, and in particular art. 4 in the matter of PhD course, as amended by art. 19, paragraph 1, of the Law of 30th December 2010, No. 240;
- IN VIEW OF the Statute of the University, issued with D.R. No. 1244 of 14th May 2012 (published on G.U. - General Series No. 116 of 19th May 2012) and amended with D.R. No. 3429 of 30th December 2014 (published on G.U. - General Series No. 8 of 12th January 2015);
- IN VIEW OF the Ministerial Decree No. 45 of 8th February 2013 "Regulation laying down procedures for the accreditation of PhD centers and PhD courses and criteria for the establishment of PhD courses by accredited bodies";
- IN VIEW OF the Regulations of the University of Messina concerning the PhD courses, issued with D.R. No. 1015/2016 of 3rd May 2016;
- IN VIEW OF the Ministerial Decree No. 40 of 25th January 2018, that ordered the increase of the *gross* annual amount of PhD scholarships;
- IN VIEW OF the Student Contribution Regulations issued with D.R. No. 18 of 8th January 2019;
- IN VIEW OF the resolutions of the Academic Senate and the Board of Directors of 27th June 2019 and of 12th November 2019, concerning the "Contribution related to PhD Courses";
- IN VIEW OF the "Guidelines for the accreditation of places and PhD courses", as per the official Ministerial Note of 1st February 2019, No. 3315, and the "Operational indications on accreditation procedures for PhD courses A.Y. 2021/22- 37th cycle", referred to in the Ministerial Note of 16th March 2021, No. 7403;
- IN VIEW OF the D.M. 25th March 2021, No. 289, with which they have been defined the "General guidelines of the programming of the Universities 2021-2023 and indicators for the evaluation of the results";
- IN VIEW OF the resolutions of the Academic Senate of 13th April 2021 and of the Board of Directors of 14th April 2021, with which the 37th cycle PhD Courses were approved, the assignment of the related scholarships, and have been authorized the conclusion of the Agreements for the activation and/or the financing of the Courses, as well as the start of the selection procedures for admission to the PhD Courses of the 37th cycle;
- IN VIEW OF the opinion of the Evaluation Committee (Nucleo di Valutazione) expressed respectively in the sessions of 29th April and 5th May 2021, prot. 60765/2021, in order to verify the requirements of the proposed PhD courses;
- IN VIEW OF the opinions of ANVUR published on the dottorati.miur.it website on 04.06.2021, relating to the accreditation of PhD courses 37th Cycle - A.Y. 2021/2022;
- IN VIEW OF the call for public competition, based on qualifications and examinations, for admission to PhD courses activated at the University of Messina 37th cycle, issued with D.R. n. 1299 of 16.06.2021;
- IN VIEW OF the D.M. No. 1061 of 10/08/2021, with which the endowment of the PON "Research and Innovation" 2014-2020 was awarded - Action IV.4 "Doctorates and research

contracts on innovation topics" and Action IV.5 "Doctorates on Green issues", through the assignment of additional PhD scholarships on the topics of innovation, enabling technologies and digital, such as interventions to enhance the human capital of the world of research and innovation, for Action IV.4, and on issues oriented to the conservation of the ecosystem, biodiversity, as well as the reduction of the impacts of climate change and the promotion of sustainable development for Action IV.5, the Implementation Disciplinary Annex and the Explanatory Note of the Minister of University and Research as per official register 12025 of 08.09.2021;

IN VIEW OF the resolutions of the Academic Senate and the Board of Directors of 24.09.2021, respectively Prot. No. 115962 and Prot. No. 116117 of 27.09.2021, which approved the expressions of interest and authorized the public selection call, in implementation of the aforementioned Ministerial Decree 1061/2021 for the awarding of additional scholarships in the field of Innovation (Action IV.4) and Green (Action IV.5) for the 13 PhD courses accredited and activated within the 37th cycle, with the quantification of the values of the scholarships on the basis of the UCS for the first two years and on the basis of the DD.MM. 45/2013 and 40/2018 for the third year, with the quantification of the scholarship accrual financed by the PON R&I 2014 - 2020 and the scholarship accrual for the time period subsequent to 31st December 2023 to be paid by the University budget, providing submission of applications for participation that of 15 days. from the date of publication of the call;

IN VIEW OF the D.M. No. 156/2021 of 12th February 2021 (published in GU- Serie Generale No. 61 of 12th March 2021) concerning the "Definition of the list of particularly poor countries for A.Y. 2021/2022";

WITH RISERVE any subsequent amendments and/or additions to this Call that will be advertised on the website of the University of Messina at <http://www.unime.it/it/ricerca/dottorati-ricerca>.

RECOGNIZED the need to proceed with the call for the selection procedure for the assignment of the aforementioned scholarships.

D E C R E E S

Art. 1 Positions in the Call

It is launched for the A.Y. 2021/2022 a public competition, based on examinations and qualifications, for the awarding of **No. 68 additional PhD scholarships, with a specific obligatory topic**, on the topics better defined in the Thematic Sheets referred to in **Attachments No. 1-13** under the PON "Research and Innovation" 2014-2020 as part of the Research PhD Courses – 37th cycle, of the University of Messina and precisely:

- a) **No. 35 additional PhD scholarships on innovation issues (Action IV.4)**, in favor of PhD students selected on the basis of this specific Call. The objective of the measure is to finance additional PhD scholarships on innovation topics, i.e. PhD courses focused on the themes of innovation, enabling technologies and the broader digital theme, such as interventions to enhance human capital in the world of research and innovation;
- b) **No. 33 additional PhD scholarships on Green issues (Action IV.5)** for PhD students selected on the basis of this specific Call. The objective of the measure is to finance additional PhD scholarships on topics oriented towards ecosystem conservation, biodiversity, as well as reducing the impacts of climate change and promoting sustainable developments.

The individual scholarships are listed in the Table below, divided by PhD course:

	PHD COURSES 37TH CYCLE	Additional scholarships INNOVATION	Additional scholarships GREEN
1	ADVANCED CATALYTIC PROCESSES FOR USING RENEWABLE ENERGY SOURCES" (ACCESS)	-	2
2	BIOINGEGNERIA APPLICATA ALLE SCIENZE MEDICHE	3	1
3	BIOLOGIA APPLICATA E MEDICINA SPERIMENTALE	6	12
4	ECONOMICS, MANAGEMENT AND STATISTICS	2	4
5	FISICA	3	1
6	INGEGNERIA CIVILE, AMBIENTALE E DELLA SICUREZZA	1	2
7	INGEGNERIA E CHIMICA DEI MATERIALI E DELLE COSTRUZIONI	3	4
8	SCIENZE CHIMICHE	3	3
9	SCIENZE COGNITIVE	5	-
10	SCIENZE GIURIDICHE	3	1
11	SCIENZE POLITICHE	1	1
12	SCIENZE VETERINARIE	2	2
13	TRANSLATIONAL MOLECULAR MEDICINE AND SURGERY	3	-
	TOTAL	35	33

The duration of the PhD Courses is three academic years, and will take place according to the terms provided by the Regulations of the PhD Program at the University of Messina, by D.M. No. 1061 of 10/08/2021 and the related Disciplinary of Implementation, forming an integral and substantial part of this Call.

The entire PhD, training, research and evaluation course will take place at the administrative and operational headquarters of the University of Messina, without prejudice to the periods of study and research at the company and abroad, the latter where provided.

The research paths envisage the involvement of companies in the definition of the training path and require the PhD student to carry out periods of study and research in the company (**compulsory**) and abroad (**optional**), from a minimum of six (6) months to a maximum of twelve (12) months.

Art. 2 Activation

The available positions can **only** be activated following the positive outcome of the eligibility check carried out by the MUR in relation to the scholarships selected and assigned on the basis of the eligibility requirements identified in the document "Selection criteria for operations based on ESF-REACT resources EU "approved by the Supervisory Committee of the PON" Research and Innovation "2014-2020.

Any negative outcome of the aforementioned evaluation, which would affect the assignment of the

positions announced, will be communicated to the candidates at the e-mail address indicated in the participation.

In this case, no claim can be made by the candidate against the University of Messina.

Art. 3 **Admission requirements**

Can participate in the selections, without age and citizenship restrictions:

- a) those who, **at the deadline of the Call**, have obtained the specialist degree (D.M. No. 509/1999), or alternatively, the Master's degree diploma (D.M. No. 270/2004), or the degree diploma (old system), or a similar academic qualification, also obtained abroad, and declared equivalent, or recognized as suitable for admission to PhD Courses, based on the principles sanctioned by international conventions on the subject;
- b) or those who **do not meet the above requirement at the date of expiry of this Call**, **provided that** they achieve the title required for participation by 31th October 2021, **under penalty of forfeiture of admission**, in case of successful selection.

In the latter case, candidates who pass the selection tests and enroll in a PhD course, after having obtained the title, and in any case **no later than 31th October 2021**, must send to the Rector of the University of Messina by e-mail at the address protocollo.pec@unime.it or protocollo@unime.it, or by registered letter with return receipt sent to the address: Piazza Pugliatti, 1 – 98122 Messina, the self-certification relating to the achievement of the qualification together with a valid identification card (or certification, in case of academic qualification obtained in countries not belonging to the European Union), together with the official translation in Italian or English issued by the University that awarded the title indicating:

- type of the title;
- name of the University that issued the title;
- date of graduation;
- final vote.

Those who, for whatever reason, do not communicate the achievement of the degree within the established terms **will be excluded** from the Courses.

The provisions concerning the access of foreign students to PhD courses academic year 2021/2022 can be consulted by visiting the MUR website (<http://www.studiare-in-italia.it/studentistranieri>) and institutional website of the University (<https://international.unime.it/research/phd-programmes/>).

The suitability of the foreign qualification will be ascertained by the PhD examination Committee, for the sole purpose of this selection, in compliance with current legislation, in Italy and in the country where the qualification was issued, and of international treaties or agreements on the subject of recognition of qualifications for the continuation of studies.

Those who have already obtained, in any case and anywhere, even partially, a PhD scholarship of the University of Messina or of another University in Italy or abroad **cannot submit an application to participate** in the competition (Article 9, paragraph 8 of the Regulations of the Research Doctorate at the University of Messina).

All candidates **are admitted to the selection conditionally** subject to verification of the self certified declarations pursuant to Presidential Decree No. 445/2000 and subsequent amendments and integrations. At any time of the procedure, even after the start of the PhD courses, the University may carry out checks on the veracity of the statements produced. In the event of false declarations, the University may at any time, with the Rector's provision, order **the exclusion** of candidates from the selective procedure, **or the forfeiture** of admission to the PhD Course, without prejudice to the penal responsibilities arising therefrom.

Art. 4 **How to apply**

In accordance with current legislation, the University of Messina has adapted its IT systems through the implementation of **SPID**, which represents the authentication system that allows citizens to access the

online services of public administrations with a single Digital Identity.

The presentation of the application to participate in the selection, including the documentation indicated in **Attachments No.1-13**, takes place electronically through the Esse3 platform <https://unime.esse3.cineca.it> through:

- Login with SPID for adult candidates;
- Login without SPID for minors and foreign citizens.

The submission of the application for admission through the online procedure implies the acceptance by the candidates of the rules contained in this Call, including the **Attachments No. 1-13**, and in the current PhD course Regulations at the University of Messina, in the Ministerial Decree n. 1061 of 10th August 2021 and in the related Implementing Regulations.

The procedure for participation in the selection will be active for **15 days** starting from the day following the online publication of the Call in the University Register at the address <http://www.unime.it/it/ateneo/amministrazione/albo-online>. After this period, the connection will be deactivated and it will no longer be possible to complete the application form.

Applications received after the indicated deadline, or produced and/or received with a different way, **will be excluded**.

In the application, the candidate must declare the possession of the requisites for access to the selection referred to in art. 3, in particular EU and non-EU citizens candidates, in possession of foreign qualification(s) obtained in EU and non-EU countries, **must attach** the qualification certificate(s) possessed (Master's degrees) from which it is deduced:

- the duration of the study course;
- the list of exams taken with relative marks (transcript of records);
- the name of the University that issued the title;
- the date of achievement and the final grade

with attached an official translation in Italian or English, **issued by the University that awarded the title**.

The candidate **must also indicate the Course and the Scholarship/Scholarships with a specific obligatory topic** for which he/she intends to participate in the aforementioned Course, presenting the documentation and qualifications required in **the Attachments No. 1-13, in pdf format**, together with the Research Project(s) envisaged therein.

It should be noted that each Scholarship corresponds to a Thematic Sheet shown at the bottom of the individual **Attachments No. 1-13**.

It should be noted that in drafting the Research Project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid of the following art. 6 of this Call.

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship. Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "research project" field on the Esse3 platform.

Candidates who wish to participate in more than one PhD Course **must** submit a separate application for each Course, but must exercise the **option** of a single scholarship with a specific obligatory topic, if they are in a useful position in more than one ranking.

Candidates can make use of self-certifications, according to what is expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens
- citizens of countries outside the European Union, legally residing in Italy, **limited to** status, personal qualities and facts certifiable or attested by Italian public bodies (in particular: Master's degree obtained at an Italian University).

The candidate with disability must specify, in the application form, the necessary aid in relation to his/her disability and any need for additional time, documented by a suitable certificate issued by the Public Health Authority responsible for the area, pursuant to Law No. 104/92, as amended by Law No. 17/99.

The candidate with a diagnosis of specific learning disorders (SLD) must specify, in the application form, the necessary compensatory tools and any need for additional time, documented by a suitable

certification issued by no more than three years by NHS Structures, or by specialists and structures accredited by the same, pursuant to Law No. 170/2010 and subsequent guidelines D.M. No. 5669, 12th July 2011.

For any information, the candidate may contact the University's "Disability Services/SLD" Operational Unit, located in via Consolato del Mare, No. 41, Palazzo Mariani, Messina, e-mail: udisabili@unime.it tel. 090 676 8986/5066.

At the end of the procedure, the payment of the participation fee of € 50.00 (fifty euros) must be made through the PagoPA® system. The aforementioned payment must be made **within the day of expiry of the Call**.

Only for candidates residing abroad, the payment of the contribution can be made by bank transfer on the IBAN account IT 16W 02008 16511 000300029177 CODE BIC SWIFT UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below "<surname and name of the candidate> contribution for PhD participation in the <denomination of PhD course>".

The obligatory contribution to the competition is not refundable for any reason. The payment receipt must be carefully preserved by the candidate and exhibited in case of request.

Candidates from particularly poor and developing countries defined in the Ministerial Decree No. 156 of the 12th February 2021 **are exempt from the payment of the aforementioned contribution**.

For the academic year 2021/2022, are to be understood particularly poor and developing within the meaning of the aforementioned D.M., the countries listed below:

Afghanistan - Bangladesh - Benin - Bhutan - Burkina Faso - Burundi - Cambodia - Central African Republic - Chad - Comoros - Democratic People's Republic of Chorea - |Democratic Republic of the Congo - Djibouti - Eritrea - Ethiopia - Gambia - Guinea - Guinea Bissau - Haiti - Kiribati -Lao People's Democratic Republic - Lesotho - Liberia - Madagascar - Malawi - Mali - Mauritania - Mozambique - Myanmar - Nepal - Niger - Rwanda - São Tomé and Príncipe - Senegal - Sierra Leone - Solomon Islands - Somalia - South Sudan - Sudan - Tanzania - Timor Leste - Togo - Tuvalu - Uganda - Yemen -Zambia - Zimbabwe.

Art. 5 PhD examination Committees

The examination Committees for admission to the PhD courses are appointed by Decree of the Rector on the proposal of the Academic Board, in compliance with the article No. 11 of the current PhD Course Regulations at the University of Messina.

The aforementioned Decree will be published, after the deadline for the application form has expired, on the University website at the address <http://www.unime.it/it/ricerca/dottorati-ricerca> with notification value by the University.

Art. 6 Examinations

Admission to PhD courses takes place by selection, by qualifications and exams, according to the procedures and in compliance with the criteria, indicated below and in **Attachments No. 1-13** of this Call.

The diary of the tests, with the indication of the modality, the day, the month and the time in which the tests will take place is **indicated in the Attachments No. 1-13** and it will be valid in all respects as an official call for candidates.

The work of the Committees will be carried out electronically, through the IT platform which can be reached by accessing the teams.microsoft.com site.

The Examination Committees proceeds, first of all, to the definition of the evaluation sub-criteria to which it will adhere in the attribution of the overall score which will be published on the University website <http://www.unime.it/it/ricerca/dottorati-ricerca>.

Subsequently, the Committee proceeds to evaluate the qualifications and the research Project presented by the candidates. The outcome of the qualifications will be visible to each candidate through restricted access to the ESSE3 platform.

The presence of candidates at the time of this evaluation is not allowed.

Once the aforementioned evaluation has been completed, the Committee proceeds with the

examination tests in the manner and in accordance with the criteria indicated for each Course in **Attachments No. 1-13** of this Call.

In the evaluation of applications and with particular reference to the Research Project submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.
a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

Please note that candidates **will have to refer to the above criteria in the drafting of the Research Project** referred to in the **Attachments No. 1-13**; it should also be noted that the Attachments themselves contain information on the research topics covered by the scholarships financed by the MUR, distinguished by Macro Area *Green* and *Innovation* and by PhD course.

The oral exam consists of an interview that will discuss the titles presented and the Research Project with the aim of verifying the vocation to research and the ability of the candidate to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. No. 1061/2021.

During the interview, knowledge of the required language(s) in the **Attachments No. 1-13** to this Call is checked.

The oral tests will be carried out, according to the indications of the Examination Committees, electronically, via the Microsoft Teams IT platform (teams.microsoft.com), virtual classroom "EXAMINATION FOR ADMISSION TO THE PHD COURSE IN <name PhD course> XXXVII CYCLE" and by

connecting at the address that will be published in the following link:
<https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>.

The oral tests are public.

The candidate must guarantee the use of a webcam to allow the Examination Committee to identify himself/herself.

Before the interview begins, **under penalty of exclusion from the competition**, the candidate must identify himself/herself by showing a valid identity document, preferably the same one that was uploaded on Esse3 platform during the presentation of the application for admission.

The candidate who is untraceable or does not show up on the day or time set for the interview **must be deemed to have renounced**.

The University declines any responsibility for the eventuality that technical reasons prevent the regular conduct of the interview.

The final score of the selection, expressed in hundredths, is given by the sum of the marks reported in the individual assessments (qualifications and exams).

At the end of the selection, on the basis of the scores obtained in the evaluation of qualifications, Research Project and oral test, the Committee compiles the **general merit ranking** with the list of eligible and ineligible candidates for the PhD Program in relation to the individual scholarship awarded.

All Committees must complete the work without delay **no later than 10.11.2021**.

The general merit ranking is issued by Rector's Decree, and is published on the University website with legal notification value to all intents and purposes.

Art. 7

Admission to PhD Courses

Candidates are admitted to PhD courses, according to the ranking order up to the number of available positions.

In the case of equal merit, the assessment of the most disadvantaged economic situation determined in accordance with current legislation prevails, and in the event of further equality, the youngest candidate prevails, pursuant to the provisions of art. 17 of the University Regulations.

In the event that a scholarship with a **specific obligatory topic** cannot be awarded due to a lack of participants and/or a lack of eligible candidates, the University reserves the right to assign the aforementioned scholarship to the candidate who, for the same PhD course, has obtained the highest score in the merit ranking prepared by the same Committee for another Scholarship, as long as it pertains to the same Action (**Innovation Action IV.4 - Green Action IV.5**) of the Scholarship remained available.

Candidates who are holders of research grants may be admitted, after passing the selection tests, and without prejudice to the provisions of art. 20, point 10 of the University Regulations.

Public employees may be admitted, after passing the selection tests, in accordance with the provisions of art. 20 of the aforementioned Regulation. Public employees admitted to PhD courses may request, for the normal duration of the Course, the **unpaid** leave provided for by collective bargaining or, for employees under public law, extraordinary leave for study purposes, compatibly with needs of the administration, pursuant to art. 2 of the law of 13 August 1984, No. 476, and subsequent amendments.

Art. 8

Enrollment procedure

Admitted candidates must register **within the deadline** that will be indicated in the Decrees of Rector approving acts and admission to PhD courses which will be published on the website at <http://www.unime.it/it/ricerca/dottorati-ricerca>. **No personal communications will be sent. Candidates admitted to the Courses are responsible for checking the dates and methods of enrollment. Enrollment will take place subject to waiting for the positive outcome of the admissibility check by the MUR, as better specified in art. 2 of this Call.**

The candidate who has participated in several selections and has placed himself/herself in a useful

position in several rankings, must proceed with registration by exercising **the right of option** and subsequent registration for one of the PhD courses **within the term** that will be indicated in the Rectoral Decrees of approval deeds and admission to courses. Failure to complete enrollment in the chosen course will result in **forfeiture** of admission to all courses in which the candidate was admitted.

Simultaneous enrollment in more than one PhD course is not allowed, without prejudice to the provisions of Article 9 of the Regulations.

Candidates must use the enrollment procedure prepared by the Administration, available on the website <https://unime.esse3.cineca.it>. The enrollment procedure must be completed within the prescribed deadline, **under penalty of exclusion**.

Candidates in possession of a foreign academic qualification (Master's degree) obtained in EU countries must attach to the application form:

certificate(s) of the qualification(s) possessed with attached an official translation, in Italian or English, **issued by the University that awarded the qualification**.

Candidates in possession of a foreign academic qualification obtained in non-EU countries must attach to the application form:

- a) certificate(s) of the qualification(s) possessed (Master's degrees) with an attached translation, in Italian or English, declared compliant with the text by the Italian competent diplomatic or consular representatives abroad;
- b) *Dichiarazione di valore in loco* issued by the Italian competent diplomatic or consular representations abroad, certifying the duration of the study program together with the list of exams taken with the relative marks and the academic value of the qualification in the country that issued it.

Candidates in possession of a qualification obtained abroad, who do not produce the required documentation at the time of enrollment, will be enrolled with reserve and **will be excluded** from the PhD course, if they fail to deliver such documentation within **six months** from the beginning of the course and/or following verification, if the title produced does not comply with the requirements of this Call.

Foreign candidates, who need a visa to stay in Italy, must register on the portal <https://www.university.it>, apply for pre-enrollment in the PhD course and follow the procedure indicated therein for the purpose of issuing the visa.

Non-EU citizens must also produce a copy of a regular residence permit **within 10 days** of issue.

The insertion of untruthful data in the application form will result in exclusion from the final ranking list and the office forfeiture. In this case, the University Administration has the right to recover any benefit granted. The mendacious declaration, in addition to the prescribed penalties, may entail, for the subject involved, actions for compensation of damages by the counter-parties concerned.

Art. 9

Scrolling of ranking and taking over

In the event of forfeiture or waiver by the successful candidates, it will be possible to proceed with the scrolling of the ranking among the positively selected candidates, in compliance with the deadlines set by the MUR funding.

The suitable candidate, usefully placed in the ranking, will be sent the scrolling notification via e-mail.

Within the **peremptory term of three days** from the communication, the candidate must explicitly and unequivocally express his/her will regarding the scrolling of the ranking in his/her favor, by means of a communication to be sent to the University at the address protocollo@unime.it.

The candidate who has expressed a willingness to take over the ranking must enroll within the maximum deadline indicated by the administration.

Art. 10

Obligations of the PhD students

Pursuant to the D.M. n. 1061 of 10.08.2021, the acceptance of the scholarships covered by this Call **necessarily implies** the carrying out of study and research periods in the company from a minimum of

six (6) months to a maximum of twelve (12) months. For some positions there are also periods of study and research abroad from a minimum of six (6) months to a maximum of twelve (12) months (optional); please refer to the data sheet relating to the individual scholarships, present in the **Attachments N. 1-13**.

The period in the company **can be carried out even after 31st December 2023**; the period abroad **must be carried out by 31st December 2023**.

The candidate accepting the scholarship **will have to declare:**

a) to undertake formally to carry out the planned research periods (minimum 6 months, maximum 12 months) in the company and abroad (optional), at the same time certifying that he/she is aware that failure to comply with the minimum undertaking period will result in the withdrawal of the scholarship;

b) to be aware that the modification of the project objectives and expected results (if not previously authorized by the MUR) will lead to the withdrawal of the scholarship and the total refund of any amounts already paid;

c) to be aware that any negative judgement of the Academic Board and the consequent non-admission to the following year of the PhD course will result in the withdrawal of the sums already paid for the current year, and that failure to achieve the title will result in the withdrawal of sums already disbursed for the last year of the course;

d) not to benefit at the time of other scholarships in any capacity awarded, and to undertake, for the duration of the additional scholarship, not to benefit from other scholarships in any capacity awarded, except for those eligible under existing national law.

In the cases of revocation of the scholarship, provided by the Disciplinary attached to D.M. n. 1061, the University of Messina can claim the beneficiary for the refund of the amounts paid and revoked by the MUR in the cases mentioned above, and also in the case where the PhD student renounces the scholarship, in relation to the annuality in progress at the time of renunciation.

Art. 11 Taxes and fees

The deliberations of the Academic Senate and the Board of Directors of 27th June 2019 and 12th November 2019 established the contribution requirements for enrollments in PhD Courses.

At the time of enrollment, the admitted candidate, Italian and foreign, is required to pay through PagoPA® the sum of € 156.00 (equal to € 140.00 regional tax and € 16.00 virtual stamp).

Admitted candidates are required to pay, for each year of the course, an all-inclusive contribution determined according to the ISEE income classes established in general for the student contribution.

At the beginning of each year of the course following the first, the PhD student, admitted at the frequency of the following year, must renew the registration, using the appropriate procedure available at <https://unime.esse3.cineca.it>.

Upon enrollment/enrollment in the following years, the PhD student receiving a scholarship **must** give his/her consent to the acquisition of the ISEE Dottorato by the University. Otherwise, he/she will be placed in the maximum income bracket.

The request for the issuance of the ISEE Dottorato certificate must be made at the Cafs or other persons in charge, preferably before registration and, in any case, by 31th December. In the case of applications for the issuance of the ISEE Dottorato certificate made after that date, the PhD student will be required to pay a review fee of €100.00.

The amount of the PhD all-inclusive annual contribution is calculated based on the acquisition of "ISEE Dottorato" through the INPS Application Cooperation system and must be paid, as prescribed by the PagoPA® system, respecting the following deadlines (according to the choice made by the PhD student during the enrollment/registration):

- No. 1 single installment: by 31st March;
- No. 3 installments: by 31st January, 31st March and 31st May.

The penalty fee for late payment of the single deadlines is € 28,00.

Admitted foreign candidates (belonging or not to the European Union), non-resident and not producing income in Italy, are required to pay a PhD single annual all-inclusive contribution of € 750,00.

Total or partial exemption from the payment of taxes and fees is established by the "Regulations on

student's contributions" and in particular by articles 2 and 6 and by each and every other relevant normative provision.

Art. 12 Incompatibilities

Those admitted to PhD courses and already enrolled in other courses of study, incompatible pursuant to art. 19 of the University Regulations, are required to request the temporary suspension of their previous career, upon enrollment in the PhD program.

Students enrolled in Specialization Schools are also required to request temporary suspension, except in the cases referred to in the aforementioned article of the Regulations.

Art.13 Scholarships

The scholarships referred to in this Call will be awarded **only if additional**, or only if the assignment of all the ordinary scholarships charged to the University budget is guaranteed.

The PhD scholarships have an annual duration and are renewed following specific verification, by the Academic Board, of the completion of the program of activities planned for the previous year, as well as the evaluation of the research activity carried out without prejudice to the obligation to disburse the scholarship following the passing of the verification.

The annual amount of the scholarship, paid in monthly deferred installments, is equal to €15.343,28, gross of social security contributions paid by the PhD student.

If the PhD student is authorized by the Academic Board to carry out research activities abroad, for periods of more than 15 days, the amount of the scholarship is increased by 50%, for a total period not exceeding 18 months.

Requests for study stays abroad, duly authorized by the Academic Board, with the indication of the location, the period and the motivation, must be sent by the Coordinator of the PhD Program to the competent Office at least **30 days before** the start of the stay, in order to prepare the subsequent Rectoral Decree of increase.

Starting from the second year, a fund is provided for research activities in Italy and abroad in accordance with the provisions of art. 17 of the Regulation.

The scholarship **cannot be combined** with any other scholarship, except for those granted by Italian or foreign institutions useful for integrating the PhD student's research activity with stays abroad, with the exclusion of the advanced training activities provided by the Law 398/1989.

The PhD scholarship is subject to the payment of social security contributions INPS "Gestione Separata" in accordance with current legislation, of which two thirds shall be borne by the administration and one third by the PhD student with scholarship.

Art. 14 Attendance, suspension, forfeiture and waiver

The attendance of PhD students at the courses is mandatory and involves an exclusive and full-time commitment. The suspension, the forfeiture and the waiver to continue the PhD Course are governed by art. 18 of the current Regulations of the PhD Program of the University of Messina, as well as the D.M. No. 1061 of 10th August 2021 and its Disciplinary implementation.

Art.15 Processing of personal data

The processing of personal data related to this call is carried out by the University in accordance with

the European General Regulation No. 679/2016 for the protection of personal data and the Code regarding the protection of personal data, Legislative Decree No. 196/2003 and subsequent amendments and additions.

The notice is available in the privacy section of the University, <http://www.unime.it/privacy> and is an integral part of this Call. By signing the application form, the candidate acknowledges having read the aforementioned notice.

Art. 16 **Properties of Results and Confidentiality**

The intellectual and industrial property rights on the results that may be achieved by the PhD student, including, but not limited to, software, industrial inventions that can be patented or not, knowhow, models, data and data collections, are regulated in accordance with current legislation and the University regulations and possibly, on the basis of what is established in the individual agreements with the Universities, Companies or Organizations involved.

The PhD student who realizes that he/she has achieved an invention is obliged to immediately communicate it to his/her tutor and the coordinator and from that moment on, he/she will be required to respect confidentiality obligations.

Art. 17 **Responsible of the procedure**

The person in charge of administrative procedure is Dr. Angelina Venezia, Administrative Coordinator PhD Unit of the Administrative Department "Research and internationalization" of this University. For information, interested parties may contact the PhD of the Administrative Department "Research and internationalization" of this University. For information, interested parties can contact the PhD Unit, telephone numbers: 0906768716/8502/8286/8283 e-mail: dottorati@unime.it

Art. 18 **Final rules**

Although not expressly mentioned in this Call, reference is made to the current legislation on the subject, and in particular: to the rules contained in article 4 of Law 210/1998, in article 19 of Law No. 240/2010, in the Ministerial Decree No. 45/2013 and in the Regulations of the PhD courses of the University of Messina (D.R. No. 1015/2016), in the Legislative Decree No. 81/2015 and subsequent amendments and additions, in the Regulations for the discipline of the patent activity of the University of Messina (D.R. No. 2773/2020), in the D.M. No. 1061 of 10th August 2021 and in the in the related Implementing Regulations, as well as in the other provisions in force.

The submission of the application to participate in the selections through the online procedure, pursuant to art. 4, implies acceptance by the candidate of the rules contained in this Call and in the aforementioned Attachments and regulations. Participation in the procedure implies, as previously acquired, consent to the release of the documents presented and all acts of the procedure, in the case of a request by the other competitors, pursuant to the legislation on access to documents.

The University assumes no responsibility for the dispersion of communications resulting from inaccurate indications of residence and address by the candidate or from failure or late communication of the change of the same, nor for any postal or IT errors not attributable to the fault of the University itself.

This Decree, written both in Italian and in English, will be published on the register of the University at <http://www.unime.it/it/ateneo/amministrazione/albo-online>.

The call will be also published on the EU websites of Euraxess, on the website of the Italian Ministry of Research (MUR) and on the website of University of Messina.

THE RECTOR
Professor Salvatore Cuzzocrea

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.1

Title of the PhD course

PhD course in: **ADVANCED CATALYTIC PROCESSES FOR USING RENEWABLE ENERGY SOURCES (ACCESS)**

PhD Coordinator: **Professor Gabriele Centi**
E-mail: centi@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/advanced-catalytic-processes-using-renewable-energy-sources>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/118>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
ADVANCED CATALYTIC PROCESSES FOR USING RENEWABLE ENERGY SOURCES (ACCESS)	-	2

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Green Scholarship No. 1 - *Distributed production of fertilizers from the air with renewable energy* – **Green Scholarship No. 2 - *Development of artificial leaves for the conversion of CO₂ with sunlight in industrial emissions***: LM-54 (SCIENZE CHIMICHE), LM-17 (FISICA), LM-53 (SCIENZA E INGEGNERIA DEI MATERIALI), LM-22 (INGEGNERIA CHIMICA), LM-33 (INGEGNERIA MECCANICA), LM-79 (SCIENZE GEOFISICHE).

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates):**

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
<p>a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.</p>	<p>b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.</p>
<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.</p>

<p>a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.</p>	<p>b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.</p>
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1. Titles

The maximum score attributable to the qualifications will be **30/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **20/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **50/100**, with a minimum score to be exceeded by **30/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 4 November 2021, 15:30

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: “<surname and name of the candidate> Participation PhD Contribution in “ADVANCED CATALYTIC PROCESSES FOR USING RENEWABLE ENERGY SOURCES” - ACCESS.

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



Ministero dell'Università
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Università
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Messina

DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP (GREEN) - Action IV.5 - Nr. 1

Doctoral Course:

Advanced catalytic processes for using renewable energy sources (ACCESS)

cod. DOT20JCJJA

Scientific Contact:

prof. Gabriele Centi

SSD: CHIM/04

Theme to be developed:

DISTRIBUTED PRODUCTION OF FERTILIZERS FROM THE AIR WITH RENEWABLE ENERGY

The proposed theme has the ambitious objective of producing fertilizers from the air using renewable energy, with a significant economic impact and reduction of the environmental impact (today they are produced with complex processes that use fossil fuels; the proposed technologies lead to a reduction of over 60% in CO₂ equivalent emissions), but also social impact, linked to the enhancement of local and human resources. Today fertilizers are produced starting from fossil fuels to produce H₂ which is then used in the catalytic conversion of N₂ (at high pressure and temperature) to produce NH₃, which is then oxidized to NO_x which in turn is then converted into nitrates. Two possible innovative processes will be studied, from a fundamental perspective: i) through the conversion of N₂ to produce NO_x with non-thermal plasma (generated using renewable energy), followed by a catalytic oxidation step to form (after absorption in water) a solution of nitrates to be used as fertilizer, ii) through the direct electrocatalytic production of NH₃ from N₂ (and H₂O, renewable energy).

Period abroad and subject in which to carry out the activity (if foreseen):

6 months at Eindhoven University of Technology (TUE), Chem. Eng. and Chem. Dept., Eindhoven, The Netherlands; contact: Fausto Gallucci (Director Dept. Chemical Engineering and Chemistry), email: f.gallucci@tue.nl

Period in the company and person in which to carry out the activity:

6 months at Casale SA, Lugano, Switzerland; contact Biasi Pierdomenico email: P.Biasi@casale.ch, Department Head - Basic Research - R&D Division

Type of qualification required:

LM54 (CHEMICAL SCIENCES), LM17 (PHYSICS), LM53 (MATERIALS SCIENCE AND ENGINEERING), LM22 (CHEMICAL ENGINEERING), LM-33 (MECHANICAL ENGINEERING), LM-79 (GEOPHYSICAL SCIENCES)



Ministero dell'Università
e della Ricerca



Università
degli Studi di
Messina

DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP (GREEN) - Action IV.5 - Nr. 2

Doctoral Course:

Advanced catalytic processes for using renewable energy sources (ACCESS)

cod. DOT20JCJJA

Scientific Contact:

prof.sa Siglinda Perathoner

SSD: CHIM/04

Theme to be developed:

DEVELOPMENT OF ARTIFICIAL LEAVES FOR THE CONVERSION OF CO₂ WITH SUNLIGHT IN INDUSTRIAL EMISSIONS

The proposed topic concerns the development of integrated photovoltaic devices / electrochemical cells capable of using CO₂ in industrial emissions to produce fuels and/or chemicals using solar energy. This type of device is also referred to as artificial leaves and represent an innovative technology to convert CO₂ into industrial emissions to products to be used as fuels and/or chemical products to replace those from fossil origin, thus allowing i) the development of a circular carbon economy, ii) a drastic reduction of greenhouse gas emissions, as they replace those deriving from fossil fuels through the use of renewable energy and carbon recycling, and iii) direct integration of renewable (solar) energy in energy-intensive processes where otherwise the direct use of renewable energy would not be possible. This area, indicated with the concept of solar fuels, is a crucial area to fully realize the energy transition towards a sustainable economy, and at the center of various European initiatives in which the proposing group is actively involved, including SUNERGY.

Period abroad and subject in which to carry out the activity (if foreseen):

6 months at Institute of Chemical Research of Catalonia (ICIQ) Tarragona, Spain; contact: José Ramón Galán, email: jrgalan@ICIQ.ES

Period in the company and person in which to carry out the activity:

6 months at ENGIE Laborelec, Linkebeek, Belgium; contact Carina Faber, email: carina.faber@engie.com

Type of qualification required:

LM54 (CHEMICAL SCIENCES), LM17 (PHYSICS), LM53 (MATERIALS SCIENCE AND ENGINEERING), LM22 (CHEMICAL ENGINEERING), LM-33 (MECHANICAL ENGINEERING), LM-79 (GEOPHYSICAL SCIENCES)

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.2

Title of the PhD course

PhD course in: BIOINGEGNERIA APPLICATA ALLE SCIENZE MEDICHE

PhD Coordinator: Prof. Michele Gaeta
E-mail: michele.gaeta@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/bioingegneria-applicata-alle-scienze-mediche>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/116>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
BIOINGEGNERIA APPLICATA ALLE SCIENZE MEDICHE	3	1

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation – Scholarship No.1 - Innovative biosensors for nucleic acids detection in “point-of-care” (POC) format: LM-54 Scienze chimiche o equipollenti; LM-9 Biotecnologie mediche, veterinarie e farmaceutiche or equivalent; LM-17 Fisica or equivalent; LM-21 Ingegneria biomedica o equipollenti; LM-53 Scienza e ingegneria dei materiali or equivalent.

Innovation – Scholarship No.2 - Development of predictive models for telemedicine through the use of wearable devices, applying data-driven methods and transfer learning techniques: LM-18 Master’s degrees in Informatica, LM-21 Master’s degrees in Ingegneria Biomedica, LM-29 Master’s degrees in Ingegneria Elettronica, LM-32 Master’s degrees in Ingegneria Informatica, LM-33 Master’s degrees in Ingegneria Meccanica.

Innovation – Scholarship No.3 - Forensic applications of 3D reconstructions and radioimaging in expert practice: from biomedicine to courtrooms : Master’s degree in Medicina e Chirurgia LM-41; [or any degree in Odontoiatria e Protesi Dentaria LM-46; or any

degree in Ingegneria Meccanica LM-33].

Green – Scholarship No.1 - *Green Design” of Biomedical Prosthetic Devices in Additive Manufacturing*: LM-21 Ingegneria biomedica; LM-33 Ingegneria meccanica; LM-53 Scienza e ingegneria dei materiali.

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master’s degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master’s degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph “Procedures and criteria for the selection and evaluation of candidates”.

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
<p>a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.</p>	<p>b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.</p>
<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates,</p>

encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	through the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **30/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **50/100** points, with a minimum score to be exceeded by **40/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 5 November 2021, 10:00

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: “<surname and name of the candidate> Participation PhD Contribution in “BIOINGEGNERIA APPLICATA ALLE SCIENZE MEDICHE”.

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.1

Doctoral Course: Bioengineering applied to medical sciences

Scientific Contact: Prof. Sabrina Conoci

SSD: SC 02 / B1 - Experimental Physics of Matter - SSD: FIS / 03 - Physics of Matter

Title: Innovative biosensors for nucleic acids detection in "point-of-care" (POC) format

Theme to be developed:

The goal of the project proposal will be the development of innovative biosensor method that can be used in rapid "point-of-care" (POC) devices for the detection of infections from *in-vitro* samples. The developed biosensor can quickly, reliably and easily detect even low concentrations of pathogens. The probes used will be based on bacteriophages engineered for the recognition of specific microorganisms, integrated in miniaturized systems that will use integrated optical reading modules for signal transduction.

The possibility of creating multiplex sensor microsystems will be evaluated able to recognize more than one pathogen at the same time. The final goal will be the creation of a TRL5-7 prototype to be tested and validated at the host company.

Period abroad and subject in which to carry out the activity (if foreseen): NO

Period in the company and person in which to carry out the activity: 6 months

Type of qualification required:

LM-54 Chemical sciences or equivalent

LM-9 Medical, veterinary and pharmaceutical biotechnologies or equivalent

LM-17 Physics or equivalent

LM-21 Biomedical engineering or equivalent

LM-53 Science and engineering of materials or equivalent



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.2

Doctoral Course: Bio-Engineering Applied to the Medical Sciences

Scientific Contact: Prof. Luca Patanè

SSD: ING-INF/04 – System and control engineering

Title: Development of predictive models for telemedicine through the use of wearable devices, applying data-driven methods and transfer learning techniques

Theme to be developed:

The PhD project will focus on the "Development of predictive models for telemedicine through the use of wearable devices, applying data-driven methods and transfer learning techniques".

Specifically, the expected results will concern the implementation of wearable devices, endowed with sensors, to carry out the collection of data and the reading of on-demand metrics by means of an IoT / Cloud infrastructure, related to the measurement of vital parameters of the patient. All the sensor data will be collected in real-time and analysed either on site (according to the Fog / Edge computing paradigm) or on the Cloud using data-driven techniques. In addition, the use of specific platforms for publication such as Open Data will be evaluated. The development of innovative transfer learning techniques will allow to extend the models developed to new subjects for which there is a limited amount of data, accelerating the training process.

Period abroad and subject in which to carry out the activity (if foreseen):

Period in the company and person in which to carry out the activity: 12 months at SmartMe.IO S.r.l., Via Osservatorio 1 – 98121, Messina, Italia, P.IVA 03457040834, innovative start-up and academic spinoff of the University of Messina.

Type of qualification required:

LM-18 Computer science,
LM-21 Biomedical engineering,
LM-29 Electronic engineering,
LM-32 Computer systems engineering,
LM-33 Mechanical engineering



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N. 3

Doctoral Course: BioEngineering Applied to the Medical Sciences

Scientific Contact: Prof. Daniela SAPIENZA, MD PhD

SSD: MED/43 (Legal Medicine); MED/36 (Radiology); ING-IND/15 (Industrial Engineering Design and Methods); MED/28 (Dentistry).

Title: Forensic applications of 3D reconstructions and radioimaging in expert practice: from biomedicine to courtrooms.

Theme to be developed: Forensic applications of 3D printing technology and use of laser-scans for indoor and outdoor environmental reconstructions in cases of expert judiciary interest.

Technologies - to date only of experimental application - will have to be standardized in method and purpose for the application in current use in courtrooms given their probative power. These important and innovative opportunities for the use of the 3D printing technology must be evaluated in order to correctly implement it for the so-called purposes *forensics* by the manufacturing companies. The market must be ready to satisfy the requests of the Judicial Authority in terms of human resources and means, as in the past for DNA sequencing - in the genetic forensic field - thus evaluating the effectiveness and reliability of the technique proposed in this project.

Period abroad and subject in which to carry out the activity (if foreseen): attendance at the University of Zurich is expected - <https://virtopsy.com/virtopsy-education-1-courses/>

Period in the company and person in which to carry out the activity: > 6 months - MT ORTHO S.r.l., VAT No. 03821920877, with registered office in Aci S. Antonio (CT) - Via Fossa Lupo snc, legally represented by Mr. / Dr. Roberto Drago, as sole director. Company contact person ing. Rosalia Mineo, contact (+39 320 954 0011).

Type of qualification required: Degrees in Medicine and Surgery LM-41;

[or any degree in Dentistry and Dental Prosthetics LM-46; or any degree in Mechanical Engineering LM-33]



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.1

Doctoral Course: Bio-Engineering Applied to the Medical Sciences

Scientific Contact: Giacomo Risitano

SSD: ING-IND/14 - PROGETTAZIONE MECCANICA E COSTRUZIONE DI MACCHINE (09/A3 – PROGETTAZIONE INDUSTRIALE, COSTRUZIONI MECCANICHE E METALLURGIA)

Title: “Green Design” of Biomedical Prosthetic Devices in Additive Manufacturing

Theme to be developed:

The PhD project aims to develop new "green" design methodologies optimized, intelligent and integrated with computational systems of components, systems and complex structures in the biomedical field through innovative technological processes of Additive Manufacturing (AM) that take into account the ecological transition and the impactful effects of mass production.

The project also includes the study of the mechanical characteristics of the components designed also in relation to the geometries and complex shapes that AM technology is able to allow. As for the use of this technology, innovation concerns two aspects: the reduction of the weight of the components and the environmental impact.

Period abroad and subject in which to carry out the activity (if foreseen): 6 months at NTNU-Norwegian University of Science and Technology

Period in the company and person in which to carry out the activity): 6 months at NEURAL S.R.L. Contrada di Dio, 98166 Messina

Type of qualification required:

LM-21 Ingegneria biomedica

LM-33 Ingegneria meccanica

LM-53 Scienza e ingegneria dei materiali

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No. 3

Title of the PhD course

PhD course in: **BIOLOGIA APPLICATA E MEDICINA SPERIMENTALE**

Curricula:

1. Medicina Sperimentale;
2. Scienze Biologiche ed Ambientali;
3. Scienze del Farmaco.

PhD Coordinator: **Prof. Nunziacarla Spanò**
E-mail: nunziacarla.spano@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/biologia-applicata-medicina-sperimentale>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/101>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
BIOLOGIA APPLICATA E MEDICINA SPERIMENTALE	6	12

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation Scholarship No.1 - *Biochemical Evaluation of Oxidative Stress and Pain in Endometriosis*; **Innovation Scholarship No.2**- *Evaluation of the biological properties of Helix Aspersa Muller slime in pathophysiological alterations in inflammatory bowel diseases*; **Innovation Scholarship No.3** - *Cellular, Biochemical, and Clinical Aspects of Wound Healing*; **Innovation Scholarship No.4** - *Biochemical Evaluation of Oxidative Stress and Pain in Low Back Pain*; **Innovation Scholarship No. 5** - *Assessment and management of postoperative pain*; **Innovation Scholarship No.6** - *Machine learning, artificial Intelligence and emerging enabling Technologies for drug discovery process Optimization (MITO)*– **Green Scholarship No.1**- *Environmental risks due to the use of personal protective equipment (PPE) as a health measure against the new coronavirus (SARS-CoV-2)*; **Green Scholarship No.2**- *Evaluation of the antioxidant properties of the almond husk and the protective effects on human health* – **Green**

Scholarship No.3 - *In vitro and in vivo effects of personal care products on invertebrate and fish*; **Green Scholarship No.4** - *Re-use of waste from the fish industry* – **Green Scholarship No.5** - *The role of sustainable diets and the beneficial effects of consuming pistachios on human health*; **Green Scholarship No.6** - *Bio-plastics application in mussel farming*; **Green Scholarship No.7** - *Research and use of compounds for the immune system*; **Green Scholarship No.8**- *New antifouling coatings for Cultural Heritage and plastic surfaces in algal biomass plant*; **Green Scholarship No.9** - *Study of the aquatic biodiversity of the RNO of Capo Peloro (Messina, Italy) and coastal marine areas of the Strait of Messina*; **Green Scholarship No. 10** - *Optimization of microalgal growth for the production of lipids, pigments and polysaccharides at industrial scale*; **Green Scholarship No.11** - *Study of the pharmacotoxicological profile of waste from Citrus essential oil industry and evaluation of its potential application in human health*; **Green Scholarship No.12** - *PLASTic litter as substrate FOR Marine LIFE (PLASFORMLIFE)*:

LM-6 Biologia

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche

LM-13 Farmacia e farmacia industriale

LM-60 Scienze della natura

6/S (Master's degrees in biologia)

9/S (Master's degrees in biotecnologie mediche, veterinarie e farmaceutiche)

14/S (Master's degrees in farmacia e farmacia industriale)

68/S (Master's degrees in scienze della natura)

Single cycle master's degree in Chimica e Tecnologia Farmaceutiche

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and

<p>competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.</p>	<p>contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.</p>
<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.</p>
<p>a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.</p>	<p>b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.</p>

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **20/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **60/100** points, with a minimum score to be exceeded by **42/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 9 November 2021, 9:30.

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: "<surname and name of the candidate> Participation PhD Contribution in "BIOLOGIA APPLICATA E MEDICINA SPERIMENTALE".

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.1

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Rosanna Di Paola

SSD: BIO/10

Title: Biochemical Evaluation of Oxidative Stress and Pain in Endometriosis

Theme to be developed:

Endometriosis is a debilitating disease that affects 10% of women of reproductive age. This is characterized by the presence of endometrial tissue outside the uterine cavity. It induces dysfunction of the pelvic organs, infertility and chronic pain, negatively affecting the quality of life. Despite the great clinical interest that endometriosis arouses, especially in recent years, this disease still remains largely unknown today. This project focuses on the biochemical and molecular mechanisms for the assessment of chronic pain related to endometriosis. The aim of the project is to use an in vivo experimental model of chronic pain induced by endometriosis to evaluate the use of new biomarkers useful in the early diagnosis of the disease and to improve the quality of life.

Period abroad and subject in which to carry out the activity (if foreseen): None

Period in the company and person in which to carry out the activity: 12 month at Epitechgroup spa (Via Egadi 7 Milano 20144 Italy PI/CF: 03630550287 Attorney: Raffaella Della Valle info@epitech.it)

Type of qualification required:

LM-6 Biology

LM-9 Medical, veterinary and pharmaceutical

biotechnologies LM-13 Pharmacy and industrial pharmacy

LM-60 Natural sciences

6 / S (specialist in biology)

9 / S (specialist in medical, veterinary and pharmaceutical biotechnology)

14 / S (specialist in pharmacy and industrial pharmacy)

68 / S (specialists in natural sciences)

Single-cycle Master's Degree in Pharmaceutical Chemistry and Technology



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.2

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Dott. Marika Cordaro

SSD: BIO/09 (Physiology)

Title: Evaluation of the biological properties of *Helix Aspersa Muller* slime in pathophysiological alterations in inflammatory bowel diseases

Theme to be developed:

It has long been known that snail extract of the *Helix Aspersa Muller* species is an excellent ingredient for repairing tissues and healing wounds. However, there are still few studies on its antioxidant and anti-inflammatory power. The present project aims to deepen the knowledge on the biological properties of snail slime in the inflammatory process that underlies intestinal pathologies. The study will be carried out through *in vivo* models in which the physiological and biochemical alterations underlying the inflammatory and oxidative processes will be examined in order to evaluate whether snail slime can be used to "strengthen" or even more "replace" current therapies, also in consideration of the fact that it has no adverse effects.

Period abroad and subject in which to carry out the activity (if foreseen): not expected.

Period in the company and person in which to carry out the activity: 6 months

Snail Srls

Via Giovanni Zodda 109 98042 - Pace del Mela (ME) P. IVA 03485880839

Dott. Stefano Crupi snailsrls@gmail.com

Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies) LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura) (master's degrees in natural sciences)



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.3

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Rosanna Di Paola

SSD: BIO/10

Title: Cellular, Biochemical, and Clinical Aspects of Wound Healing

Theme to be developed:

Wound healing is an important physiological process that maintains skin integrity after trauma resulting from accidents, external factors, medical procedures, or other causes. In both humans and animals, wound healing is a complicated process that includes several stages, including inflammation, proliferation and remodeling. Normally, the result of these well-coordinated sequential steps is complete wound healing with the restoration of a normal skin structure. However, in the presence of several pathological factors, such as an underlying disease state or an infection, the wound can become chronic. For centuries, *Helix aspersa* Muller has been known to have biological properties that are useful for treating skin disorders. The purpose of the study is to investigate the effect of the topical application of *Helix aspersa* Muller slime in an animal model of wound healing.

Period abroad and subject in which to carry out the activity (if foreseen): None

Period in the company and person in which to carry out the activity: 12 month Snail Srls
Via Giovanni Zodda 109 98042 - Pace del Mela (ME) P. IVA 03485880839 Attorney Dott.
Stefano Crupi snailsrls@gmail.com

Type of qualification required:

LM-6 Biology

LM-9 Medical, veterinary and pharmaceutical biotechnologies

LM-13 Pharmacy and industrial pharmacy

LM-60 Natural sciences

6 / S (specialist in biology)

9 / S (specialist in medical, veterinary and pharmaceutical biotechnology)

14 / S (specialist in pharmacy and industrial pharmacy)

68 / S (specialists in natural sciences)

Single-cycle Master's Degree in Pharmaceutical Chemistry and Technology



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.4

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Roberta Fusco

SSD: BIO/10

Title: Biochemical Evaluation of Oxidative Stress and Pain in Low Back Pain

Theme to be developed: Low back pain is a very common disease that occurs during adulthood. It has implications for the mental and physical health of patients burdening the social support system and health care. Low back pain is often caused by inflammation of the lumbar intervertebral disc and by diseases of the spine, which cause symptoms such as neuropathic pain and motor dysfunction. Intervertebral disc degeneration is characterized by the loss of biological, biomechanical and architectural properties and induces chronic spinal inflammation and low back pain. Although many treatments have been employed for the management of discogenic pain, their clinical efficacy remains questionable. This project focuses on the evaluation of molecular and biochemical mechanisms associated with chronic pain related to lower back pain. The aim of the project is to evaluate the effect of new synthetic molecules in an in vivo experimental model of low back pain.

Period abroad and subject in which to carry out the activity (if foreseen): **None**

Period in the company and person in which to carry out the activity: 12 months at Epitech group spa (Via Egadi 7 Milano 20144 Italy PI/CF: 03630550287 Attorney: Raffaella Della Valle info@epitech.it)

Type of qualification required:

LM-6 Biology

LM-9 Medical, veterinary and pharmaceutical

biotechnologies LM-13 Pharmacy and industrial pharmacy

LM-60 Natural sciences

6 / S (specialist in biology)

9 / S (specialist in medical, veterinary and pharmaceutical biotechnology)

14 / S (specialist in pharmacy and industrial pharmacy)

68 / S (specialists in natural sciences)

Single-cycle Master's Degree in Pharmaceutical Chemistry and Technology



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.5

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Tiziana Genovese

SSD: MED/04

Title: Assessment and management of postoperative pain

Theme to be developed: Pain is considered a negative experience associated with tissue damage. The distinction between acute and chronic pain determines the choice of drug therapy. One of the most common causes of acute pain is postoperative pain. Therefore, in recent years, the treatment of acute pain, immediately after surgery, has acquired enormous importance in the health field. Although painkillers have made great progress, data from around the world suggests that postoperative pain continues to be poorly managed. This project focuses on innovative therapies for the treatment of postoperative pain. The aim of the project is to evaluate the effect of new compounds administration in a mouse model of postoperative pain.

Period abroad and subject in which to carry out the activity (if foreseen): None

Period in the company and person in which to carry out the activity: 12 month at

Epitech group spa (Via Egadi 7 Milano 20144 Italy PI/CF: 03630550287 Attorney: Raffaella Della Valle info@epitech.it)

Type of qualification required:

LM-6 Biology

LM-9 Medical, veterinary and pharmaceutical biotechnologies

LM-13 Pharmacy and industrial pharmacy

LM-60 Natural sciences

6 / S (specialist in biology)

9 / S (specialist in medical, veterinary and pharmaceutical biotechnology)

14 / S (specialist in pharmacy and industrial pharmacy)

68 / S (specialists in natural sciences)

Single-cycle Master's Degree in Pharmaceutical Chemistry and Technology



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.6

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Prof. Laura De Luca

SSD: CHIM/08 (Medicinal chemistry)

Project title: Machine learning, artificial Intelligence and emerging enabling Technologies for drug discovery process Optimization (MITO)

Theme to be developed:

In the field of pharmaceutical research, computational technologies play an important role in accelerating and optimizing drug discovery processes; these processes could further benefit from the application of digital innovation through Machine learning (ML) applications and artificial intelligence (AI). Even emerging enabling technologies or KETs (Key Enabling Technologies) could lead to an increase in the ability to innovate and support drug development in different stages of the process up to the preclinical stage. On this basis, the main objective of the proposed project is the training of a professionalism capable of employing a combined approach of ML, AI and KETs for the development of "Innovative drugs and therapeutic approaches with the use of biomaterials and polypharmacology" and "Innovative molecules of biological and biotechnological origin".

Period abroad and subject in which to carry out the activity (if foreseen): 6 months at Faculty of Life Sciences, Department of Pharmaceutical Chemistry, University of Vienna (Austria). Tutor: Prof. Thierry Langer, email: thierry.langer@univie.ac.at

Period in the company and person in which to carry out the activity: 10 months at Net4Science s.r.l., Viale Europa snc – 88100 Catanzaro, P.IVA e C.F.: 03666060797. Attorney: Francesco Ortuso.

Type of qualification required:

LM-6 Biologia

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche

LM-13 Farmacia e farmacia industriale

LM-60 Scienze della natura

6/S (specialistiche in biologia)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche)

14/S (specialistiche in farmacia e farmacia industriale)

68/S (specialistiche in scienze della natura)

Laurea Magistrale a ciclo unico in Chimica e Tecnologia Farmaceutiche



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.1

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Prof Nunziacarla Spanò

SSD: BIO/07

Title: Environmental risks due to the use of personal protective equipment (PPE) as a health measure against the new coronavirus (SARS-CoV-2)

Theme to be developed:

The increasing use of personal protective equipment (PPE) as a health measure against the new coronavirus (SARS-CoV-2) has become a significant source of many environmental risks. The increased use and difficult recycling practice of PPE have led to an increasing presence of PPE in the marine environment. This research project aims to monitor the impact and the level of pollution generated by PPE, associated with COVID-19 along the Strait of Messina coasts. The PPE and / or fragments will be sampled, classified and subsequently identified by spectroscopic techniques, also for the possible presence of other classes of contaminants. Furthermore, the project includes: a) activities in a natural environment, with sampling in the sea and on the beach; b) experimental activities under controlled laboratory conditions, through which the fragmentation speed, absorption capacity of other contaminants and their effects on model organisms will be evaluated.

Period abroad and subject in which to carry out the activity (if foreseen):

6 months

RUĐER BOŠKOVIĆ INSTITUTE

Bijenička cesta 54, 10000 Zagreb, Croatia

info@irb.hr

T +385 1 4561 111

F +385 1 4680 084

Period in the company and person in which to carry out the activity:

6 months

C.E.O. Dott. Giuseppe Zaffino

Ambiente e Sicurezza srl

Servizi tecnici per l'Ambiente e Laboratorio Analisi chimiche biologiche fisiche ambientali.

Via Panoramica dello Stretto 965 Parco delle Ninfe corpo B 98168 Messina

Sede operativa: Via Venini Giulio e Corrado 38/2 - 20127 Milano

tel. 090/310866 fax 090/314200 - PIVA 02472580790



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Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies) LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura)(master's degrees in natural sciences)



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Università
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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.2

Doctoral Course: Doctoral Course in Applied Biology and Experimental Medicine

Scientific Contact: Daniela Impellizzeri

SSD: BIO/12

Title: Evaluation of the antioxidant properties of the almond husk and the protective effects on human health

Theme to be developed:

The project aims to study the biological properties of the Avola almond and its waste by-products derived from the industrial extraction of the husk during the peeling process. Almond husks contain health-promoting compounds, such as polyphenols, which are protective agents against cancer and cardiovascular disease. In particular, the research activity will concern the evaluation of the antioxidant properties of the integument through the use of experimental models *in vitro* and *in vivo*, in order to evaluate the possible molecular pathways involved and the beneficial effects on human health and improve the circular economy linked to the consumption of almonds. Therefore, this research is proposed for the PON "Research and Innovation" 2014-2020 green theme, as it is aimed at promoting sustainable development through the recovery of compounds with high added value.

Period abroad and subject in which to carry out the activity (if foreseen): none

Period in the company and person in which to carry out the activity: 6 months
CONSORTIUM FOR THE PROTECTION AND IMPROVEMENT OF THE AVOLA ALMOND CHAIN,
PIAZZA V. VENETO 35, 96012 AVOLA, P.IVA/CF: 01315800894, Legal representative: Giorgio Cappello email:consorzioandorlaavola@gmail.com

Type of qualification required:

LM-6 Biology

LM-9 Medical, veterinary and pharmaceutical biotechnologies

LM-13 Pharmacy and industrial pharmacy

LM-60 Natural sciences

6 / S (specialist in biology)

9 / S (specialist in medical, veterinary and pharmaceutical biotechnology)

14 / S (specialist in pharmacy and industrial pharmacy)

68 / S (specialists in natural sciences)

Single-cycle Master's Degree in Pharmaceutical Chemistry and Technology



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Università
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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.3

Doctoral Course: Doctorate in Applied Biology and Experimental Medicine, University of Messina.

Scientific Contact: Prof Caterina Faggio

SSD: BIO/09

Title: *In vitro* and *in vivo* effects of personal care products on invertebrate and fish

Theme to be developed:

An in-depth examination of the scientific literature made it possible to identify differentiated cytotoxicity assays according to the type of cell on which to test products for "personal care". Since no single assay is able to absolutely guarantee a certain result, it is necessary to carry out a series of assays to better evaluate the cytotoxicity of the aforementioned products. For this purpose, different cytotoxicity assays will be used (Trypan Blue, Neutral Red, LDH exclusion test, osmotic resistance assay, phagocytosis, and cell volume regulation) on different cells isolated from aquatic invertebrates and vertebrates.

All these investigations will allow to evaluate the potential environmentally eco-friendly use.

Period abroad and subject in which to carry out the activity (if foreseen): 6 months to Department of Animal Protection and Welfare and Veterinary Public Health, University of Veterinary Sciences Brno, 61242 Brno, Czech Republic;

Period in the company and person in which to carry out the activity: 6 months to C.E.O. Dott.Giuseppe Zaffino Ambiente e Sicurezza srl Servizi tecnici per l'Ambiente e Laboratorio Analisi chimiche biologiche fisiche ambientali.-Via Panoramica dello Stretto 965 Parco delle Ninfe corpo B 98168 Messina Sede operativa : Via Venini Giulio e Corrado 38/2 - 20127 Milano

tel. 090/310866 fax 090/314200 - PIVA 02472580790

Type of qualification required:

LM-6 Biology

LM-9 Medical, veterinary and pharmaceutical biotechnologies

LM-13 Pharmacy and industrial pharmacy

LM-60 Natural sciences

6 / S (specialist in biology)

9 / S (specialist in medical, veterinary and pharmaceutical biotechnology)

14 / S (specialist in pharmacy and industrial pharmacy)

68 / S (specialists in natural sciences)

Single-cycle Master's Degree in Pharmaceutical Chemistry and Technology



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.4

Doctoral Course:

Scientific Contact: Dr. Daniela Coppola - Stazione Zoologica Anton Dohrn, Dipartimento di Biotecnologie Marine

SSD: BIO/07

Theme to be developed: Re-use of waste from the fish industry

Discards from the fishing industry is a huge waste of resources and constitutes an important problem for the environment and biodiversity. The growing attention on the possible uses of these waste plays an important role in the economic growth and sustainable development, as they represent a rich source of high value-added compounds. Overall, the PhD project aims at the valorization of marine biomass discarded until now, including underused fishery by-catch species (such as, jellyfish and undersized fish) and by-products from fish-processing industries (skin, bones, scales, fins) through the development of a "green" pipeline to produce commercially viable high-value products, such as marine collagen and its hydrolysates. At the same time, the PhD project will allow to address the EU ZeroWaste goal from the fish supply chain.

Period abroad and subject in which to carry out the activity (if foreseen):

Period in the company and person in which to carry out the activity: 12 months at BioSearch S.R.L

Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies) LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura)(master's degrees in natural sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.5

Doctoral Course: Doctoral Course in Applied Biology and Experimental Medicine

Scientific Contact: Giuseppina Mandalari

SSD: MED/07

Title: The role of sustainable diets and the beneficial effects of consuming pistachios on human health

Theme to be developed:

The project will focus on evaluating the biological properties related to the consumption of natural and roasted pistachios, which will be provided by the American Pistachio Growers. In particular, *in vitro* and *in vivo* study models will be used to study the beneficial effects of pistachios on human health. Consuming pistachios and other nuts can increase the levels of "good" HDL cholesterol in the blood and reduce the risk of stroke. Current results indicate that patients who consumed pistachios improved heart health, reduced the risk of breast cancer and lowered the incidence of diabetes. Therefore, this research is proposed for the PON "Research and Innovation" 2014-2020 green theme, as it is aimed at promoting sustainable development through the recovery of compounds with high added value.

Period abroad and subject in which to carry out the activity (if foreseen): none

Period in the company and person in which to carry out the activity: 6 months in American Pistachio Growers: 9 River Park Place East, Suite 410, Fresno, CA 93720 USA

Legal representative Rene' Yamashiro, Mgr, Nutrition Research & Communication

Judy Hirigoyen, Vice-president of Global Marketing email: ryamashiro@AmericanPistachios.org

Type of qualification required:

LM-6 Biology

LM-9 Medical, veterinary and pharmaceutical biotechnologies

LM-13 Pharmacy and industrial pharmacy

LM-60 Natural sciences

6 / S (specialist in biology)

9 / S (specialist in medical, veterinary and pharmaceutical biotechnology)

14 / S (specialist in pharmacy and industrial pharmacy)

68 / S (specialists in natural sciences)

Single-cycle Master's Degree in Pharmaceutical Chemistry and Technology



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.6

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Prof. Fabio Marino

SSD: VET/03

Theme to be developed: GREEN - Bio-plastics application in mussel farming

Mater-Bi is a family of biodegradable and compostable bioplastics patented and marketed by Novamont S.p.A. Its production began in 1990 from starch and corn, and has been widely used in packaging. The aim of the project is to evaluate the effect of these materials in mussel farming plants as the best alternative to the socks currently used by breeders, to develop an innovative service with a reduced impact on the environment, evaluating the degradation times of these polymers during the entire breeding cycle in farms with different environmental characteristics. The waste produced by myxiculture (plastic stockings) is a critical element in terms of Marine litter, both as beached materials (for sea farms) and as a direct source of contamination from degradation of plastics in the environment in which they are used. The project will evaluate the reuse and recycling of biodegradable socks in mussel farms.

Period abroad and subject in which to carry out the activity (if foreseen): 3 months - Roman Lehner, roman.lehner@unifr.ch Adolphe Merkle Institute, University of Fribourg, Chemin des Verdiers 4, 1700 Fribourg, Switzerland

Period in the company and person in which to carry out the activity: 6 months Mollusks farm - laboratori Novamont NOVAMONT SPA, Novamont S.p.A. - Via G. Fauser 8, 28100 Novara - Italia -P.Iva IT01593330036 - Cod.fisc. 08526630150

Type of qualification required:

LM-6 Biologia

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche

LM-13 Farmacia e farmacia industriale

LM-60 Scienze della natura

6/S (Specialistiche in Biologia)

9/S (Specialistiche in Biotecnologie mediche, veterinarie e farmaceutiche)

14/S (Specialistiche in Farmacia e farmacia industriale)

68/S (Specialistiche in Scienze della natura)

Laurea in Chimica e Tecnologia Farmaceutiche



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.7

Doctoral Course:

Scientific Contact: Dr Chiara Lauritano (SZN)

SSD: BIO/07

Theme to be developed: Research and use of compounds for the immune system

Immune system stimulating compounds have been used to prevent and combat various human diseases. Considering the increasing incidence of tumors and infectious diseases, the search for new bioactive compounds, especially of natural origin, has also increased. Recently, various compounds from marine organisms have been found to stimulate the immune system in human cell and mouse models. Stazione Zoologica Anton Dohrn (SZN) has a collection of about 100 microalgae that have already shown interesting anti-inflammatory, antioxidant, and anticancer properties. The PhD project aims to identify marine microalgae from the SZN algal collection with immunomodulatory properties, to chemically characterize the active extracts and to identify the cellular mediators involved in the mechanism of action. Marine microalgae have aroused growing industrial interest due to the possibility of mass-cultivate them in controlled eco-sustainable way.

Period abroad and subject in which to carry out the activity (if foreseen):

Period in the company and person in which to carry out the activity: 6 months at BioSearch S.R.L.

Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies) LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura)(master's degrees in natural sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.8

Doctoral Course: Doctorate in Applied Biology and Experimental Medicine, University of Messina.

Scientific Contact: Prof.ssa Clara Urzi

SSD: BIO/19

Title: New antifouling coatings for Cultural Heritage and plastic surfaces in algal biomass plant

Theme to be developed:

- a) design and evaluation in laboratory and in field of newly synthesized and ecofriendly Ionic liquids for innovative anti-fouling and/or fouling release coatings to protect submerged cultural heritage sites;
- b) Study of the interactions among materials/environment/microorganisms and of molecular mechanisms underlying the production of adhesion and microbial biofilms for the design of specific antifouling or fouling release coatings;
- c) design and implementation of non-toxic and environmentally friendly products for the prevention and elimination of micro-fouling from algal biomass production systems.

Period abroad and subject in which to carry out the activity (if foreseen): 3-6 months, Subject to be decided

Period in the company and person in which to carry out the activity: 6 months at Plastica Alfa Spa, sede legale in Caltagirone, C.da S.M. Poggiarelli, codice fiscale/P.Iva 01826360875

Legale rappresentante: Mario Pace

referente: Dr. Luciano Falqui, Project Manager

Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies)

LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura) (master's degrees in natural sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.9

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Dr. Gioele Capillo

SSD: BIO/05

Title: Study of the aquatic biodiversity of the RNO of Capo Peloro (Messina, Italy) and coastal marine areas of the Strait of Messina

Theme to be developed:

The theme to be developed focuses on the exploration of aquatic environments (transitional waters and marine-coastal environment). More in detail, the doctoral project aims to determine the biological diversity of the waters of the brackish lake called "Pantano di Faro" (Oriented Nature Reserve "Lagune di Capo Peloro", Messina, Sicily), and coastal marine facing the Oriented Nature Reserve through non-invasive census techniques of aquatic species, traditional (underwater visual census "UVC") and innovative (environmental DNA "eDNA") in order to establish the level of biodiversity of the area in question also in terms of elusive and cryptic species. The expected results, obtained with almost no disturbance for animals, will be useful for promoting an eco-sustainable exploitation of resources in terms of productivity and tourism in the area.

Period abroad and subject in which to carry out the activity (if foreseen):

-

Period in the company and person in which to carry out the activity:

Six months, Oloturia Sub DC, via Consolare Pompea, 253/255, P.IVA 03496640834, CF 03496640834. Gianmichele Iaria, gianmicheleiaria@oloturiasub.it.

Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies) LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura)(master's degrees in natural sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.10

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Prof. Concetta Gugliandolo

SSD: BIO/07 Ecology

Title: Optimization of microalgal growth for the production of lipids, pigments and polysaccharides at industrial scale

Theme to be developed: Microalgae produce a wide range of high-value added compounds for many biotechnological fields, as pharmaceuticals, nutraceuticals, cosmeceuticals and animal feeding. Moreover, they sequester CO₂ and generate O₂, so mitigating climate-altering factors. Industrial microalgae production does not produce waste (biorefinery concept) and can be coupled to CO₂-producing processes (industrial symbiosis). The aims of the research are to optimize the microalgal biomass and metabolites (lipids, pigments and polysaccharides) production under different nutritional conditions, at industrial prototype scale, using waste CO₂ from a biogas plant. Consistently with the guidelines of SNSI and Recovery Plan, this activity will give the opportunity to define an economic value-chain with repercussions both in the environmental and socio-economic fields, ensuring a more sustainable use of natural resources.

Period abroad and subject in which to carry out the activity (if foreseen):

Period in the company and person in which to carry out the activity: 6 months,

Plastica Alfa Spa, registered office in Caltagirone, C.da S.M. Poggiarelli, C.F./P.Iva 01826360875

Legal representative data: Mario Pace

Dr. Luciano Falqui, Project Manager

Type of qualification required (indicate the subset of the degree classes provided for each scholarship)

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies) LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura)(master's degrees in natural sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.11

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Prof. Michele Navarra

SSD: 05/G1 – Pharmacology, Clinical Pharmacology and Pharmacognosy - BIO/14

Theme to be developed: Study of the pharmaco-toxicological profile of waste from *Citrus* essential oil industry and evaluation of its potential application in human health

Essential oils (EO) are phytocomplexes employed in the cosmetic industry as well as in aromatherapy. These are mainly composed of terpenes, coumarins and psoralenes, that are acknowledged for their toxicological profile. Therefore, EOs are often deprived of these compounds, thus determining high economic and environmental costs. In the view of circular economy approach, the aim of the present study is to evaluate the pharmacological properties, such as neuroprotective, anti-inflammatory, anti-tumor and anti-metabolic syndrome, of molecules obtained from *Citrus* EO waste, to obtain value-added compounds, potentially exploitable by the pharmaceutical industry.

Period abroad and subject in which to carry out the activity (if foreseen): 6 months

Period in the company and person in which to carry out the activity: 6 months; Baller S.r.l., Messina, S.S. 114 Km. 4,600, P. IVA 00071310833, Antonino Pappalardo (CEO), tel. 090633976, info@baller1828.com

Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary and pharmaceutical Biotechnologies)

LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura) (master's degrees in natural sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.12

Doctoral Course: Applied Biology and Experimental Medicine

Scientific Contact: Dr. Gioele Capillo

SSD: BIO/05

Title: PLastic litter as Substrate FOR Marine LIFE (PLASFORMLIFE)

Theme to be developed:

The role of plastics, already present in the sea, as a possible artificial substrate available for the settlement of benthic, sessile, and encrusting fauna is poorly studied. In particular, the project plans to evaluate a) any positive, increasing, or temporary effects of plastic substrates on the growth and increase in abundance of species of economic / ecological interest; b) negative effects of plastic substrates in terms of increased abundance of predatory, alien and / or invasive species, and possible impacts on small populations with limited geographical distribution; c) absence of effects on the aforementioned organisms. The topic will concern studies on 1) creation of new microhabitats; 2) analysis of the structure of the benthic community; 3) intra- and interspecific relationships; 3) strategies of adaptation and reproduction of the species that insist on selected plastic substrates; 4) analysis of the biofilms, which adhere to plastic surfaces and their role in the subsequent adhesion by benthic organisms.

Period abroad and subject in which to carry out the activity (if foreseen):

6 months

RUĐER BOŠKOVIĆ INSTITUTE

Bijenička cesta 54, 10000 Zagreb, Croatia

info@irb.hr

T +385 1 4561 111

F +385 1 4680 084

Period in the company and person in which to carry out the activity:

6 months

C.E.O. Dott. Giuseppe Zaffino

Ambiente e Sicurezza srl

Servizi tecnici per l'Ambiente e Laboratorio Analisi chimiche biologiche fisiche ambientali.

Via Panoramica dello Stretto 965 Parco delle Ninfe corpo B 98168 Messina

Sede operativa : Via Venini Giulio e Corrado 38/2 - 20127 Milano

tel. 090/310866 fax 090/314200 - PIVA 02472580790

Type of qualification required:

LM-6 Biologia (Master's degree in Biology)

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche (Master's degree in Medical, veterinary

and pharmaceutical Biotechnologies) LM-13 Farmacia e farmacia industriale (Master's degree in Pharmacy and industrial pharmacy)

LM-60 Scienze della natura (Master's degree in Natural Sciences)

6/S (specialistiche in biologia) (master's degrees in Biology)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) (master's degrees in medical, veterinary and pharmaceutical biotechnologies)

14/S (specialistiche in farmacia e farmacia industriale) (master's degrees in pharmacy and industrial pharmacy)

68/S (specialistiche in scienze della natura)(master's degrees in natural sciences)

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.4

Title of the PhD course

PhD course in: ECONOMICS, MANAGEMENT AND STATISTICS

PhD Coordinator: Prof. Edoardo Otranto
E-mail: edoardo.otranto@unime.it

Website of the PhD course:

<https://www.unime.it/it/dipartimenti/economia/dottorato-di-ricerca-economics-management-and-statistics>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/103>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
ECONOMICS, MANAGEMENT AND STATISTICS	2	4

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation Scholarship No. 1 *Big Data Analytics: a study for the technological innovation of the Italian cultural heritage:* LM18 – Master's degrees in Informatica; LM31- Master's degrees in Ingegneria Gestionale, LM32- Master's degrees in Ingegneria Informatica, LM40- Master's degrees in Matematica, LM43- Master's degrees in Metodologie Informatiche per le Discipline Umanistiche, LM56- Master's degrees in Scienze dell'Economia, LM77- Master's degrees in Scienze Economico-Aziendali, LM82- Master's degrees in Scienze Statistiche, LM83- Master's degrees in Scienze Statistiche Attuariali e Finanziarie.

Innovation Scholarship No. 2 *The impact of emerging technologies (ETs) on performance management systems in health:* All Master's degrees.

Green Scholarship No. 1 *Sustainability and circular economy (CE) in the cosmetic industry: innovative methods and tools to support business strategies* – **Green Scholarship No. 2** *Measuring sustainability performance in agricultural companies: Life Cycle Thinking methods to guide the transition towards a Circular Economy (CE):* LM-08 - Master's degrees in

Biotechnologie Industriali; LM-09 Master's degrees in Biotechnologie Mediche, Veterinarie e Farmaceutiche; LM-18 Master's degrees in Informatica; LM-21 Master's degrees in Ingegneria Biomedica; LM-22 Master's degrees in Ingegneria Chimica; LM-31 Master's degrees in Ingegneria Gestionale; LM-32 Master's degrees in Ingegneria Informatica; LM-35 Master's degrees in Ingegneria per l'Ambiente e il Territorio; LM-53 Master's degrees in Scienza e Ingegneria dei Materiali; LM-54 Master's degrees in Scienze Chimiche; LM-56 Master's degrees in Scienze dell'Economia; LM-71 Master's degrees in Scienze e Tecnologie della Chimica Industriale; LM-75 Master's degrees in Scienze e Tecnologie per l'Ambiente e il Territorio; LM-76 Master's degrees in Scienze Economiche per l'Ambiente e la Cultura; LM-77 Master's degrees in Scienze Economico-Aziendali; CLASSE LM-82 Master's degrees in Scienze Statistiche.

Green Scholarship No. 3 *Promoting innovative processes to favor the ecological transition: the interaction between entrepreneurial tradition, digital transformations and new capabilities / resources;*
Green Scholarship No. 4 *The evolution of performance management systems and the introduction of Sustainable Development Goals (SDG):* All Master's degrees.

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the

indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced

and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.	impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.
a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- curriculum vitae;
- university career (profit exams, graduation grade);
- Master's degree thesis;
- any publications;
- any professional experiences;
- other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **40/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **40/100**, with a minimum score to be exceeded by **24/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: **8 November 2021, 14:00**

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: "<surname and name of the candidate> Participation PhD Contribution in "ECONOMICS, MANAGEMENT AND STATISTICS".

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N. 1

Doctoral Course: *PhD in ECONOMICS, MANAGEMENT AND STATISTICS – Department of Economics, University of Messina*

Scientific Contact: *Prof. Edoardo Otranto (UNIME); Dr. Nuccio Castorina (IDS&Unitelm)*

SSD: *SECS-S01 Statistica*

Theme to be developed:

Big Data Analytics: a study for the technological innovation of the Italian cultural heritage. The research project involves the use of computational statistics and statistical modeling skills, for the analysis of big data. A close collaboration with a company (IDS & Unitelm) is expected; the activities of the company concern the production and distribution of software, digital communication, cyber security, hosting / housing services on data centers. The company follows the collection, in the context of the ecclesiastical cultural heritage, of data and the production of images, thus collecting an enormous amount of information. The aim of the project is to identify, through data mining and data visualization techniques, classifications and correlations (also in a spatial framework) in this huge amount of data and to elaborate graphic synthetic representations that can be understood and interpreted even by non-expert users.

Period abroad and subject in which to carry out the activity (if foreseen): *6 months; Department of Statistics-Universidade Federal do Rio Grande do Sul del Brasile*

Period in the company and person in which to carry out the activity: *6 months; IDS&UNITELM s.r.l., Messina office.*

Type of qualification required:

Degree classes

LM18- Lauree Magistrali in Informatica;

LM31- Lauree Magistrali in Ingegneria Gestionale,

LM32- Lauree Magistrali in Ingegneria Informatica,

LM40- Lauree Magistrali in Matematica,

LM43- Lauree Magistrali in Metodologie Informatiche per le Discipline Umanistiche,

LM56- Lauree Magistrali in Scienze dell'Economia,

LM77- Lauree Magistrali in Scienze Economico-Aziendali,

LM82- Lauree Magistrali in Scienze Statistiche,

LM83- Lauree Magistrali in Scienze Statistiche Attuariali e Finanziarie.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N. 2

Doctoral Course: *Economics, management and statistics*

Scientific Contact: *Prof. Guido Noto*

SSD: *SECS-P/07 – Economia Aziendale (Management and Accounting)*

Theme to be developed:

The impact of emerging technologies (ETs) on performance management systems in health. *Health organizations operate in complex institutional and social settings. This complexity is tackled through the support of performance management systems (PMSs) which support decision makers to design strategies and actions toward the desired objectives. PMSs collect and analyses data on structures, processes and outcomes and, as such, provide useful information to health organizations' managers. The aim of this project is to understand the impact of the ETs introduced in the last decade and related to the management of data and information (e.g. AI, blockchain, machine learning, etc.) on the design and implementation of PMSs in the healthcare sector.*

Period abroad and subject in which to carry out the activity (if foreseen): *not foreseen*

Period of internship and organization in which to carry out the activity: *6 months, HT Informatica S.R.L. – C.so Sicilia, 65, 95040, Motta Sant'Anastasia (CT), VAT nr 03757350875.*

Type of qualification required:

All master degrees



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N. 1

Doctoral Course: *PhD in ECONOMICS, MANAGEMENT AND STATISTICS – Department of Economics, University of Messina*

Scientific Contact: *Prof. Roberta Salomone*

SSD: *SECS-P/13 Scienze Merceologiche*

Theme to be developed:

Sustainability and circular economy (CE) in the cosmetic industry: innovative methods and tools to support business strategies.

The candidate will explore the various innovative solutions based on the principles of EC to be applied in the cosmetic sector with the aim of meeting the objectives set out in the SDG No. 12 "Responsible Consumption and Production" (UN Agenda 2030). Methods for measuring and evaluating the potential environmental, economic and social impacts, as well as the circularity of the eco-innovations under study will be analyzed. Furthermore, the potential synergies between strategies oriented to ecological and circular transition and digital transformation strategies in the cosmetic sector will be evaluated, taking into consideration issues related to digital marketing and social media marketing, with the aim of proposing innovative and sustainable solutions for growth and improvement of the company's performance.

Period abroad and subject in which to carry out the activity: *6 months at a subject to be defined*

Period in the company and person in which to carry out the activity: *6 months at Laboratori Farmaceutici Krymi s.p.a. - via L. Galvani 34, Monterotondo Scalo (RM)*

Type of qualification required:

- *CLASSE LM08 Lauree Magistrali in Biotecnologie Industriali*
- *CLASSE LM09 Lauree Magistrali in Biotecnologie Mediche, Veterinarie e Farmaceutiche*
- *CLASSE LM18 Lauree Magistrali in Informatica*
- *CLASSE LM21 Lauree Magistrali in Ingegneria Biomedica*
- *CLASSE LM22 Lauree Magistrali in Ingegneria Chimica*
- *CLASSE LM31 Lauree Magistrali in Ingegneria Gestionale*
- *CLASSE LM32 Lauree Magistrali in Ingegneria Informatica*
- *CLASSE LM35 Lauree Magistrali in Ingegneria per l'Ambiente e il Territorio*
- *CLASSE LM53 Lauree Magistrali in Scienza e Ingegneria dei Materiali*
- *CLASSE LM54 Lauree Magistrali in Scienze Chimiche*
- *CLASSE LM56 Lauree Magistrali in Scienze dell'Economia*
- *CLASSE LM71 Lauree Magistrali in Scienze e Tecnologie della Chimica Industriale*
- *CLASSE LM75 Lauree Magistrali in Scienze e Tecnologie per l'Ambiente e il Territorio*
- *CLASSE LM76 Lauree Magistrali in Scienze Economiche per l'Ambiente e la Cultura*
- *CLASSE LM77 Lauree Magistrali in Scienze Economico-Aziendali*
- *CLASSE LM82 Lauree Magistrali in Scienze Statistiche*



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N. 2

Doctoral Course: *PhD in ECONOMICS, MANAGEMENT AND STATISTICS – Department of Economics, University of Messina*

Scientific Contact: *Prof. Roberta Salomone*

SSD: *SECS-P/13 Scienze Merceologiche*

Theme to be developed:

Measuring sustainability performance in agricultural companies: Life Cycle Thinking methods to guide the transition towards a Circular Economy (CE).

The research aims at evaluating the efficiency of corporate strategies focused on circularity and sustainability, through the study and application of Life Cycle Thinking methods and indicators for evaluating the circularity of a product or company. The proposal is part of the SNSI thematic area "Smart and sustainable industry, energy and environment", in the trajectory "Innovative production processes with high efficiency and for industrial sustainability". Indeed, the irrigation systems transversely affect all types of agricultural activities and the Agri-food area is one of those consistent with the SNSI, especially if we consider that the research topic aims to improve the economic, environmental and social impact of the agri-food sector using green economy and CE models.

Period abroad and subject in which to carry out the activity: *6 months at a subject to be defined*

Period in the company and person in which to carry out the activity: *6 months at Irritec S.p.A Via Gambitta Cinforto, C.da S. Lucia, 98071 Capo d'Orlando Leone, Messina (ME)*

Type of qualification required:

- *CLASSE LM08 Lauree Magistrali in Biotecnologie Industriali*
- *CLASSE LM09 Lauree Magistrali in Biotecnologie Mediche, Veterinarie e Farmaceutiche*
- *CLASSE LM18 Lauree Magistrali in Informatica*
- *CLASSE LM21 Lauree Magistrali in Ingegneria Biomedica*
- *CLASSE LM22 Lauree Magistrali in Ingegneria Chimica*
- *CLASSE LM31 Lauree Magistrali in Ingegneria Gestionale*
- *CLASSE LM32 Lauree Magistrali in Ingegneria Informatica*
- *CLASSE LM35 Lauree Magistrali in Ingegneria per l'Ambiente e il Territorio*
- *CLASSE LM53 Lauree Magistrali in Scienza e Ingegneria dei Materiali*
- *CLASSE LM54 Lauree Magistrali in Scienze Chimiche*
- *CLASSE LM56 Lauree Magistrali in Scienze dell'Economia*
- *CLASSE LM71 Lauree Magistrali in Scienze e Tecnologie della Chimica Industriale*
- *CLASSE LM75 Lauree Magistrali in Scienze e Tecnologie per l'Ambiente e il Territorio*
- *CLASSE LM76 Lauree Magistrali in Scienze Economiche per l'Ambiente e la Cultura*
- *CLASSE LM77 Lauree Magistrali in Scienze Economico-Aziendali*
- *CLASSE LM82 Lauree Magistrali in Scienze Statistiche*



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N. 3

Doctoral Course:

PhD in Economics, Management and Statistics, Department of Economics, University of Messina

Scientific Contact: *Prof. Fabrizio Cesaroni*

SSD: SECS-P/08 "Economia e Gestione delle Imprese"

Theme to be developed:

Promoting innovative processes to favor the ecological transition: the interaction between entrepreneurial tradition, digital transformations and new capabilities / resources.

The research project aims at studying the ability of companies to integrate, adapt and reconfigure internal and external knowledge and resources with the goal of promoting green innovations, i.e. innovative actions aimed at facing environmental issues as well as accelerating the transition to sustainable growth. In particular, the project focuses on the so-called "green technologies", i.e. (product, process or business model) innovations capable of reducing the negative environmental impact of economic and manufacturing activities. Through careful empirical investigations and the use of appropriate econometric models, the project will study to what extent collaborations with external subjects (other companies, universities, public and private research centers) impact on the ability of companies to recombine new knowledge acquired from outside with those possessed internally in order to generate green innovations and sustainable processes.

Period abroad and subject in which to carry out the activity (if foreseen):

6 months at a university / research institute actively involved in the project's topic (yet to be defined)

Period in the company and person in which to carry out the activity:

6 months at VALVITALIA S.p.A., Via Tortona, n. 69, 27055 Rivanazzano Terme (PV)

Type of qualification required (indicate the subset of the degree classes provided for each scholarship):

Any Master's degree (Laura Magistrale)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N. 4

Doctoral Course: *Dottorato di ricerca in ECONOMICS, MANAGEMENT AND STATISTICS – Dipartimento di Economia, Università degli Studi di Messina*

Scientific Contact: *Prof. Guido Noto*

SSD: *SECS-P/07 – Economia Aziendale (Management and Accounting)*

Theme to be developed: *The evolution of performance management systems and the introduction of Sustainable Development Goals (SDG).*

SDGs were introduced by the United Nation in 2015 with the aim to guide the global society toward sustainable development. To reach these goals, every social sector needs to be engaged. In this context, businesses play a key role. As such, it is urgent to define proper management tools to support organizations' top management to address these goals. This project aims at advancing knowledge with regards to the development and implementation of performance management systems integrating SDGs with traditional measures of business performance. This is key to allow businesses and their management to measure and monitor their impact at the economic, social and environmental levels. The information produced by these performance management systems would thus inform strategies and policies leading toward sustainable development.

Period abroad and subject in which to carry out the activity (if foreseen): *not foreseen*

Period of internship and organization in which to carry out the activity: *6 months, Agrumaria Reggina S.r.l. -Via Nazionale 167, 89135, Reggio Calabria, Paolo Antonino Chirico*

Type of qualification required:

All master's degrees

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.5

Title of the PhD course

PhD course in: FISICA

PhD Coordinator: Prof.ssa Vincenza Crupi
E-mail: vincenza.crupi@unime.it

Website of the PhD course:
<https://www.unime.it/it/dottorato/fisica>

Information on the characteristics of the PhD course can be found on the page:
<https://www.unime.it/it/ricerca/offerta-dottorati/37/104>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
FISICA	3	1

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation – Scholarship No.1 *New frontiers of wide-bandgap semiconductors based power electronics: efficiency, novel architectures and reliability*: Master's degree in Fisica (LM17) or equivalent; Master's degree in Ingegneria Elettronica (LM 29) or equivalent; Master's degree in Scienza e Ingegneria dei Materiali (LM53) or equivalent; Master's degree in Ingegneria delle Telecomunicazioni (LM27) or equivalent; Master's degree in Ingegneria Informatica (LM32) or equivalent; Master's degree in Informatica (LM18) or equivalent.

Innovation – Scholarship No.2 *Plasmonic resonances in silicon nanostructures*: Master's degree in Fisica (LM-17) or equivalent; Master's degree in Ingegneria Chimica (LM-22) or equivalent; Master's degree in Ingegneria Elettronica (LM-29) or equivalent; Master's degree in Scienza e Ingegneria dei Materiali (LM-53) or equivalent; Master's degree in Scienze Chimiche (LM-54) or equivalent; Master's degree in Scienze e Tecnologie della Chimica Industriale (LM-71) or equivalent.

Innovation – Scholarship No.3 *Quantum Information and Computing Systems*: Master's degree in Fisica (LM17) or equivalent; Master's degree in Ingegneria Informatica (LM32) or equivalent; Master's degree in Informatica (LM18) or equivalent.

Green - Scholarship No.1 Perovskite Solar Cells by innovative Physical approaches: Master's degree in Fisica (LM-17) or equivalent; Master's degree in Ingegneria per l'Ambiente e il Territorio (LM-35) or equivalent; Master's degree in Scienze Chimiche (LM-54) or equivalent; Master's degree in Ingegneria Elettronica (LM-29) or equivalent; Master's degree in Ingegneria Meccanica (LM-33) or equivalent; Master's degree in Scienza e Ingegneria dei Materiali (LM53) or equivalent.

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates):**

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
<p>a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.</p>	<p>b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.</p>
<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through</p>

encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON..	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

11. Titles

The maximum score attributable to the qualifications will be **15/100 points**.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate

2. Project

The maximum score attributable to the research project will be **15/100 points**.

3.3. Examination: oral test

The maximum score attributable to oral test will be **70/100 points**, with a minimum score to be exceeded by **42/100 points**.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 3 November 2021, 9:30.

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: “<surname and name of the candidate> Participation PhD Contribution in “FISICA”.

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021– (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N. 1

Doctoral Course: Physics

Scientific Contact: Prof. Salvatore Patanè

SSD: FIS03 **SC:** 02B1

Title: New frontiers of wide-bandgap semiconductors based power electronics: efficiency, novel architectures and reliability.

Theme to be developed:

Reliability assessment of novel power devices based on wide gap semiconductors (Silicon Carbide and Gallium Nitride) suitable for automotive and energy conversion applications. The activity will require the use of multiple experimental techniques, such as RAMAN spectroscopy, scanning probe microscopy, high-speed thermal microscopy, interferometric techniques to evaluate the mechanical stress at die level, and the development of models by means of use of multi-physics simulation software systems.

Period abroad and Institution where to carry out the activity (if foreseen): 6 months

STMicroelectronics S.r.l. società con sede legale in Agrate Brianza (MB), via C. Olivetti 2 e sede secondaria in Catania, stradale Primosole 50, Codice Fiscale 09291380153 e Partita IVA 00951900968.

Period at the company and Company where to carry out the activity: 6 months

STMicroelectronics S.r.l., società con sede legale in Agrate Brianza (MB), via C. Olivetti 2 e sede secondaria in Catania, stradale Primosole 50, Codice Fiscale 09291380153 e Partita IVA 00951900968. Contatti: Michele Calabretta (michele.calabretta@st.com), Salvatore Coffa (salvo.coffa@st.com).

Type of qualification required

1. Master's degree in Physics (LM17) or equivalent
2. Master's degree in Electronic Engineering (LM28) or equivalent
3. Master's degree in Material Science (LM53) or equivalent
4. Master's degree in Telecommunication Engineering (LM27) or equivalent
5. Master's degree in Computer Engineering (LM32) or equivalent
6. Master's Degree in Computer Science (LM18) or equivalent



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N. 2

Doctoral Course: Physics

Scientific Contact: Dott.ssa Rosaria A. Puglisi

SSD: FIS03 **SC:** 02B1

Title: Plasmonic resonances in silicon nanostructures

Topic to be developed:

A resonant cavity induced by plasmons in silicon nanostructures is scientifically and technologically very interesting because it finds different applications in many fields, including the innovative one of multicolour plasmonic lasers, allowing for threshold enormous reductions and ultra-fast modulation. The possibility of the industrial integration offered by Si makes this perspective much more actual than other approaches. However, fabricating Si nanostructures and studying their plasmonic behavior is a non-trivial challenge. The understanding of these plasmonic phenomena in Si in literature is in fact quite preliminary. The PhD thesis will aim to optimize the growth and characterize the plasmonic behavior of these nanostructures. Alongside these innovations, the student will be able to investigate the phenomenon by carrying out simulations on plasmonic behavior at the foreign university and will tackle the development of appropriate software applications for data analysis at the hosting company.

Period abroad and Institution where to carry out the activity (if foreseen): 6 months

Southern Denmark University (SDU) - Computational Materials Group - Mechanical and Electrical Engineering University of Southern Denmark – Contact person: Prof. Jost Adam, Phone: +45 6550 8209, Contacts: jostadam@sdu.dk.

Period at the company and Company where to carry out the activity: 6 months

Elettronica Tirrito s.r.l - Via San Leone 169, 94100 Enna -Italia, P.IVA. 01228470868, C.F. 01228470868, Manager: Salvatore Tirrito, Contact person: Salvatore Tirrito, Company contacts: progettazione@elettronica-tirrito.it, Phone: +39 3803895747.

Type of qualification required:

1. Master's degree in Physics (LM-17) or equivalent
2. Master's degree in Chemical Engineering (LM-22) or equivalent
3. Master's degree in Electronic Engineering (LM-29) or equivalent
4. Master's degree in Materials Science and Engineering (LM-53) or equivalent
5. Master's degree in Chemical Sciences (LM-54) or equivalent
6. Master's degree in Science and Technology of Industrial Chemistry (LM-71) or equivalent



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DESCRIPTION SHEET INNOVATION / SUSTAINABILITY SCHOLARSHIP N. 3

Doctoral Course: Physics

Scientific Contact: Dott. Roberto Stassi, Proff. Salvatore Distefano, Salvatore Savasta

SSD: FIS 03 **SC:** 02B2

Title: Quantum Information and Computing Systems

Theme to be developed:

Quantum computing is an open research area focusing on techniques to build quantum computers and communication networks, as well as algorithms and software to run on them. The PhD student will have to deal with various aspects related to the implementation of a fault-tolerant quantum computer: 1) connection between qubits and development of universal quantum gates; 2) investigation on noise effects (a fundamental problem in quantum computing) and methods to limit the noise; 3) development of hardware and software applications to correct errors in computation; 4) implementation of a quantum memory; 5) development of algorithms on quantum computers for scientific purposes (quantum simulation, quantum machine learning, etc.); 6) identification of new issues and problems that quantum computers could help to solve.

Period abroad and institution where to carry out the activity (if foreseen): 6 Months

Kipu Quantum GmbH, Kurwenal Straße 11, 80804 Munich, Germany. Contact: Chief Executive Officer Prof. Dr. Enrique Solano, enrique.solano@kipu-quantum.com

Period in the company in which to carry out the activity and contact person : 6 Months

Kipu Quantum GmbH, Kurwenal Straße 11, 80804 Munich, Germany. Contact: Chief Executive Officer Prof. Dr. Enrique Solano, enrique.solano@kipu-quantum.com

Type of qualification required:

1. Master's degree in Physics (LM17) or equivalent
2. Master's degree in Computer Engineering (LM32) or equivalent
3. Master's degree in Computer Science (LM18) or equivalent



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.1

Doctoral Course: Physics

Scientific Contact: Prof.ssa Enza Fazio

SSD: FIS01 **SC:** 02B1

Title: Perovskite Solar Cells by innovative Physical approaches

Theme to be developed:

The project aims to develop Perovskite Solar Cells (PSC) using innovative materials with 15% photo-conversion efficiency. Device architectures containing, among others, transition metal oxides (single layers or nano-structures), porous graphite and photo-active Perovskite layers will be under the spotlight. Green innovation concerns the transition from chemical processes with solvents to physical processes in vacuum (clean) with the aim of maintaining high the optical, structural and electrical performance of both the single layers of the PSC architecture and the final device. Innovative synthesis processes and advanced analysis methods will be hence applied. The photo-active perovskite layers will be physically grown through sublimation and thereby the doctoral activity will be partially directed to the implementation and expansion of a new method patented by CNR-IMM and Kenosistec srl.

Period abroad and Institution where to carry out the activity (if foreseen): 6 months
Prof. Michael Saliba- Stuttgart University (Germany)

Period at the company and Company where to carry out the activity: 6 months

The technological development related to the realization of materials will be carried out in collaboration with the company Kenosistec srl (Angelantoni group), national leader in the production of high vacuum systems for physical deposition, by evaporation or sputtering, of innovative materials.

KENOSISTEC Srl con sede legale in Massa Martana (PG) località Cimacolle nr. 464 CAP 06056
Tel 075 89551 Fax 075 8955200 e-mail info@kenosistec.it, pec
amministrazione_kenosistec@pec.it, sede Operativa in BINASCO Viale delle Scienze 23, CAP
20082 telefono 02 9055200 telefax 02 9052984 e-mail mario.rovati@kenosistec.it Codice
Fiscale e partita IVA n. 02837890546 CCIAA di Perugia n° PG-244504 rappresentata da Mauro
Margherita, in qualità di Amministratore Delegato , nato a Napoli il 18/04/1967, CF
MRGMRA67D18F839L domiciliato per la presente carica presso la sede della società

Type of qualification required:

1. Master's degree in Physics (LM-17) or equivalent
2. Master's degree in Engineering for the Environment and Territory (LM-35) or equivalent
3. Master's degree in Chemical Sciences (LM-54) or equivalent
4. Master's degree in Electronic Engineering (LM-29) or equivalent
5. Master's degree in Mechanical Engineering (LM-33) or equivalent
6. Master's degree in Materials Science and Engineering (LM-53) or equivalent

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.6

Title of the PhD course

PhD course in: INGENGERIA CIVILE, AMBIENTALE E DELLA SICUREZZA

Curricula:

1. Ingegneria Geotecnica;
2. Ingegneria delle infrastrutture e della mobilità;
3. Ingegneria idraulica, costruzioni idrauliche e marittime, idrologia e energia dalle acque;
4. Scienze e tecnologie, materiali, energia e sistemi complessi per il calcolo distribuito e le reti.

PhD Coordinator: Prof. Gaetano Bosurgi

E-mail: gaetano.bosurgi@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/ingegneria-civile-ambientale-della-sicurezza>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/114>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
INGEGNERIA CIVILE, AMBIENTALE E DELLA SICUREZZA	1	2

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation – Scholarship No.1 *The multimedia “projection” of the tangible and intangible historical cultural heritage of Messina* : LM 4 and LM24

Green – Scholarship No.1 *The future of external insulation solutions: a comparison between conventional and non-conventional insulation*: LM 4 e LM24

Green – Scholarship No.2 *Enhancement of citrus processing waste for the joint production of nanocellulose and pectin*: LM 54

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates):**

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
<p>a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.</p>	<p>b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.</p>
<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.</p>
<p>a.c) Measurability of the expected results and</p>	<p>b.c) Measurability of the expected results</p>

potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON..	and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.
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It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

11. Titles

The maximum score attributable to the qualifications will be **30/100** points.

The evaluable titles are:

- curriculum vitae;
- university career (profit exams, graduation grade);
- Master's degree thesis;
- any publications;
- any professional experiences;
- other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **40/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **30/100** points, with a minimum score to be exceeded by **20/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call

Date of the oral exam: 8 November 2021, 9:30

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008

16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: "<surname and name of the candidate> Participation PhD Contribution in "INGEGNERIA CIVILE, AMBIENTALE E DELLA SICUREZZA".

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021– (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.1

Doctoral Course: Civil, Environmental and Safety Engineering

Scientific Contact: Ornella Fiandaca

SSD: ICAR 10 Building Construction

Theme to be developed:

The multimedia “projection” of the tangible and intangible historical cultural heritage of Messina

During the research carried out at doCme 1908 Study Laboratory: Documentation Center for Messina (established in 2017 in the Engineering Department), the experimentation of a digital approach to the management of historical-architectural heritage -reconnaissance, cataloguing and enhancement - has begun; this by combining digital elaborations with archiving on Archimista-Archivista database, Building Information Modelling and Geographic information system.

The research project is proposed, for a highly effective pilot case constituted by the city of Messina, where the tangible memory, like the intangible one, is at risk of impoverishment and obsolescence:

- the conservation, management and enhancement of the archives of architects and engineers (1909-1949), geographically dispersed, physically vulnerable and often abandoned by their heirs;

- the virtual use, with digital and augmented reality technologies, of the intangible heritage both the twentieth century city both the various previous stratifications.

The methodology obtained as a result intends to recompose new and unprecedented identities of a city, in this case Messina, which can be used:

- in the didactic field to restore the memory of the places to the younger generations;
- in the tourist field to allow even fragile users an easy use before or during the trip;
- in the professional field to increase the level of confidence with the cultural heritage to be protected.

Period abroad and subject in which to carry out the activity (if foreseen):

Six months at the UPV Universitat Politècnica de València (prof. Luis Palmero Iglesias)

Period in the company and person in which to carry out the activity:

Six months at:

IDS&UNITELM s.r.l.

Direzione Generale: Via Consolare Pompea, 19 - 98168 – Messina - Tel. 090 35 38 1

C.F. e P.IVA: 01324070836

Amministratore Delegato e Rappresentante legale:

Dr. Michele Sturniolo - m.sturniolo@idsunitelm.it

amministrazione@pec.idsunitelm.it

Sito: <https://www.idsunitelm.it/>

Type of qualification required:

LM-24 or LM-4



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.1

Doctoral Course: Civil, Environmental and Safety Engineering

Scientific Contact: Ornella Fiandaca

SSD: ICAR 10 Building Construction

Theme to be developed:

The future of external insulation solutions: a comparison between conventional and non-conventional insulation

The research project intends to deal with a comparison between conventional thermal insulators for external insulation systems, and unconventional ones that make use of nanotechnologies, known as VIP (Vacuum Insulation Panel), Airgels and heat reflective coatings.

In a first phase, confidence with this technological innovation will be deepened through:

- a census of thermal nano and micro coatings that meet minimum environmental criteria (CAM), principles of sustainability during the production process (cradle to gate) and specific regulations in terms of performance;
- a depth study of the active ingredients, different by virtue of their conception;
- an assessment of the physical-technical mechanisms that determine the extent of the energy requalification.

In a second phase, assuming the leading products of this innovation, sampled based on the best declared performances, a comparison will be made, with an experimental application on pilot walls (on site or in the laboratory) in order to carry out comparisons and validations of the performance.

In a third phase, the end-of-life characteristics of all sampled and tested insulating products will be investigated.

The green issue is therefore addressed along the entire life cycle of conventional and non-conventional thermal insulators, from the investigation of sustainability requirements in the production phase, the verification of the amount of energy savings in the management phase, the conditions of recycling / disposal.

Period abroad and subject in which to carry out the activity (if foreseen):

not foreseen

Period in the company and person in which to carry out the activity:

six months at:

TRADIMALT SPA

VIA NAZIONALE (AREA EXPIRELLI) N°1 - CAP 98049 VILLAFRANCA TIRRENA (ME)

Codice fiscale e n.isc. al Registro Imprese 01895950838

Amministratore Delegato CONIGLIO GIUSEPPE

Indirizzo PEC: postmaster@pec.tradimalt.com

Type of qualification required:

LM-24 or LM-4



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.2

Doctoral Course:

INGEGNERIA CIVILE, AMBIENTALE E DELLA SICUREZZA

Scientific Contact:

Prof. Francesco Mauriello

SSD:

CHIM/07

Theme to be developed:

Enhancement of citrus processing waste for the joint production of nanocellulose and pectin

The PhD programme aims to valorize citrus processing waste (the biobased residues of citrus juic production) by means of the hydrodynamic cavitation process carried out in water only (without the addition of chemical reagents or solvents) for the joint production of nanocellulose and pectin. In collaboration with the partner company, a complete technical and economic feasibility study will be conducted for the production of pectin and nanocellulose from the processing waste of various citrus fruits (orange, lemon and grapefruit). The pectin in question, called "IntegroPectin", whose exceptional antibacterial, antioxidant, mitoprotective, neuroprotective, and antiproliferative activity is already known, also due to the presence of numerous flavonoids and terpenes adsorbed on the surface of the polysaccharide fibers, will be used for the production of biocompatible films for the treatment of burns and wounds; for the protection of the skin from aging processes; and for the development of a multispectral antibacterial treatment for the prevention of periodontitis due to the formation of microbial biofilms. The residual insoluble fraction of the process, a submicron micronized cellulose with a low degree of crystallinity capable of forming insoluble hydrogels as well as characterized by a high electrostatic charge, will be studied for the accumulation of electrical energy, producing new supercapacitors; to improve the mechanical properties of pectin hydrogels and related films; and for the formation of biocompatible, porous and robust scaffolds to improve the mineralization processes involved in osteogenesis.

Period abroad and subject in which to carry out the activity (if foreseen):

Not foreseen

Period in the company and person in which to carry out the activity:

Campisi Citrus Srl, Sede Legale: via Adda 9, 96100 Siracusa; Sede operativa: via Elorina 184, 96100 Siracusa

Type of qualification required:

LM-54

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ATTACHMENT No.7

Title of the PhD course

PhD course in: INGENGERIA E CHIMICA DEI MATERIALI E DELLE COSTRUZIONI

PhD Coordinator: Prof. Giovanni Neri
E-mail: giovanni.neri@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/ingegneria-chimica-materiali-costruzioni>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/105>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
INGEGNERIA E CHIMICA DEI MATERIALI E DELLE COSTRUZIONI	3	4

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation – Scholarship No.1 *Development of innovative systems and procedures for the analysis of Acoustic Emission signals for corrosion damage detection and failure prevention of tendons in post-tensioned structures:*

LM-17 Fisica

LM-20 Ingegneria aerospaziale e astronautica

LM-22 Ingegneria chimica

LM-23 Ingegneria civile

LM-26 Ingegneria della sicurezza

LM-30 Ingegneria energetica e nucleare

LM-33 Ingegneria meccanica

LM-53 Scienza e ingegneria dei materiali

20/S (Master's degrees in fisica)

27/S (Master's degrees in ingegneria chimica)

28/S (Master's degrees in ingegneria civile)

33/S (Master's degrees in ingegneria energetica e nucleare)

36/S (Master's degrees in ingegneria meccanica)

Innovation – Scholarship No.2 *Innovative BIOplastics from ClrCoLar Economy:*

LM-17 Fisica

LM-21 Ingegneria biomedica

LM-22 Ingegneria chimica

LM-33 Ingegneria meccanica

LM-35 Ingegneria per l'ambiente e il territorio

LM-53 Scienza e ingegneria dei materiali

LM-54 Scienze chimiche

LM-71 Scienze e tecnologie della chimica industriale

20/S (Master's degrees in fisica)

26/S (Master's degrees in ingegneria biomedica)

27/S (Master's degrees in ingegneria chimica)

36/S (Master's degrees in ingegneria meccanica)

38/S (Master's degrees in ingegneria per l'ambiente e il territorio)

61/S (Master's degrees in scienza e ingegneria dei materiali)

62/S (Master's degrees in scienze chimiche)

Innovation – Scholarship No.3 *Development of wearable and non-invasive sensors for the monitoring of the effectiveness of rehabilitation therapies:*

Master's degree in Ingegneria Elettronica LM-29 or equivalent.

Green – Scholarship No.1 *Durability issues and risk analysis in green transition of hydrogen blended natural gas distribution grids.:*

LM-17 Fisica

LM-20 Ingegneria aerospaziale e astronautica

LM-22 Ingegneria chimica

LM-26 Ingegneria della sicurezza

LM-30 Ingegneria energetica e nucleare

LM-33 Ingegneria meccanica

LM-53 Scienza e ingegneria dei materiali

LM-54 Scienze chimiche

LM-71 Scienze e tecnologie della chimica industriale

20/S (Master's degrees in fisica)

27/S (Master's degrees in ingegneria chimica)

33/S (Master's degrees in ingegneria energetica e nucleare)

36/S (Master's degrees in ingegneria meccanica)

61/S (Master's degrees in scienza e ingegneria dei materiali)

62/S (Master's degrees in scienze chimiche)

Green – Scholarship No.2 *New concept of composite mortars with active and passive thermal insulation for energy saving in buildings:*

LM-17 Fisica

LM-20 Ingegneria aerospaziale e astronautica

LM-22 Ingegneria chimica

LM-30 Ingegneria energetica e nucleare

LM-33 Ingegneria meccanica

LM-53 Scienza e ingegneria dei materiali

LM-54 Scienze chimiche

LM-71 Scienze e tecnologie della chimica industriale

20/S (Master's degrees in fisica)

27/S (Master's degrees in ingegneria chimica)

33/S (Master's degrees in ingegneria energetica e nucleare)

36/S (Master's degrees in ingegneria meccanica)
61/S (Master's degrees in scienza e ingegneria dei materiali)
62/S (Master's degrees in scienze chimiche)

Green – Scholarship No 3 *Development of Sustainable Process for the Complete Upgrading of Agro-industrial Waste into Value Added Chemicals and Materials:*

LM-21 Ingegneria biomedica
LM-22 Ingegneria chimica
LM-33 Ingegneria meccanica
LM-35 Ingegneria per l'ambiente e il territorio
LM-53 Scienza e ingegneria dei materiali
LM-54 Scienze chimiche
LM-71 Scienze e tecnologie della chimica industriale

26/S (Master's degrees in ingegneria biomedica)
27/S (Master's degrees in ingegneria chimica)
36/S (Master's degrees in ingegneria meccanica)
38/S (Master's degrees in ingegneria per l'ambiente e il territorio)
61/S (Master's degrees in scienza e ingegneria dei materiali)
62/S (Master's degrees in scienze chimiche)

Green – Scholarship No 4 *Enhancement of industrial processing waste of blue fish into nutraceutical compounds, bioenergy and organic fertilizers:*

LM-30 Ingegneria energetica e nucleare

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced

and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.	impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.
a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON..	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **25/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **5/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **70/100** points, with a minimum score to be exceeded by **42/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and

objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 9 November 2021, 9:30.

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: "<surname and name of the candidate> Participation PhD Contribution in "INGEGNERIA E CHIMICA DEI MATERIALI E DELLE COSTRUZIONI".

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.1

Doctoral Course: Engineering and Chemistry of Materials and of Construction

Scientific Contact: Prof. Edoardo Proverbio

SSD: ING-IND/22

Title: *Development of innovative systems and procedures for the analysis of Acoustic Emission signals for corrosion damage detection and failure prevention of tendons in post-tensioned structures.*

Theme to be developed:

*The aim of the project is to address the problems of assessing and forecasting the damage induced by the degradation of the post-tension elements of the prestressed reinforced concrete structures through Acoustic Emission technologies finalized to the development of an innovative monitoring system that can be integrated in real time with the road traffic management devices. The **University of Messina** will aim at a classification of the types of corrosion damage and the behaviour of the structures themselves to be correlated with the emissions of acoustic signals. The company **ETS Sistemi Industriali** srl will address the problem of time-frequency analysis of AE signals for the extraction of pre-fracture characteristics aimed at predicting cable failure. The **University of Kielce** will develop the investigation procedure in the field and subsequent validation with testing in place.*

Period abroad and subject in which to carry out the activity (if foreseen):

9 months at Kielce University of Technology, Faculty of Civil Engineering and Architecture, Kielce, Polonia. Tutor Prof. Grzegorz Świt

Period in the company and person in which to carry out the activity:

9 months at ETS Sistemi Industriali Srl, placed in Brugherio (MB), Italy. Tutor MEng. Celestino Alberto Monici

Type of qualification required:

LM-17 Physics

LM-20 Aerospace and astronautics engineering

LM-22 Chemical engineering

LM-23 Civil engineering

LM-26 Safety Engineering

LM-30 Energy and nuclear engineering

LM-33 Mechanical engineering

LM-53 Science and engineering of materials

20 / S (specialists Physics)

27 / S (specialists in Chemical engineering)

28 / S (specialists Civil engineering)

33 / S (specialists in Energy and nuclear engineering)

36 / S (specialists in Mechanical engineering)

61 / S (specialists in Materials science and engineering)

SI



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Università
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Messina

DESCRIPTION SHEET INNOVATION SUSTAINABILITY

Doctoral Course: Engineering and Chemistry of Materials and Constructions

Scientific Contact: Prof. Annamaria Visco

SSD: ING-IND/22

Theme to be developed: (max 10 lines)

Title: innovative BIOplastics from CirCoLar Economy

Acronym: BIOCICLE

The theme of this research project concerns the recycling of waste products from agri-food chains to produce new products with bioplastic, in the form of micro/nano-composites. In view of the use of "green", non-polluting, and biodegradable plastics (based on the new European directives EU 2019/904 of 5 June 2019), this waste can be mixed with the bioplastics with which they can be integrated. The waste/bioplastic composites must have appreciable mechanical and physical properties, as close as possible to those of the starting polymeric matrix in which they are housed. The optimal composition of the composite must therefore be defined, with any additives. It will be necessary to study the mechanical and physical performance of the composites, their stability over time, and the thermo-mechanical and chemical-physical degradation methods. Finally, on the basis of all the data collected, the objects will be designed, and the suitable production technologies identified to realize this recycling of materials.

Period abroad and subject in which to carry out the activity:

not foreseen

Period in the company and person in which to carry out the activity:

6 months at ECOSMED soc. coop. Sociale, Forte Petrazza, Camaro Superiore, 98151 Messina, C.F. and VAT number 02094960834, represented by Sindoni Giuseppa, Chairman of the Board of Directors, born in Milazzo (ME) on 07/30/1965, Tax Code SNDGPP65L70F206J. Contact: amministrazione@ecosmed.it, tel. 090.9023226

Type of qualification required:

LM-17 Physics

LM-21 Biomedical Engineering

LM-22 Chemical engineering

LM-33 Mechanical engineering

LM-35 Engineering for the environment and the territory

LM-53 Science and engineering of materials

LM-54 Chemical Sciences

LM-71 Sciences and technologies of industrial chemistry

20 / S (physics specialists)

26 / S (biomedical engineering specialists)

27 / S (specialists in chemical engineering)

36 / S (specialists in mechanical engineering)

38 / S (specialists in engineering for the environment and the territory)

61 / S (specialists in materials science and engineering)

62 / S (specialists in chemical sciences)



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.3

Doctoral Course: Engineering and Chemistry of Materials and Constructions.

Scientific Contact: Prof Giovanni Neri

SSD: CHIM/07

Theme to be developed: Development of wearable and non-invasive sensors for the monitoring of the effectiveness of rehabilitation therapies.

The technologies for the monitoring of vital parameters at low cost control with wearable and non-invasive sensors represent the new generation for the development of the effectiveness of rehabilitation therapies, for home care of the elderly population. The present project proposal aimed at the realization of a wearable biosensor device capable of detecting and acquiring the cardiac pulse signal from a bacterial artery (wrist and / or ankle) by means of optical sensors that detect the absorption of oxygenated (HbO₂) and non-oxygenated (Hb) hemoglobin present in the blood, or biomechanical probes made of piezo materials that register the impulse generated by the mechanical movement of the artery. The data will be correlated to the state of a rehabilitation process (e.g. after prosthetic interventions) in order to be a final system that can, through non-invasive monitoring, identify the patient's rehabilitation status, providing an important tool for its clinical management.

Period abroad and subject in which to carry out the activity (if foreseen): NO

Period in the company and person in which to carry out the activity: 6 months

Type of qualification required:

Degree in Electronic Engineering LM-29 or equivalent.



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.1

Doctoral Course: Engineering and Chemistry of Materials and of Construction

Scientific Contact: Prof. Edoardo Proverbio

SSD: ING-IND/22

Theme to be developed:

Title: *Durability issues and risk analysis in green transition of hydrogen blended natural gas distribution grids.*

*The objective of the research project (which has been developed in the frame of the green transition of natural gas networks to reach the objectives indicated by the EU for the transport of hydrogen), is to evaluate the problems of durability and managing the resilience of the current natural gas transport infrastructures used for the distribution of hydrogen in blended mode. Particular attention will be given to the compatibility with hydrogen of the steels used in the distribution lines, in the conditions of dynamic stress induced by the flow fluctuations resulting from the variations in product demand in the network itself. The **University of Messina** will deal with the problems of damage induced by hydrogen in the gaseous phase, the **Ecole des Mines of Saint-Etienne** with the knowledge on the mechanisms of hydrogen trapping in the metal matrices, the **Enginia Group** company with the development of management technologies and risk analysis of the structures.*

Period abroad and subject in which to carry out the activity (if foreseen):

9 months at Ecole des Mines of Saint-Etienne, Department of Materials Science and Mechanical Engineering, France. Tutor Prof. Krzysztof Wolski

Period in the company and person in which to carry out the activity:

9 months at Enginia Group srls, placed in Capo d'Orlando (ME), Italy. Tutor MEng. Antonino Rossello

Type of qualification required:

(indicate the subset of the master degree classes provided for each scholarship)

LM-17 Physics

LM-20 Aerospace and astronautics engineering

LM-22 Chemical engineering

LM-26 Safety Engineering

LM-30 Energy and nuclear engineering

LM-33 Mechanical engineering

LM-53 Science and engineering of materials

LM-54 Chemical Sciences

LM-71 Sciences and technologies of industrial chemistry

20 / S (specialists Physics)

27 / S (specialists in Chemical engineering)

33 / S (specialists in Energy and nuclear engineering)

36 / S (specialists in Mechanical engineering)

61 / S (specialists in Materials science and engineering)

62 / S (specialists in Chemical sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.2

Doctoral Course: Engineering and Chemistry of Materials and Constructions.

Scientific Contact: Prof. Luigi Calabrese

SSD:ING-IND/22

Theme to be developed:

New concept of composite mortars with active and passive thermal insulation for energy saving in buildings

The project proposal is aimed to create a new concept of composite mortars in which active and passive thermal insulation actions are integrated. Waste treated products (e.g. mineral wool) will be used as fillers to enhance the thermal insulation properties of the mortar. Furthermore, active cooling capacity, due to energy recovery induced by night and day thermal excursions, will be conferred through an innovative use of hydrated salts (thermochemical action) or PCM (latent heat action). In this path, the technological and applied skills of the partner Tradimalt S.p.A. and the scientific ones in the field of composite materials for energy recovery of UNIME, will be integrated with the skills in the field of thermochemical storage by the partner ICP-CSIC.

Period abroad and subject in which to carry out the activity:

9 months at ICP-CSIC (Spanish Council for Scientific Research - Institute of Catalysis and Petrochemistry of Madrid - Spain). Tutor: Prof. Juan Manuel Coronado Carneiro

Period in the company and person in which to carry out the activity:

9 months at Tradimalt S.p.A. placed in Villafranca Tirrenica (Me), Italy. Tutor: Ing. Francesco Grungo

Type of qualification required:

LM-17 Physics

LM-20 Aerospace and astronautics engineering

LM-22 Chemical engineering

LM-30 Energy and nuclear engineering

LM-33 Mechanical engineering

LM-53 Science and engineering of materials

LM-54 Chemical Sciences

LM-71 Sciences and technologies of industrial chemistry

20 / S (specialists Physics)

27 / S (specialists in Chemical engineering)

33 / S (specialists in Energy and nuclear engineering)

36 / S (specialists in Mechanical engineering)

61 / S (specialists in Materials science and engineering)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.3

Doctoral Course: Engineering and Chemistry of Materials and Constructions

Scientific Contact: Prof. Claudia Espro

SSD: CHIM/07

Theme to be developed:

Development of Sustainable Process for the Complete Upgrading of Agro-industrial Waste into Value Added Chemicals and Materials

The theme of this research project concerns the development of an eco-sustainable process for the conversion and valorization of waste from the industrial processing of citrus fruits, with the production of innovative "platform Chemicals" and "carbonaceous materials", by means of hydrothermal carbonization (HTC). Carbon residue is a promising material with enormous potential for use in a wide range of applications, such as adsorption of pollutants, as a low-cost material for sensor applications. The bio-oil, obtained by extraction from the aqueous phase, is of potential interest as a raw material for the synthesis of chemical products and liquid biofuels. Therefore, it will be necessary to study the chemical, physical and morphological characteristics, and the chemical composition of the obtained products, to identify the optimal operating conditions for maximizing the yield in bio-carbon and bio-oil. It will be identified and developed innovative fields of practical application of these green product sobtained by the agroindustrial waste conversion.

Period abroad and subject in which to carry out the activity:

not foreseen

Period in the company and person in which to carry out the activity:

6 months, (Eurofood Srl – Piazza San Giuseppe,13 – 98071 Capo D’orlando – IVA e CF 00524000833 – Legale Rappresentante: Lorella Ingrassia – contatti info@lemonplus.it)

Type of qualification required:

LM-21 Biomedical Engineering

LM-22 Chemical engineering

LM-33 Mechanical engineering

LM-35 Engineering for the environment and the territory

LM-53 Science and engineering of materials

LM-54 Chemical Sciences

LM-71 Sciences and technologies of industrial chemistry

26 / S (biomedical engineering specialists)

27 / S (specialists in chemical engineering)

36 / S (specialists in mechanical engineering)

38 / S (specialists in engineering for the environment and the territory)

61 / S (specialists in materials science and engineering)

62 / S (specialists in chemical sciences)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.4

Doctoral Course: Ingegneria e Chimica dei Materiali e delle Costruzioni

Scientific Contact: Prof. Lucio Bonaccorsi

SSD: ING-IND/22

Theme to be developed:

Enhancement of industrial processing waste of blue fish into nutraceutical compounds, bioenergy and organic fertilizers.

The aim of this proposal is the full valorization of the biowaste arising from the industrial preparation of the fish fillet into nutraceutical compounds (omega-3: EPA and DHA), bioenergy (biomethane) and organic fertilizers. The extraction of omega-3 compounds will be carried out by using biobased solvents, including limonene easily obtainable from agro-industrial waste (citrus pulp). The solid residue obtained from the extraction process will be further valorized through an anaerobic biological treatment. Finally, the output of anaerobic digestion will be used as fertilizer or compost. In addition, LCA analysis (Life Cycle Assessment) of the environmental impacts associated with the entire process will be carried out in order to identify and quantify the consumption of materials, energy and environmental emissions.

Period abroad and subject in which to carry out the activity (if foreseen):

Not foreseen

Period in the company and person in which to carry out the activity:

Giacinto Callipo Conserve Alimentari S.r.l., Riviera Prangi, 156 - 89812 Pizzo (VV)

Type of qualification required:

LM-30



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Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No. 8

Title of the PhD course

PhD course in: SCIENZE CHIMICHE

PhD Coordinator: Prof. Paola Dugo
E-mail: paola.dugo@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/scienze-chimiche>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/107>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
SCIENZE CHIMICHE	3	3

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation Scholarship No. 1 - *An integrated strategy for the prediction of air quality and the assessment of the aging phenomena of historical materials* - **Innovation Scholarship No. 2** - *Development of tunable magnetic nanobiomaterials for tissue engineering and antitumoral therapy* - **Innovation Scholarship No. 3** - *Nanomaterials and Medical Devices for Liquid Biopsy*:
all Master's degrees.

Green Scholarship No. 1 - *Studies on pillarene derivatives with antifouling properties for the development of anti-adhesive polymers* - **Green Scholarship No. 2** - *Optimization of sample preparation methods, innovative and sustainable, in order to develop diagnostic kits useful for medical and food applications* - **Green Scholarship No. 3** - *Biodegradable NANOMaterials*

based on CYCLOdextrin as molecular carriers for bio-delivery and chemo and bio species Monitoring (NANOCICLOTRAM):
all Master's degrees.

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates):**

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
<p>a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.</p>	<p>b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.</p>
<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence</p>

Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- curriculum vitae;
- university career (profit exams, graduation grade);
- Master's degree thesis;
- any publications;
- any professional experiences;
- other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **10/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **70/100** points, with a minimum score to be exceeded by **42/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 8 November 2021, 10:00.

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: “<surname and name of the candidate> Participation PhD Contribution in “SCIENZE CHIMICHE”.

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021– (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION N.1

Doctoral Course: Chemical Sciences

Scientific Contact: Paola Cardiano

SSD: CHIM/12 Chemistry of the environment and of cultural heritage

Theme to be developed:

An integrated strategy for the prediction of air quality and the assessment of the aging phenomena of historical materials.

This proposal deals with a multidisciplinary project for integrated diagnostics and monitoring of the state of conservation of historical materials, together with the assessment of the environmental quality of archaeological sites and places of historical and artistic interest through an infrastructural network of low-cost smart sensors, data analysis algorithms, machine learning and analytical investigations. Meteorological parameters and the concentration of site-specific chemical species will be collected in real-time by means of selected sensors and *in-situ* analyzed. Moreover, materials will be analyzed by spectroscopic (e.g., XRF, FT-IR, XRD) and chromatographic techniques (e.g., LC-MS, GC-MS). Analytical information will be correlated with sensors data through chemometrics with the aim to assess how measured variables affect the materials conservation state as well as their role on the ageing phenomena.

Period in the company and person in which to carry out the activity: 9 months at SmartMe.IO S.r.l.

Type of qualification required:

All master degrees



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DESCRIPTION SHEET INNOVATION N.2

Development of tunable magnetic nanobiomaterials for tissue engineering and antitumoral therapy

Doctoral Course: Chemical Science

Scientific Contact: Anna Piperno

SSD: CHIM 06

Theme to be developed:

Development of magnetic nanostructured biomaterials that mimic chemically, physically, mechanically, and biologically the extracellular matrix of healthy or pathological tissues. The innovative nanomaterials will be employed in regenerative medicine applications and in vitro studies as predictive models of different diseases. The new biomaterials will be able to respond to an external magnetic field producing hierarchical structure similar to the target human tissues. Moreover, they can be engineered as “stimuli-responsive” nanoplatfroms for the on-demand release of therapeutic agents. The studies of cell/ biomaterial interactions will be carried out in collaboration with ISTECCNR. The behavior of the magnetic biomaterials under the effects of an external magnetic field will be carried out in collaboration with NTSOL.

Period abroad and subject in which to carry out the activity (if foreseen): 6 months in Nanotech Solutions Sociedad Limitada (NTSOL), Villacastín, Spagna (coincident with 6 months which will be spent in the company). Contact Dr. Francisco J Teran Garc (francisco.teran@ntsol.es)

Period in the company and person in which to carry out the activity:

- 6 months in Nanotech Solutions Sociedad Limitada (NTSOL), Villacastín, Spagna. Contact Dr. Francisco J Teran Garc (francisco.teran@ntsol.es)
- 12 months in Istituto di Scienza e Tecnologia dei Materiali Ceramici del Consiglio Nazionale delle Ricerche (“ISTEC-CNR”), Faenza, (RA). Contact: Dr Monica Montesi e Dr Silvia Panseri monica.montesi@istec.cnr.it; silvia.panseri@istec.cnr.it

Type of qualification required:

All Master Degree



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DESCRIPTION SHEET INNOVATION N.3

Nanomaterials and Medical Devices for Liquid Biopsy

Doctoral Course: Chemical Science

Scientific Contact: Anna Piperno

SSD: CHIM 06

Theme to be developed:

Development of innovative nanotechnological strategies for the fishing of oncological biomarkers in blood and/or pathological tissues and for the development of medical devices in liquid biopsy. Nanoplatfroms based on graphene, carbon nanotubes, magnetic beads will be engineered with molecular recognition elements and developed for the fishing of target biomarkers. Their efficiency will be studied in collaboration with Cogentech, the evaluation will include the development of experimental protocols on plasma of both patients and healthy donors.

Period abroad and subject in which to carry out the activity (if foreseen): No

Period in the company and person in which to carry out the activity:

- 6 months in Cogentech Società Benefit srl
Sede Legale: via Adamello 16, 20139 Milan, Italy
Unità locale presso il Parco Scientifico e Tecnologico della Sicilia Zona Industriale,
Blocco Palma I, Stradale V. Lancia 57 - 95121 Catania. Contatto Dr **Nina Offenhäuser**
nina.offenhauser@cogentech.it

Type of qualification required:

All Master Degree



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N. 1

Doctoral Course: SCIENZE CHIMICHE (CHEMICAL SCIENCES)

Scientific Contact: ANNA NOTTI

SSD: CHIM/06

Title: Studies on pillarene derivatives with antifouling properties for the development of anti-adhesive polymers.

Theme to be developed:

The present project aims at finding innovative solutions for the problem of biofouling in photobioreactors used for the production of microalgae, through the design of new polymeric materials, or coatings, adopting different synthetic strategies to obtain prototype polymers with anti-adhesive properties. For this purpose, a number polycationic or zwitterionic aromatic macrocyclic compounds, belonging to the pillararene family, will be used as anti-adhesive agents. In consideration of the biocompatibility and the already known antibiofouling and antibacterial properties of this class of compounds, new pillarene monomers will be synthesized to be used directly in the polymerization process (formation of copolymers) or in the post-functionalization of the surface of the polymeric material (direct anchoring or graft-polymerization). The derivatives and the functionalized plastic surfaces obtained will be extensively analyzed.

Period in the company and company in which to carry out the activity: six (6) months to be spent at Plastica Alfa Spa, Caltagirone.

Type of qualification required:

Master Degree on any subject.



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.2

Doctoral Course: Chemistry

Scientific Contact: Prof. Luigi Mondello

SSD: CHIM/01 Analytical Chemistry

Theme to be developed:

Optimization of sample preparation methods, innovative and sustainable, in order to develop diagnostic kits useful for medical and food applications

Nucleic acid amplification techniques are particularly useful for identifying and quantifying those microorganisms that are difficult to cultivate or to identify with other methods. The extraction step is the limiting step of these techniques, as it is necessary to purify the samples from reaction inhibitors and any contaminants. The classic methods involve the use of organic solvents, are laborious and time consuming. The aim of the project is to optimize an innovative and easy-to-use extraction system that allows the elimination of reaction inhibitors without the use of organic solvents, in accordance with the principles of Green Chemistry. This method will make it possible to decrease analysis times, reduce analysis and disposal costs, making molecular systems more usable both for diagnostic needs and within the food supply chains.

Period abroad and subject in which to carry out the activity (if foreseen):

6 months

Period in the company and person in which to carry out the activity:

6 months at Enbiotech s.r.l., Palermo, Italy

Type of qualification required:

All the master degrees



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.3

Doctoral Course: Chemical Science

Scientific Contact: Antonino Mazzaglia

SSD: CHIM 03

Theme to be developed: Biodegradable NANOMaterials based on CYCLOdextrin as molecular carriers for bio-delivery and chemo and bio species Monitoring (NANOCICLOTRAM):

In the agri-food area, innovative and smart sensor, and monitoring systems can help to generate sustainable agricultural/ food supply chains, reducing their environmental impact. In the medical and health sectors, the urgent need to implement new enabling technologies in order to improve, customize and speed up diagnosis, monitoring, assistance and rehabilitation care is an open challenge. In this context, through green approaches (both covalent and supramolecular) and computational techniques, in NANOCICLOTRAM will be developed sensory nano-platforms based on macrocycles, polymers, hybrid systems, constructs based on metallic nanoparticles and graphene for studies in solution, in biological media, and, in perspective, for engineering in miniaturized devices (for example in optical, plasmonic, magnetic, electrochemical and label-free sensors). The fine-tuning of the molecular and macromolecular components and their self-assembly will allow to direct the properties of bio-recognition, bio-transport and sensor performance.

Period abroad and subject in which to carry out the activity (if foreseen): 6 months in CYCLOLAB -Budapest, Hungary (coincident with 6 months which will spent in company

Period in the company and person in which to carry out the activity: CYCLOLAB
CIKLODEXTRIN KUTATO-FEJLES Cyclodextrin Research & Development Laboratory Ltd.;

E-mail: cyclolab@cyclolab.hu; Homepage: www.cyclolab.hu

Contact: Dr Milo Malanga , Email: malanga@cyclolab.hu

Type of qualification required:

All Master Degree

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.9

Title of the PhD course

PhD course in: SCIENZE COGNITIVE

Curricula:

1. Filosofie del linguaggio e della mente, psicologia e scienze dell'evoluzione
2. Teorie e tecnologie sociali, territoriali, dei media e delle arti performative

PhD Coordinator: Prof. Alessandra Maria Falzone
E-mail: alessandra.falzone@unime.it

Website of the PhD course:
<https://www.unime.it/it/dottorato/scienze-cognitive>

Information on the characteristics of the PhD course can be found on the page:
<https://www.unime.it/it/ricerca/offerta-dottorati/37/108>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
SCIENZE COGNITIVE	5	-

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation – Scholarship No.1 - *A study on the role of electrophysiological variables in the study of preference in the context of consumer goods*

Innovation – Scholarship No.2 - *The use of museums between innovation and science of the mind*

Innovation – Scholarship No.3 - *Mapping Messina: Representation techniques and spatial analysis for services mapping*

Innovation – Scholarship No.4 - *Deliberative Democracy*

Innovation – Scholarship No.5 - *Innovative techniques of sentiment analysis for social sciences*

all master's / single cycle degrees or equivalent

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates):**

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].
Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.
a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with	b.c) Measurability of the expected results and potential impact of the intervention

reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.	with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.
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It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **10/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **70/100** points, with a minimum score to be exceeded by **42/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 4 November 2021, 9.30.

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: “<surname and name of the candidate> Participation PhD Contribution in “SCIENZE COGNITIVE”.

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.1

Doctoral Course: Cognitive Science

Scientific Contact: prof Carmelo Vicario

SSD: M-PSI/02

Theme to be developed: *A study on the role of electrophysiological variables in the study of preference in the context of consumer goods*

The project foresees the study of the electrophysiological correlates associated with the preference/choice in the field of consumer goods. All this will take place through the involvement of various technologies such as virtual reality, the study of the basic electromyographic activity and the electrodermal response.

Period abroad and subject in which to carry out the activity (if foreseen):

A training period abroad (6 months) is envisaged at qualified facilities to refine skills and establish any scientific collaborations with experienced researchers in the sector.

Period in the company and person in which to carry out the activity:

A commitment of 6 months is foreseen at BrainTrends, via delle Nazioni Unite, terza traversa 20 - 0010 Galliciano Roma, during which the research activity will be carried out in collaboration with the company already active in the field of neuromarketing with reference to fragrances.

Type of qualification required: All Master's Degree



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.2

Doctoral Course: Cognitive Sciences

Scientific Contact: Prof. Francesco Paolo Campione

SSD: L-Art/04

Theme to be developed: *The use of museums between innovation and science of the mind*

The project, starting from a case study which will be identified (typically, an agreed museum) aims to construct a system able to combine the virtual and augmented reality instruments and the objects (notably, artworks) exhibited in it. When approaching the object, automatically or by an input of the user, the system will virtually “open” the artwork, and will allow him (through a viewer, or through a non invasive projection system on the surrounding space), to “entry) in the work obtaining additional information relating, for example, to the manufacturing technique, to the original conservation context, and eventually about the author.

Period abroad and subject in which to carry out the activity: 6 months

Period in the company and person in which to carry out the activity: 6 months, PATH srl, via Bivona Bernardi 3, 98122 Messina

Type of qualification required: Master's or single-cycle degree (or equivalent)



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.3

Doctoral Course: Cognitive Science

Scientific Contact: prof. Andrea Nucita

SSD: INF/01

Theme to be developed: *Mapping Messina: Representation techniques and spatial analysis for services mapping*

The PhD project will be part of a research carried out by a team of anthropologists, sociologists, computer scientists and demographers in the municipality of Messina and the candidate's research questions will investigate, from the perspective of applied social sciences, the perception of urban space in relation to the social services offered. The research proposals will consider, on the basis of consolidated scientific literature, the intersection of cultural, political and socio-economic variables in the construction of the spatial categories (near/far; accessible/accessible, etc.) that define the use of social services, identifying any gaps and/or overlaps between the institutional formulation and within the social groups concerned (families, young people, the elderly, migrants, etc.). The research implies a multi-scalar approach functional to connect the thick and long lasting ethnographic survey with the socio-demographic processes found in the statistical sources. The project will propose methodological paths able to integrate - within an innovative scientific approach - the multiple cartographic representations, the use of TCI supports, the qualitative-quantitative analyses, with the aim of a cognitive fallout and at the same time of restitution to the institutions and the population.

Period abroad and subject in which to carry out the activity (if foreseen): 6 months

Period in the company and person in which to carry out the activity: 6 months, PATH srl, via Bivona Bernardi 3, 98122 Messina

Type of qualification required: Master's Degree



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.4

Doctoral Course: Cognitive Science

Scientific Contact: prof. Mario Graziano

SSD: M-FIL/01

Theme to be developed: *Deliberative Democracy*

The concept of deliberative democracy that has emerged in the last two decades represents an exciting development in political theory. As a normative account of legitimacy, deliberative democracy evokes ideals of rational legislation, participatory politics, and civic self-governance. In short, it presents an ideal of political autonomy based on the practical reasoning of citizens. Deliberative bodies such as citizens' councils, assemblies, and juries (often called "deliberative mini-publics" in academic literature) they are examples of deliberative democracy and involve randomly selected citizens spending a significant period of time developing informed recommendations for public authorities. But is this democratic ideal feasible or even desirable? The purpose of this research project is answer this question and at the same time create the conditions (through the use of information technology) for a truly effective deliberative model.

Period abroad and subject in which to carry out the activity (if foreseen): not foreseen

Period in the company and person in which to carry out the activity: 6 months at Gomobile S.r.l.,
Via Resuttana, 367, 90146, Palermo

Type of qualification required: Master's degree



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.5

Doctoral Course: Cognitive Science

Scientific Contact: Antonia Cava

SSD: SPS/08

Theme to be developed: *Innovative techniques of sentiment analysis for social sciences*

In recent years, the massive production of texts generated on the web provided an excellent base for a quantitative approach to social phenomena analysis. Sentiment analysis is conceived as the study of people's opinions, feelings, and evaluations regarding products, services, organizations, and topics through computational techniques. Several issues arise because of the use of these techniques, from gathering data to their processing until the choice of machine learning algorithms. Nevertheless, the unavoidable importance of artificial intelligence tools is evident even in the social sciences, although their potential is not totally expressed yet. The project, markedly multidisciplinary, aims to investigate sentiment analysis techniques in sociological phenomena through the use of the most recent techniques of artificial intelligence, particularly in the context of communication.

Period abroad and subject in which to carry out the activity (if foreseen): not foreseen

Period in the company and person in which to carry out the activity: 6 months at PATH srl, via Bivona Bernardi 3, 98122 Messina

Type of qualification required: Master's Degree

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.10

Title of the PhD course

PhD course in: SCIENZE GIURIDICHE

Curricula:

1. Organizzazione del potere e tutela dei diritti fondamentali nella prospettivacostituzionalistica e storico-filosofica
2. Diritto civile. Persona e mercato nel diritto interno ed europeo
3. Tutela penale e garanzie della persona nel diritto interno, comparato, europeo ed internazionale: profili sostanziali e processuali
4. Impresa, trasporti e pubblica amministrazione

PhD Coordinator: Prof. Concetta Parrinello
E-mail: concetta.parrinello@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/scienze-giuridiche>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/109>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
SCIENZE GIURIDICHE	3	1

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation Scholarship No.1 - *Consumer protection in energy, gas and water supply contracts between new innovation and digitization processes and protection techniques: SMART METERING;* **Innovation Scholarship No.2** - *Digital innovation and the right to disconnect: reconstructive profiles of an open question;* **Innovation Scholarship No.3** - *The new industrial revolution: from corporate governance to corpotech democracy* –**Green Scholarship No.1** - *Waste at times of circular economy between End of Waste and health protection:*

LMG/01 Classe delle lauree LMG/01 Class of master's degrees in law

22/S (master's degrees in law)
LMG/01 LAW
Degree in Law (V.O)

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).**

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.
a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the	b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.

contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **40/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **40/100** points, with a minimum score to be exceeded by **24/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English, French, German and Spanish languages is verified as chosen by the candidate.**

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 3 November 2021, 15.30

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: “<surname and name of the candidate> Participation PhD Contribution in “SCIENZE GIURIDICHE”.

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION / SUSTAINABILITY SCHOLARSHIP N. 1

Doctoral Course: Legal Sciences

Scientific Contact: PROF.SSA ASTONE MARIA ANNUNZIATA,

SSD: 12A1 (IUS 01)

Theme to be developed: Consumer protection in energy, gas and water supply contracts between new innovation and digitization processes and protection techniques: SMART METERING

The research, after an analysis of the regulations concerning water, gas and electricity supply contracts, and of the rights reserved to the consumer in this area, will be dedicated to the problems related to the use of IoT (Internet of Things) devices, (smart meters), able to collect detailed information on the consumption of individual users, such as to reveal their habits, health conditions or other characteristics relating to their behavior

This will result in the need to examine the relevance in terms of the protection of users' personal data and the effectiveness and execution of the contract, as well as the existence of any liability profiles connected to abnormal use or the defect of the smart meter.

Period abroad and subject in which to carry out the activity (if foreseen): 6 MONTHS ,
Universidad de Extremadura (Spagna),

Period in the company and person in which to carry out the activity: 6. MONTHS, AMAM S.P.A, con sede in MESSINA , Viale Giostra, Ritiro, (partita IVA 01937820833)

Type of qualification required:

LMG/01 Classe delle lauree magistrali in giurisprudenza (Master's degree classes in Law)

22/S (specialistiche in giurisprudenza) (Master's degrees classes in Law)

LMG/01 GIURISPRUDENZA) (Master's degree classes in Law)

Laurea in giurisprudenza (V.O) (Master's degree classes in Law)



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.2

Doctoral Course: PhD Programme in Legal Studies

Scientific Contact: Prof. Loredana Ferluga

SSD: IUS/07 – Labour Law

Theme to be developed: Digital innovation and the right to disconnect: reconstructive profiles of an open question.

The right of workers to disconnect, i.e. the right of workers not to carry out activities or to receive communications, directly or indirectly, by means of digital tools outside working hours, without this entailing any repercussions of a disciplinary nature, is lacking. currently of an adequate legal regulation, both in the Euro-unitary order and in the national one. The current state of the art therefore outlines various theoretical and applicative issues, from the constitutional framework of disconnection to the regulatory source of the law, up to the identification of the minimum measures adequate for the protection of the worker, both of a preventive and sanctioning nature. This PhD program has the aim to promote scientific research that reconstructs the notion of the right to disconnect, also with reference to "intellectual disconnection", and identifies adequate forms of worker protection.

Period abroad and subject in which to carry out the activity (if foreseen): //

Period in the company and person in which to carry out the activity: 6 months to be carried out at C.O.T. Cure Ortopediche Traumatologiche s.p.a. - Via Ducezio n.1, Messina

Type of qualification required:

LMG/01 Classe delle lauree magistrali in giurisprudenza (Master's degree classes in Law)

22/S (specialistiche in giurisprudenza) (Master's degrees classes in Law)

LMG/01 GIURISPRUDENZA) (Master's degree classes in Law)

Laurea in giurisprudenza (V.O) (Master's degree classes in Law)



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DESCRIPTION SHEET INNOVATION / SUSTAINABILITY SCHOLARSHIP N. 3

Doctoral Course: Legal Sciences

Scientific Contact: Prof. Dario Latella (Associate Professor of Business Law, Department of Law, University of Messina)

SSD: IUS 04

Theme to be developed: "THE NEW INDUSTRIAL REVOLUTION: FROM CORPORATE GOVERNANCE TO CORPTECH DEMOCRACY"

Abstract: Artificial Intelligence (AI) mechanisms will assume an increasingly strategic role within the management of large joint-stock companies, both as a support tool for the purely decisional activity of the so-called *CorpTech governance*, and in relation to the compliance and sustainability side of the matter. What could be the consequences of such advent of a new "industrial revolution", above all with regard to the informations and the procedure to be given inside and outside the company?

Period abroad and subject in which to carry out the activity: 6 months - Durham University - Law School, Palatine Centre, Stockton Rd, Durham DH1 3LE, UK

Period in the company and person in which to carry out the activity: 12 months - CeoRe S.r.l., based in Messina, Piazza Immacolata di marmo 4 (C.F. and P.Iva 03634670834) - PEC: ceore@pec.it

Type of qualification required:

LMG/01 Classe delle lauree magistrali in giurisprudenza (Master's degree classes in Law)

22/S (specialistiche in giurisprudenza) (Master's degrees classes in Law)

LMG/01 GIURISPRUDENZA) (Master's degree classes in Law)

Laurea in giurisprudenza (V.O) (Master's degree classes in Law)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.1

Doctoral Course: PHD in Legal Science XXXVII cycle

Scientific Contact: prof. Concetta Parrinello

SSD: IUS/01

Theme to be developed: Waste at times of circular economy between End of Waste and health protection.

The objective of this research project is to promote the development of knowledge, in terms of advancement and innovation, within the complex sector of waste, whose juridical notion is currently arising quite a few doctrinal and jurisprudential issues.

First of all, the disputes are polarized around the qualification of waste, both as a “non-usable” object or even “harmful”, and as an “asset” in the juridical sense, according to the EoW principle.

The theme intercepts the crucial junction of present times, is supported by the c.d. circular logic, and relative to reusability and re-evaluation of secondary raw materials.

It therefore appears necessary to elaborate – as part of an unavoidable and ineffable research activity – models of juridical government for items destined to disposal, within a global scenario in which environmental policies try to guarantee a sustainable growth for present and future generations.

Period abroad and subject in which to carry out the activity://

Period in the company and person in which to carry out the activity: 12 mesi presso Messinaservizi Bene Comune S.p.A., con sede in Messina, Piazza Unione Europea SNC, partita IVA 03459080838,

Type of qualification required:

LMG/01 Classe delle lauree magistrali in giurisprudenza (Master's degree classes in Law)

22/S (specialistiche in giurisprudenza) (Master's degrees classes in Law)

LMG/01 GIURISPRUDENZA) (Master's degree classes in Law)

Laurea in giurisprudenza (V.O) (Master's degree classes in Law)

Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.11

Title of the PhD course

PhD course in: SCIENZE POLITICHE

PhD Coordinator: Prof. Giuseppe Bottaro
E-mail: giuseppe.bottaro@unime.it

Website of the PhD course:
<https://www.unime.it/it/dottorato/scienze-politiche>

Information on the characteristics of the PhD course can be found on the page:
<https://www.unime.it/it/ricerca/offerta-dottorati/37/117>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
SCIENZE POLITICHE	1	1

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation Scholarship No.1 – *Democratic catholicism and politics between fascism and communism at Sturzo's archive. Documents digitization: 1919-1978:* LM-52 Relazioni internazionali; LM-62 Scienze della politica; LM-63 Scienze delle pubbliche amministrazioni; LM-78 Scienze filosofiche; LM-81 Scienze per la cooperazione allo sviluppo; LM-84 Scienze storiche; LM-87 Servizio sociale e politiche sociali; LM-88 Sociologia e ricerca sociale; LM-90 Studi europei; 18/S (Master's degrees in filosofia teoretica, morale, politica ed estetica); 60/S (Master's degrees in relazioni internazionali); 70/S (Master's degrees in scienze della politica); 71/S (Master's degrees in scienze delle pubbliche amministrazioni); 88/S (Master's degrees in scienze per la cooperazione allo sviluppo); 89/S (Master's degrees in sociologia); 94/S (Master's degrees in storia contemporanea); 96/S (Master's degrees in storia della filosofia); 99/S (Master's degrees in studi europei).

Green Scholarship No. 1 – *Community energies for the green transition in southern Italy: New forms of economic, social and environmental sustainability*: LM-52 Relazioni internazionali; LM-62 Scienze della politica; LM-63 Scienze delle pubbliche amministrazioni; LM-78 Scienze filosofiche; LM-81 Scienze per la cooperazione allo sviluppo; LM-84 Scienze storiche; LM-87 Servizio sociale e politiche sociali; LM-88 Sociologia e ricerca sociale; LM-90 Studi europei; 60/S (Master's degrees in relazioni internazionali); 70/S (Master's degrees in scienze della politica); 71/S (Master's degrees in scienze delle pubbliche amministrazioni); 88/S (Master's degrees in scienze per la cooperazione allo sviluppo); 89/S (Master's degrees in sociologia); 94/S (Master's degrees in storia contemporanea); 96/S (Master's degrees in storia della filosofia); 99/S (Master's degrees in studi europei).

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;

- 2) type of degree and title of the degree course;
- 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.

<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.</p>
<p>a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON..</p>	<p>b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.</p>

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

11. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- curriculum vitae;
- university career (profit exams, graduation grade);
- Master's degree thesis;
- any publications;
- any professional experiences;
- other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **10/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **70/100** points, with a minimum score to be exceeded by **42/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 8 November 2021, 9:00.

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: "<surname and name of the candidate> Participation PhD Contribution in "SCIENZE POLITICHE".

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N. 1

DEMOCRATIC CATHOLICISM AND POLITICS BETWEEN FASCISM AND COMMUNISM AT STURZO'S ARCHIVE. DOCUMENTS DIGITIZATION: 1919-1978

Doctoral Course: Political Sciences

Scientific Contact: prof. Giuseppe Bottaro

SC: 14/B1 - SSD: SPS/02 - History of Political Thought

Theme to be developed:

The aim of the research consists in the analysis of the elements of continuity and the circumstances of discontinuity of Christian-inspired parties' political history during the 20th century, the thought and political choices of the main leaders of these parties, and their confrontation with the authoritarianism of fascism and socialist political culture. Luigi Sturzo was a protagonist of the post-war political life. At the same time, Alcide De Gasperi, Giulio Andreotti, and Aldo Moro played a leading role in the formation and raising of liberal-democratic Italy, anchored to the West, especially to the European Communities. The Luigi Sturzo Institute preserves fundamental archival collections containing personal documents of the protagonists of this period: the founder of the Italian People's Party, Prime Minister Andreotti elected several times, and other exponents of the Christian Democracy Party. Digitization research proposed will be developed methodologically consistent with the typology of studies referable to the History of Doctrines and Political Institutions.

Period abroad and subject in which to carry out the activity: No research period abroad is planned.

Period in the company and person in which to carry out the activity: eight months at the Luigi Sturzo Institute, Palazzo Baldassini, via delle Coppelle 35 Rome.

Type of qualification required:

LM-52 Relazioni internazionali (Master's degree in International Relations); LM-62 Scienze della politica (Master's degree in Political Sciences); LM-63 Scienze delle pubbliche amministrazioni (Master's degree in Public Administration Sciences); LM-78 Scienze filosofiche (Master's degree in Philosophical Sciences); LM-81 Scienze per la cooperazione allo sviluppo (Master's degree in Sciences for cooperation in development); LM-84 Scienze storiche (Master's degree in Historical Sciences); LM-87 Servizio sociale e politiche sociali (Master's degree in Social Service and Social Policies); LM-88 Sociologia e ricerca sociale (Master's degree in Sociology and Social Research); LM-90 Studi europei (Master's degree in European Studies); 18/S specialistiche in filosofia teoretica, morale, politica ed estetica (Master's degrees in Theoretical, moral, political and aesthetic philosophy); 60/S specialistiche in relazioni internazionali (Master's degrees in International relations); 70/S specialistiche in scienze della politica (Master's degrees in Political Sciences); 71/S specialistiche in scienze delle pubbliche amministrazioni (Master's degrees in Public administration sciences); 88/S specialistiche in scienze per la cooperazione allo sviluppo (Master's degree in Sciences for cooperation in development); 89/S specialistiche in sociologia (Master's degrees in Sociology); 94/S specialistiche in storia contemporanea (Master's degrees in contemporary history); 96/S specialistiche in storia della filosofia (Master's degrees in the History of philosophy); 99/S specialistiche in studi europei (Master's degrees in European studies).



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N. 1

COMMUNITY ENERGIES FOR THE GREEN TRANSITION IN SOUTHERN ITALY: NEW FORMS OF ECONOMIC, SOCIAL AND ENVIRONMENTAL SUSTAINABILITY

Doctoral Course: Political Sciences

Scientific Contacts: prof. Giuseppe Bottaro, prof. Domenica Farinella

SC: 14/D1 - SSD: SPS/09 - Economic Sociology

Theme to be developed:

The production of clean, renewable, affordable energy is a key of the current ecological transition involving companies, citizens, and practices. For local communities, clean and accessible energy is important for enhancing full citizenship and integrating marginal social groups (the most at risk of energy poverty). The spread of solidarity practices and energy-saving systems with a low environmental impact, based on participatory civil economy (involving sharing in energy production, consumption and storage) contributes to contrast energy poverty, to enhance territorial empowerment and reducing pollution. The project analyses energy transition processes in Southern Italy, exploring in a comparative perspective some "community energy" experiences (e.g. energy communities, energy cooperatives, photovoltaic panel purchasing groups), according to the case-study method.

Period abroad and subject in which to carry out the activity: No research period abroad is planned.

Period in the company and person in which to carry out the activity: 8 months at Solidarity and Energy Spa, Impresa sociale - Forte Petrazza, Località Camaro Superiore Snc - Messina.

Type of qualification required:

LM-52 Relazioni internazionali (Master's degree in International Relations); LM-62 Scienze della politica (Master's degree in Political Sciences); LM-63 Scienze delle pubbliche amministrazioni (Master's degree in Public Administration Sciences); LM-78 Scienze filosofiche (Master's degree in Philosophical Sciences); LM-81 Scienze per la cooperazione allo sviluppo (Master's degree in Sciences for cooperation in development); LM-84 Scienze storiche (Master's degree in Historical Sciences); LM-87 Servizio sociale e politiche sociali (Master's degree in Social Service and Social Policies); LM-88 Sociologia e ricerca sociale (Master's degree in Sociology and Social Research); LM-90 Studi europei (Master's degree in European Studies); 60/S specialistiche in relazioni internazionali (Master's degrees in International relations); 70/S specialistiche in scienze della politica (Master's degrees in Political Sciences); 71/S specialistiche in scienze delle pubbliche amministrazioni (Master's degrees in Public administration sciences); 88/S specialistiche in scienze per la cooperazione allo sviluppo (Master's degree in Sciences for cooperation in development); 89/S specialistiche in sociologia (Master's degrees in Sociology); 94/S specialistiche in storia contemporanea (Master's degrees in contemporary history); 96/S specialistiche in storia della filosofia (Master's degrees in the History of philosophy); 99/S specialistiche in studi europei (Master's degrees in European studies).



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Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.12

Title of the PhD course

PhD course in: SCIENZE VETERINARIE

PhD Coordinator: Prof. Rosaria Laurà
E-mail: rosaria.laura@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/scienze-veterinarie>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/111>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
SCIENZE VETERINARIE	2	2

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation Scholarship No.1 - *Role of the aliamide palmitoylglucosamine in the treatment of lower urinary tract diseases:* LM-6 Biologia, LM-9 Biotecnologie mediche, veterinarie e farmaceutiche, LM-42 Medicina veterinaria, LM-61 Scienze della nutrizione umana, LM-69 Scienze e tecnologie agrarie, LM-70 Scienze e tecnologie alimentari, LM-86 Scienze zootecniche e tecnologie animali, 6/S (Master's degrees in biologia), 7/S (Master's degrees in biotecnologie agrarie, 9/S (Master's degrees in biotecnologie mediche, veterinarie e farmaceutiche), 47/S (Master's degrees in medicina veterinaria), 77/S (Master's degrees in scienze e tecnologie agrarie), 78/S (Master's degrees in scienze e tecnologie agroalimentari), 79/S (Master's degrees in scienze e tecnologie agro-zootecniche).

Innovation Scholarship No.2 - *Natural substances of the sicilian territory for the treatment of neurodegenerative diseases:* LM-6 Biologia, LM-9 Biotecnologie mediche, veterinarie e farmaceutiche, LM-42 Medicina Veterinaria, LM-61 Scienze della nutrizione umana LM-70 Scienze e tecnologie alimentari, LM-86 Scienze zootecniche e tecnologie animali 47/S

(Master's degrees in medicina veterinaria) 9/S (Master's degrees in biotecnologie mediche, veterinarie e farmaceutiche).

Green Scholarship No.1 – *Alternative and sustainable ingredients and foods from by products of emergingagri food chains. The industrial hemp chain:* LM-6 Biologia, LM-42 Medicina veterinaria, LM-61 Scienze della nutrizione umana, LM-70 Scienze e tecnologie alimentari, LM-86 Scienze zootecniche e tecnologie animali.

Green Scholarship No.2 - *Evaluation of the protective effects of snail secretion in the treatment of inflammatory skin diseases:* LM-6 Biologia, LM-9 Biotecnologie mediche, veterinarie e farmaceutiche, LM-42 Medicina veterinaria, LM-69 Scienze e tecnologie agrarie LM-70 Scienze e tecnologie alimentari, LM-86 Scienze zootecniche e tecnologie animali, 6/S (Master's degrees in biologia), 7/S (Master's degrees in biotecnologie agrarie), 9/S (Master's degrees in biotecnologie mediche, veterinarie e farmaceutiche) 47/S (Master's degrees in medicina veterinaria), 77/S (Master's degrees in scienze e tecnologie agrarie), 78/S (Master's degrees in scienze e tecnologie agroalimentari), 79/S (Master's degrees in scienze e tecnologie agrozootecniche).

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a. Italian University that issued the qualification;
 - b. tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c. date of graduation;
 - d. final vote;
 - e. list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the

indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital	b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced

and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.	impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.
a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).	b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.
a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.	b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.

It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **20/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **10/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **70/100** points, with a minimum score to be exceeded by **42/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 5 November 2021, 9:30.

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: "<surname and name of the candidate> Participation PhD Contribution in "SCIENZE VETERINARIE".

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION N.1

Doctoral Course: Veterinary Sciences

Scientific Contact: Rosalia Crupi

SSD: VET/07

Theme to be developed:

Role of the aliamide palmitoylglucosamine in the treatment of lower urinary tract diseases

Lower urinary tract diseases are characterized by functional damage and intense pain. Drug therapy involves the use of pharmacological drugs that are not always effective and often have contraindications due to their unwanted effects. Nutrition represents a risk factor for which dietary control is essential. The combined use of palmitic acid amide with glucosamine acts on several pathogenetic stages, offering a promising "disease-oriented" dietary approach; the association with a flavonoid neutralizes the hyper-produced free radicals in the bladder. Through the study of an in vivo experimental model, it will be possible to better elucidate the pathogenetic mechanisms underlying diseases of the lower urinary tract by verifying whether the dietary approach is able to limit their symptoms and the tissue / molecular alterations associated with them.

Period abroad and subject in which to carry out the activity (if foreseen): NO

Period in the company and person in which to carry out the activity: 6 months - INNOVET ITALIA S.r.l. unipersonale, P.Iva e C.Fisc. 11929510151. SEDE LEGALE VIA EGADI 7

20144 MILANO, ITALIA; PEC: innovet.italia@legalmail.it; Email: innovet@innovet.it;

Tel: (0039) 0498015583 - Amministratore Unico: Renato della Valle

Type of qualification required:

LM-6 Biologia

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche

LM-42 Medicina veterinaria

LM-61 Scienze della nutrizione umana

LM-69 Scienze e tecnologie agrarie

LM-70 Scienze e tecnologie alimentari

LM-86 Scienze zootecniche e tecnologie animali

6/S (specialistiche in biologia)

7/S (specialistiche in biotecnologie agrarie)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche)

47/S (specialistiche in medicina veterinaria)

77/S (specialistiche in scienze e tecnologie agrarie)

78/S (specialistiche in scienze e tecnologie agroalimentari)

79/S (specialistiche in scienze e tecnologie agro-zootecniche)



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.2

Doctoral Course: Veterinary Sciences

Scientific Contact: Prof Montalbano Giuseppe

SSD: VET/01 Anatomia degli animali domestici

Theme to be developed:

NATURAL SUBSTANCES OF THE SICILIAN TERRITORY FOR THE TREATMENT OF NEURODEGENERATIVE DISEASES

The aim of the research project is to test natural native sicilian substances to verify the effect on the central and peripheral nervous system, paying particular attention to neural progenitors and signaling pathways that control adult neurogenesis and regeneration in the telencephalon. The evaluation of the natural substances will be carried out at the Italian partner company Science4life, an academic spin-off of the University of Messina. The effects of natural extracts will be tested on wild-type and transgenic zebrafish models for neurodegenerative diseases, obtained through the CRISPR/Cas9 technology at Karlsruhe Institute of Technology (KIT), Campus North, Institute of Biological and Chemical Systems (IBCS)- Germany.

Period abroad and subject in which to carry out the activity (if foreseen): 12 months, at Karlsruhe Institute of Technology (KIT), Campus North, Institute of Biological and Chemical Systems (IBCS) – Germany.

Period in the company and person in which to carry out the activity: 6 months at Science4life, srl, an academic spin-off of the University of Messina.

Type of qualification required:

LM-6 Biologia

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche

LM-42 Medicina Veterinaria

LM-61 Scienze della nutrizione umana

LM-70 Scienze e tecnologie alimentari

LM-86 Scienze zootecniche e tecnologie animali

47/S (specialistiche in medicina veterinaria)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche)



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.1

Doctoral Course: Veterinary Sciences

Scientific Contact: Prof.ssa Antonella Verzera

SSD: AGR/15 - Food Science and Technology

Theme to be developed:

ALTERNATIVE AND SUSTAINABLE INGREDIENTS AND FOODS FROM BY-PRODUCTS OF EMERGING AGRIFOOD CHAINS. THE INDUSTRIAL HEMP CHAIN.

The project is based on a systemic experimental design which, in sequence, will study i) the chemical, physical, health, nutritional and technological properties of the by-products of the supply chain, ii) the application of conventional and innovative processes to isolate fractions and extracts, to modify their structures by improving their technological and nutritional value, and to produce new ingredients through encapsulation, structuring and biotechnological approaches, and iii) the development of new food formulations that meet consumer demand for products with high nutritional and health benefits.

Period abroad and subject in which to carry out the activity (if foreseen): None.

Period in the company and person in which to carry out the activity:

The research includes 6 months in Molino Crisafulli Soc. Coop. Agricola a r.l.

Via circonvallazione, 288, 95041 Caltagirone, CT,

P. IVA 04681700870.

Legal representative: Giuseppe Sanmartino

E-mail: info@molinocrisafulli.com Tel. +39 093322202

Type of qualification required:

LM-6, LM-42, LM 61, LM-70, LM-86, LM-54.



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DESCRIPTION SHEET SUSTAINABILITY SCHOLARSHIP N.2

Doctoral Course: Veterinary Sciences

Scientific Contact: Enrico Gugliandolo

SSD: VET\07 Veterinary Pharmacology and Toxicology

Theme to be developed:

Evaluation of the protective effects of snail secretion in the treatment of inflammatory skin diseases

Snail slime is a compound of great interest from both a scientific and commercial point of view and in particular in the cosmetic and nutraceutical / pharmaceutical application. However, there is currently little scientific research regarding both the pharmacological properties and the physico-chemical characteristics of this natural compound. The present project, therefore, aims to study and improve the techniques of heliculture that will be evaluated in terms of "quality" of the finished product, and therefore of the subsequent characterization of both chemical and pharmacological properties. The manually collected and appropriately filtered snail secretion will be used for both *in vitro* and *in vivo* pharmacological studies in skin inflammation models. Going to study its anti-inflammatory, immunomodulating and therefore therapeutic activity in the treatment of inflammatory skin disorders such as atopic dermatitis.

Period abroad and subject in which to carry out the activity (if foreseen): 3 months

Fulvio D'Acquisto, Professor of Immunology, University of Roehampton, Grove House, Roehampton Lane, London, SW15 5PJ, UK.

Period in the company and person in which to carry out the activity: 6 months

98042 - Pace del Mela (ME), P. IVA 03485880839, Stefano Crupi, +39 392 814 6712, snailsrls@gmail.com

Type of qualification required:

LM-6 Biologia

LM-9 Biotecnologie mediche, veterinarie e farmaceutiche

LM-42 Medicina veterinaria

LM-69 Scienze e tecnologie agrarie

LM-70 Scienze e tecnologie alimentari

LM-86 Scienze zootecniche e tecnologie animali

6/S (specialistiche in biologia)

7/S (specialistiche in biotecnologie agrarie)

9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) 47/S (specialistiche in medicina veterinaria)

77/S (specialistiche in scienze e tecnologie agrarie)

78/S (specialistiche in scienze e tecnologie agroalimentari)

79/S (specialistiche in scienze e tecnologie agrozootecniche)



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Public Call for the selection and awarding of additional scholarships for PhD Courses activated at the University of Messina – 37th cycle - A.Y. 2021/2022, from the PON "Research and Innovation" 2014-2020 - Action IV.4 "Doctorates and research contracts on innovation issues" and Action IV.5 "Doctorates on Green issues" pursuant to D.M. No. 1061 of 10.08.2021

ATTACHMENT No.13

Title of the PhD course

PhD course in: TRANSLATIONAL MOLECULAR MEDICINE AND SURGERY

PhD Coordinator: Prof. Gaetano Caramori
E-mail: gaetano.caramori@unime.it

Website of the PhD course:

<https://www.unime.it/it/dottorato/translational-molecular-medicine-and-surgery>

Information on the characteristics of the PhD course can be found on the page:

<https://www.unime.it/it/ricerca/offerta-dottorati/37/115>

Positions available for competition:

PHD COURSE	ADDITIONAL SCHOLARSHIPS INNOVATION	ADDITIONAL SCHOLARSHIPS GREEN
TRANSLATIONAL MOLECULAR MEDICINE AND SURGERY	3	-

For each individual scholarship see the thematic data sheets below.

Type of qualification required:

Innovation – Scholarship No.1 - Nutraceutical approaches for anxiety:

Medicina e Chirurgia (LM-41);

Innovation – Scholarship No.2 - Strategies to improve anticancer potential of natural substances:

LM-6 Biologia, LM-9 Biotecnologie mediche, veterinarie e farmaceutiche, LM-13 Farmacia e farmacia industriale;

Innovation – Scholarship No.3 - Identification of genes involved in thyroid dysfunction:

LM-6 Biologia.

The suitability of the foreign qualification will be determined by the PhD examination Committee, in accordance with current regulations in force in Italy and in the Country where the qualification was issued, and in compliance with treaties or international agreements concerning the recognition of qualifications for the continuation of studies.

Documents to be attached to the application for the purpose of evaluating the candidates:

1. curriculum vitae;
2. self-certification of the qualification, with date and autograph signature, indicating:
 - a) Italian University that issued the qualification;
 - b) tipologia di laurea, denominazione del corso di laurea, type and denomination of the Master's degree;
 - c) date of graduation;
 - d) final vote;
 - e) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.
3. Master's degree thesis;
4. declaration pursuant to art. 9, paragraph 8, of the Regulations of the PhD courses of the University of Messina;
5. publications;
6. any professional experiences;
7. other qualifications in possession of the candidate;
8. research project (s) drawn up on the basis of the topic (s) specified in the data sheet (s) of the selected scholarship (s).

It should be noted that in drafting the research project, candidates must refer to the criteria set out in art. 3 of the D.M. 1061 of 10.08.2021 referred to in the grid shown in paragraph "Procedures and criteria for the selection and evaluation of candidates".

The candidate who intends to participate in more than one Scholarship within the same PhD course must submit a Research Project for each chosen Scholarship, taking care to prepare a single file for each Research Project and to name it with the indication of the Scholarship Selected topic (Eg Innovation - Scholarship No. 1 - Green - Scholarship No. 2) and to insert it in the "Research Project" field on the Esse3 platform.

Instead of document No. 2, for candidates **not yet in possession of the required qualification (undergraduates)**:

- self-certification, with date and autograph signature, indicating:
 - 1) University where they are enrolled;
 - 2) type of degree and title of the degree course;
 - 3) list of examinations with the relevant marks and indication of CFU (credits) acquired where required.

For the purposes of the above, they can make use of self-certifications, as expressly provided for in articles 46 and 47 of Presidential Decree No. 445/2000 and subsequent amendments and additions:

- Italian and EU citizens;
- citizens of States not belonging to the European Union, legally residing in Italy, **limited to** states, personal qualities and facts certifiable or verifiable by Italian public entities (specifically: degree obtained at an Italian University).

Candidates must attach to the procedure a scanned copy of a valid ID [with photo].

Please note: candidates, **EU and non-EU citizens, with a qualification/s of study/s abroad/achieved/s in EU and non-EU countries, must attach the certificate of title/s of study/s held/s** (Master's degree/s) from which it is deduced:

- 1) the duration of the study course;
- 2) list of examinations with the relevant marks (transcript of records);
- 3) the indication of the University that issued the qualification;
- 4) the date of graduation and the final vote.

with attached an official translation in Italian or English, released by the University that issued the title.

Procedures and criteria for the selection and evaluation of candidates:

In evaluating the applications and with particular reference to the project proposal submitted by the candidates, the Committees will take into account the following criteria, pursuant to art. 3 of the D.M. 1061 of 10.08.2021:

A) ADDITIONAL PHD SCHOLARSHIPS ON INNOVATION ISSUES (ACTION IV.4)	B) ADDITIONAL PHD SCHOLARSHIPS ON GREEN ISSUES (ACTION IV.5)
<p>a.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, in terms of scientific, social and economic impacts on the national territory, encouraging appropriate research models and the training of professional profiles in response to the innovation and competitiveness needs expressed by the entrepreneurial system, through the promotion of research on innovation, digital and enabling technologies, supporting the enhancement of human capital, as a determining factor for the development of research and innovation in Italy.</p>	<p>b.a) Relevance of the PhD pathway project in relation to the ability to create a high added value, through the enhancement of human capital, in terms of scientific, social and economic impacts on the national territory, fostering appropriate models of research and contamination of knowledge and skills to foster the development of innovative products and services with a reduced impact on the environment, focusing on themes geared to the conservation of the ecosystem, biodiversity, as well as reducing the impacts of climate change and promoting sustainable development, as a contribution to promoting green recovery and overcoming the effects of the crisis in the context of the COVID-19 pandemic.</p>
<p>a.b) Compliance of the PhD program project with the SNSI and the PNR, consistency with Law 240/2010 and Ministerial Decree 45/2013 on doctorates, with the aim of encouraging innovation and interchange between the world of research and production world and qualification of the contribution of research projects in the fields of innovation (Law 240/2010, art. 24, par. 3 and subsequent amendments and additions).</p>	<p>b.b) Compliance of the PhD program with the SNSI and the PNR, coherence with Law 240/2010 and Ministerial Decree 45/2013 regarding doctorates, through the funding of PhD courses in the Green field.</p>

<p>a.c) Measurability of the expected results and potential impact of the intervention with reference to the aims of the REACTEU: presence within the project of the PhD program of quantifiable and measurable targets consistent with the indicators provided for by the reference action of the PON.</p>	<p>b.c) Measurability of the expected results and potential impact of the intervention with reference to the REACTEU purposes: presence within the PhD project of quantifiable and measurable objectives consistent with the indicators envisaged by the reference action of the PON.</p>
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It should be noted that candidates must refer to the aforementioned criteria in the drafting of the research project.

1. Titles

The maximum score attributable to the qualifications will be **10/100** points.

The evaluable titles are:

- 1) curriculum vitae;
- 2) university career (profit exams, graduation grade);
- 3) Master's degree thesis;
- 4) any publications;
- 5) any professional experiences;
- 6) other qualifications in possession of the candidate.

2. Project

The maximum score attributable to the research project will be **40/100** points.

3. Examination: oral test

The maximum score attributable to oral test will be **50/100** points, with a minimum score to be exceeded by **26/100** points.

The oral exam consists of an interview that will discuss the titles presented and the research project with the aim of verifying the vocation to research and the ability of/ of the candidate/ to propose a research project that meets the above criteria selection and the aims and objectives of the PON Action "Research and Innovation", in accordance with the provisions of D.M. n. 1061/2021.

During the interview, the knowledge of the **English language** is verified.

Minimum overall assessment to be considered eligible: 60 points

Full details of the participation procedure can be found in the PON Call.

Date of the oral exam: 10 November 2021, 15:00

The link to the Microsoft teams virtual classroom for the oral exam will be published at the following address: <https://www.unime.it/it/ricerca/dottorati-ricerca/avviso-borse-pon-37-ciclo>

Contribution of participation in the competition:

The payment of the obligatory participation fee for the competition must be made through the PagoPA® system, as indicated in article 4 of this Call.

Only for candidates residing abroad, the payment of the contribution for the participation to selection can be paid by bank transfer on the account IT 16W 02008 16511 000300029177 SWIFT BIC CODE UNCRITM1K66 to the attention of the University of Messina, specifying the reason for payment as indicated below: “<surname and name of the candidate> Participation PhD Contribution in “TRANSLATIONAL MOLECULAR MEDICINE AND SURGERY”.

The candidates from the developing Countries are exempted from the payment of the contribution mentioned above as defined in Ministerial Decree No. 156 of 12th February 2021- (GU serie generale No. 61 of 12th March 2021).

The contribution for participation in the competition is not refundable for any reason.

The receipt of the transfer must be carefully preserved and exhibited by the candidate in case of request.



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.1

Doctoral Course: Translational Molecular Medicine and Surgery

Scientific Contact: Prof. Francesco Squadrito

SSD: BIO/14

Title: Nutraceutical approaches for anxiety

Theme to be developed:

The projected aims to use naturally occurring molecules to modulate neuroinflammation which has a main role in some different neurodegenerative disease and also in depression. During depression both neuroinflammation and the reduction in neurotrophins, as BDNF, cause a disequilibrium in the Central Nervous System leading to neuronal atrophy and the alteration of cerebral connections. So natural approaches that may reduce neuroinflammation and rebalance neurotrophins will be studied to improve brain function.

Period abroad and subject in which to carry out the activity (if foreseen): University Hospital Doctor Peset, Università di Valencia, Valencia, Spain

Period in the company and person in which to carry out the activity: LABORATORI PLANTS DI COLETTA LUISA, Zona Industriale Diramazione Viaria C - Frazione Giammoro snc - PACE DEL MELA (ME)

Type of qualification required:

Degree in Medicine and Surgery LM-41



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.2

Doctoral Course: Translational Molecular Medicine and Surgery

Scientific Contact: Prof. Alessandra Bitto

SSD: BIO/14

Title: Strategies to improve anticancer potential of natural substances

Theme to be developed:

The SNSI and PNR programs identify nutraceutic and biotechnology as main fields of study for improving the quality of life of the population. The project aims at using nutraceuticals as support to anticancer drugs for amplifying their pharmacological effect. Specifically nutraceuticals will be conjugated with specific nanocarriers, graphene quantum dots to reach those organs and tissues that are difficult to target. In vitro studies on 3D cell cultures will be used to determine the ability to enter into tumor cells and the general tolerability and bioavailability will be tested on intestinal mucosa.

Period abroad and subject in which to carry out the activity: 6 months at Memorial Sloan Kettering Cancer Center, New York, USA

Period in the company and person in which to carry out the activity: 6 months at ERFO S.p.a - Viale Geki Russo Loc. Pontegallo, 98049 Villafranca T. (ME) IT

Type of qualification required:

Degree in Biology LM-6; Medical Biotechnology LM-9; Pharmacy LM-13



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DESCRIPTION SHEET INNOVATION SCHOLARSHIP N.3

Doctoral Course: Translational Molecular Medicine and Surgery

Scientific Contact: Prof. Salvatore Cannavò

SSD: MED/13

Title: Identification of genes involved in thyroid dysfunction

Theme to be developed:

Several genes can be involved in the detoxification process of xenobiotics and environmental pollutants, in this context the role of AHR a receptor for aromatic compounds activated by pollutants as IPA and PCBs might have an important role. The project aims at identifying a panel of genes that can be used for an early diagnosis of thyroid diseases due to environmental pollution even when people are exposed as resident of polluted areas. To this end in vitro studies on primary tireocytes will be done to identify the molecular pathways activated by IPA and PCBs that trigger AHR. Bioinformatic analysis will be used to determine the effect of pollution (using data from the regional environmental agency, ARPA) on the internal levels of IPA and PCBs in fluids as blood and urine and the changes in thyroid markers (hormonal and molecular) that are linked to specific diseases. This study that uses biotechnologies and bioinformatics is consistent with the SNSI program for improving the quality of life of the population.

Period abroad and subject in which to carry out the activity: 6 months at Ludwig-Maximilians Universitat Munchen, Munich (Germany)

Period in the company and person in which to carry out the activity: 6 months at AMBIENTE & SICUREZZA S.R.L. via Nuova Panoramica dello stretto, 965, 98168 Messina.

Type of qualification required:

Degree in Biology LM-6