



ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA

**Purpose: Public comparative procedure for the recruitment of 8 researchers (Assistant Professor) with a full-time fixed-terms employment contract for three years, pursuant to art. 24 paragraph 3 letter a) (junior) of Law no. 240/2010, within the framework of the Regional ESF+ Program 2021-2027 - Priority 2: Education and Training, Specific Objective e)**

### THE DIRECTOR

- CONSIDERING** the Regional ESF+ Program 2021/2027 - Priority 2: Education and Training, Specific Objective e);
- CONSIDERING** Regional Council Resolution No. 693 of 04/05/2023 of the Emilia-Romagna Region, which approved the notice for the funding of three-year system actions to enhance the qualification and strengthening of professional-oriented degree courses using PR FSE+ 2021/2027 funds - Priority 2: Education and Training - Specific Objective e);
- CONSIDERING** Regional Council Resolution No. 1649 of 02/10/2023 of the Emilia-Romagna Region, which approved the funding for 8 positions for Researcher Type a) (RTD a) positions) at the University of Bologna;
- RECALLING** the notice published in the Gazzetta Ufficiale (Official Gazette) - 4th special series on 20/10/2023, in which the University of Bologna published 7 selection notices for the assignment of fixed-term research contracts of type a), as specified in Article 24, paragraph 3, letter a) (RTDA) of Law No. 240 of December 30, 2010, using resources from the Regional ESF+ Program 2021/2027;
- REFERRING TO** the regulations specified in Article 13 of this call;
- REVIEWING** the resolutions and decrees issued by the departments for which the positions are activated;
- CONSIDERING** the resolution of the Board of Directors on 25/07/2023;

### ORDERS

#### Art. 1 – Purpose

Procedures of comparative evaluation by qualifications and public discussion are called for the recruitment of 8 researchers with a full-time fixed-term employment contract for three-year pursuant to art. 24 paragraph 3 letter a) (junior) of Law no. 240/2010.

The contract shall last three years. An annual gross salary equal to € 36.840,00 will be corresponded to the assistant professor. The annual increase in this amount will be calculated according to the existing procedure for non-contracted personnel.

**Responsabile del procedimento:** Michele Menna

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The contracts are funded through resources from the Regional ESF+ Program 2021/2027 - Priority 2: Education and Training, Specific Objective e), CUP code n. J19J23000730002.

Assistant professors will have € 20.000,00 available for missions related to the performance of the activities stipulated in the contract over the three-year period, always subject to the same regional funding.

The specific details for each position are defined in their respective attachment. In the case of procedures for the selection of multiple positions, the attachment will specify the details for each of them.

In the following articles, when there are specific elements for each selection, reference is made to the attachments.

## **Art. 2 – Activities to be performed**

The researchers will have to carry out 350 hours of supplementary teaching and assistance to students, for each academic year covered by the contract. Within the aforementioned 350 hours, 60 hours of face-to-face teaching are scheduled to be carried out in the professional-oriented undergraduate program for which the researcher position is activated.

Starting from the second semester after taking up the position during the academic year 2023-24 and for subsequent academic years, the researchers are required to:

- Contribute to industrial research projects to be identified and conducted in collaboration with the companies involved in the activities of the Study Program, aimed at applying innovative results in the fields of study to improve processes, products or services.
- Collaborate with the Study Program Coordinator in maintaining relationships with companies to ensure a better alignment between the knowledge needs and expected competencies resulting from the courses and the training and professional requirements expressed by the companies
- Assist the Coordinator of the Degree Program in the management and planning of curricular internships, including supervisory activities in collaboration with company representatives, for some of the internship activities. This also involves collaborating with the relevant professional association for the purpose of the expected certification.
- Provide support for activities taking place at the designated location, assisting the Study Program Coordinator in maintaining relationships with the students at that location.

Concerning the provisions of art. 10 of the Reg. regarding fixed term researchers, issued by Rectoral Decree no. 344 of March 29<sup>th</sup> 2011 and amendments, the project that each winner will have to develop and the scientific productivity objectives are explained in the relative attachment.

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### **Art. 3 – Admission requirements**

The selection is open to applicants, including those who come from non-EU countries, in possession of PhD or equivalent qualification obtained in Italy or abroad.

Applicants must be in possession of the aforementioned qualification at the date of the deadline for the submission of applications to the present selection.

In case of a Ph.D. obtained abroad, it is necessary to attach the decree of academic recognition of the degree (so-called decree of equivalence, as provided for by Article 74 of Presidential Decree No. 382/1980). This requirement applies to those who already possess it. Alternatively, the recognition decision of the degree for the purpose of participating in competitions for researcher positions in universities and public research institutions must be provided, in accordance with Legislative Decree No. 206/2007 - amended by Legislative Decree No. 15/2016 (for EU degrees) - and Presidential Decree No. 394/99, Article 49 (for non-EU degrees). In the meantime, before the competent authorities issue the recognition decision, it is possible to submit the receipt confirming the submission of the recognition request.

For more information on the procedures for the recognition of foreign degrees, it is recommended to consult the university's web page regarding "Non-academic recognition to participate in researcher competitions" at the following address: <https://www.unibo.it/en/teaching/enrolment-transfers-and-degrees/recognition-of-a-foreign-degree-1>.

In any case, the proof of the recognition of the foreign qualification must be produced to the administration prior to beginning service and, anyhow, within 180 days from the publication of the approval decree of the procedure on the official university bulletin, otherwise the exclusion from the position of winning candidate occurs.

Applications from professors, associate professors, or researchers with tenure will not be accepted, even if the applicant is not in service.

The selection is not open to any persons who are related by blood up to the fourth degree, to a professor working in the Department that proposed the activation of the single contract, or to the Rector, Director General or a member of the Board of Governors of the University.

Furthermore, the selection is not open to anyone who has had research fellowship or fixed-term researcher contracts at the University of Bologna or any other state-funded, private-funded or distance-learning Italian university pursuant to articles 22 and 24 of Italian Law 240/2010, or with any other body listed in paragraph 1 of Art. 22 of Italian Law 240/2010 for a period which, summed to the foreseen duration of this contract, exceeds a total of 12 years, even if not consecutive. For the purposes of the duration of the above-described periods, in compliance with the laws in force any periods of maternity or sick leave shall not be calculated.

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State employees may on unpaid leave for the entire duration of the contract, thus occupying a non-tenure position without pay or social security contributions, in cases where such a position is allowed by the structure of origin, likewise without pay or social security contributions.

#### **Art. 4 – Application procedure**

The submission of the applications for participation in the selections must be made exclusively via electronic procedure by accessing the following link:

<https://personale.unibo.it>

**Regarding all procedures, the deadline is the following: November 17<sup>th</sup>, 2023 at 12:00 (noon, Italian Time).**

The application must be submitted at the same time with the insertion of all the attached documentation required.

The following documents shall be enclosed to the electronic application form (preferably files: PDF, other supported files: JPG, BMP, PNG):

1. identification document scanned (10MB max);
2. curriculum vitae with indication of the scientific-professional activity (10MB max);
3. reference letters, if any. Letters can be submitted directly by the candidate uploading it during the application, in case of possession (10MB max), or can be submitted by the referee. In this case candidates should provide the referee e-mail address. When the application is closed, the system will send an automatic request to the referee, referring to the candidate and the procedure. The referee must submit his letter through the link into the e-mail. At this address he/she will upload his/her letter by the application deadline in order to be considered as part of the candidate's application.
4. scientific publications (other supported files are TIFF and PS, 20MB max each document) which are already printed at the date of the call of application deadline, or scientific publications accepted for printed, together with the editor acceptance letter. While uploading each document will be asked to indicate the title, the authors' names, the editor, the year of publication. Optional information are the month, the ISBN code, the DOI code, the booklet number.

Pursuant to Ministerial Decree 243/11, the PhD thesis is considered a publication, and thus if presented by the candidate it shall be included in the maximum number of publications indicated in each attachment.

While applying, applicants shall declare under their own responsibility:

1. surname and name;
2. place and date of birth;
3. citizenship;

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4. residence address;
5. (if Italian citizens) registration to electoral rolls. If any, the reasons why he/she is not registered or cancelled from them;
6. that there have not been any criminal proceeding against them or current criminal proceedings; otherwise, applicants shall specify the proceedings against them (the date of the measure and the judicial authority that issued it) and pending penal proceedings. The existence of a previous criminal conviction is not in itself an impediment to hiring, unless it is a conviction for a crime that prevents the establishment of the employment relationship with the public administration as it derives from the interdiction from public office, or the inability to contract with the public administration, or the termination of the employment relationship (articles 28, 29, 32-ter, 32-quater, 32-quinquies of the Criminal Code, articles 3,4, 5, L. 97 of March 27, 2001). In other cases, the Administration will ascertain the gravity of the criminally relevant facts committed by the person concerned, for the purposes of access to public employment. This check is carried out with the aim of ascertaining the existence of the fiduciary element which constitutes the fundamental prerequisite of the relationship between employer and worker, as well as for the purpose of assessing the existence of the requisites of moral suitability and aptitude to carry out activities as a public employee;
7. to have or not to have benefited of non-voluntary leave periods due to maternity/paternity compulsory abstention or for serious health reasons, indicating the periods in case
8. possession of the qualification required pursuant to Art. 3 of this call for application and the mark obtained, if any;
9. to be fit to the employment the selection refers to;
10. that they are not, nor have been, professors, associate professors or researchers with tenure, even if not in service;
11. that they are not related by blood up to the fourth degree, to any professor working in the Department that proposed the activation of the single contract, or to the Rector, Director General or a member of the Board of Governors of the University of Bologna;
12. elected e-mail address for the purpose of the participation in this contest;
13. Foreign citizens shall also declare to have a proper knowledge of Italian and to enjoy civil and political rights also in their origin countries or the reasons for loss of enjoyment.

Any modification shall be timely communicated to the Ufficio Ricercatori a tempo determinato.

In case of technical problems, contact the support: [assistenza.cesia@unibo.it](mailto:assistenza.cesia@unibo.it).

#### **Art. 5 – Applicants' obligations**

The penalty of exclusion from the selection shall apply in the following cases:

- Non compliance with the terms and procedures for submitting the application form indicated in article 4 of this call for applications;

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- Lack of the qualification required to participate in the selection indicated in each attachment.

All applicants shall be admitted to the contest and the Administration reserves the right to check that they actually are in possession of the requirements necessary to apply for the selections; the Administration may, at any time and even after the exams, order the exclusion from the selection hereto.

### **Art. 6 – Selection Board**

With regard to each procedure, the Selection Board will be appointed upon administration resolution and is composed of three full or associate professors belonging to the competition Scientific sector or, alternatively, to the same competition macro-sector for which the procedure is announced or of equivalent role in the case of components not coming from national universities, identified by the Department that proposed the activation of the contract.

Two of the members, external to the University, are drawn with the methods provided by the art. 8-bis of the "Regolamento per la disciplina delle chiamate dei Professori di Prima e Seconda fascia" in application of articles 18 and 24 of the Law 240/2010 issued with DR 977/2013 and s.m. A third component is identified by the Department Council among the professors inside or outside the University. As envisaged by art. 57 of Legislative Decree 165/2001, in order to guarantee equal opportunities between men and women for the access to work and work treatment, generally, at least one member is female.

The Commission appoints a president and a recording secretary between their members.

Notice of the appointment of each Commission will be published on Alma Mater Studiorum - University of Bologna website.

### **Art. 7 – Selection procedure**

With regard to each procedure, the selection procedure is carried out by the Board after a preliminary evaluation of each candidate's qualifications, curriculum and scientific production, including the doctoral thesis, according to the criterion identified by the MUIR in D.M. 243/2011.

The candidates chosen in the preliminary evaluation based on their comparative merits - between 10 and 20% of the number of applicants and not less than 6 - will then be called for interview. The interview will consist of a discussion of the candidate's qualifications and scientific production and may take the form of a seminar open to the public. If the total number of candidates is 6 or less all candidates will be interviewed.

Any reference letters produced by the candidates will also be considered.

The discussion will take place in the language indicated in each attachment.

With regard to each procedure, the discussion with the Commission will take place starting from December 2023, 4, and it will be carried out in public form and electronically using the audio and

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video teleconferencing tool via the Teams platform (the workstation from which candidates will take do the interview must be equipped with a webcam - essential for the recognition of the candidate - microphone and headphones and/or audio speakers), according with the legislative and regulatory provisions regarding the containment and management of the epidemiological emergency from COVID-19 and also considering the evolution of the health emergency.

With reference to each procedure, the notice of the day and time in which the public discussion will take place will be announced together with the publication of the list of admitted candidates on the University website at: <https://bandi.unibo.it/docenti/rtd>.

The publication on the University website will constitute official notification to all applicants, without any obligation for any further communication.

The publication will be communicated by e-mail to the address indicated by the candidates in the application.

The Alma Mater Studiorum - University of Bologna does not assume any responsibility for the non-receipt or the not-read of the e-mail.

It is up to candidates to keep themselves informed by consulting the University website page to find necessary information about selection.

Candidates attending the interview must bring a valid identification document with them.

EU citizens shall bring their passport or an identity document issued by their country of origin. Non-EU citizens shall bring their passport.

#### **Art. 8 – Individuation of the winning candidate and recruitment**

Upon completion of the assessments, the Commission selects the winner based on the candidate who has achieved the highest overall score. In case of a tie in merit, preference is determined by the younger age.

In the event that a competition is announced for two or more positions and there are two separate research projects or distinct locations involved, the winning candidate with the highest score will have the right to choose the research project to work on or the location (in case there is a single project but two locations). The eligible candidate who obtains the best score after the first one must then choose from the remaining projects or locations, and so on until the last winning candidate is assigned the remaining project or location.

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The competition proceedings are approved by the administration and are published in the Official Bulletin of the Alma Mater Studiorum - University of Bologna.

From the date of publication of this notice, a period begins during which any legal challenges can be filed if the decision has not been otherwise brought to attention.

In the event that the winner declines, the candidate with the highest overall score after the winner will be called upon.

The department that initiated the individual position will formulate the appointment proposal with the favorable vote of an absolute majority of full professors of the first and second tiers, which will be approved by the Board of Directors. Additionally, the department will propose the contract's effective start date.

#### **Art. 9 – Employment procedures**

Following the conclusion of the recruitment procedure referred to in art. 8, the candidates will be asked to sign a fixed-term contract of full-time or defined-time employment.

The contracts for the researchers must be signed by March 31, 2024.

The employment relationship is governed by a personal contract, statutory laws and EC regulations. In the event that the research project is in the medical field and provides for the performance of medical activity, the latter is governed by the national collective agreement for medical staff and by the specific appointment conferred by the hospital facility where the researcher will carry out the activity.

The personal contract shall specify any reasons for which it might be terminated, as well as the relevant periods of notice. In any case the contract will be terminated immediately and without notice in the event of the cancellation of the recruitment procedure to which it is inalienably linked. The trial period shall last three months. At the end of the period, unless the employment relationship has been terminated by either of the parties, the employee is confirmed for service and the whole period worked from the beginning of the contract shall be calculated for seniority purposes.

#### **Art. 10 – Documentation required for the participation in the public selection and for hiring purposes**

For the purposes of participation in the public selection, documents and qualifications in English, French, German and Spanish can be produced in the language of origin. Documents and qualifications written in other languages must be presented in the original language with an Italian or English translation attached. The translation must be true and correct, written by an Italian consular, a qualified diplomatic representative, or an official translator.

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Regarding the documentation necessary for hiring purposes, all the documents written in any foreign language shall be accompanied by a true and correct translation into Italian, written by an Italian consular, a qualified diplomatic representative, or an official translator.

#### **Art. 11 – Rights and duties of a researcher with a fixed-term contract of employment**

In accordance with the rights and duties of public employees prescribed by the Italian civil code, on signing the contract the researcher will be expected to perform all those activities mentioned for each position in the relative attachment as well as to carry out the research periods in the company and abroad (the latter only where applicable).

In the event that medical assistance services are provided, the researcher will also assume rights and duties related to this activity.

These activities will be carried out in respect of the existing hierarchy and in coordination with existing programmes and research projects.

The researchers will perform the requested activities in person, substitution is not permitted.

Existing Italian laws concerning maternity, injury and illness will be applied.

The researcher undertakes to fulfill the obligations of conduct prescribed by the code of conduct, issued by DPR 62/2013.

#### **Art. 12 – Processing of personal data and person in charge for the contest**

Information about the processing of personal data (provided during the application process) are available at the link: [www.unibo.it/privacy](http://www.unibo.it/privacy) (Notice for participants in contests and selections published by the University).

The person in charge of the contest is Mr. Michele Menna.

For further information, please contact: Ufficio Ricercatori a tempo determinato dell'Alma Mater Studiorum - Università di Bologna – Piazza Verdi n. 3 - Tel. +39 051 2098972 – 2099980 – 2080166, Fax 051 2086163; e-mail: [apos.ricercatoritempodeterminato@unibo.it](mailto:apos.ricercatoritempodeterminato@unibo.it).

#### **Art. 13 – Reference Regulations**

The present notice is issued based on the following regulations:

- Art. 24 of Law no. 240 dated December 30th, 2010;
- Leg. Decree no. 165 dated March 30th, 2001;
- D.P.R. (Decree of the President of the Republic) no. 445 dated December 28th, 2000;
- Law 241/1990;
- Regulation for fixed-term researchers of Alma Mater Studiorum – University of Bologna, (link: [http://www.normateneo.unibo.it/NormAteneo/Regolamento\\_ricercatori\\_a\\_tempo\\_determinato.htm](http://www.normateneo.unibo.it/NormAteneo/Regolamento_ricercatori_a_tempo_determinato.htm)).

For the Director of Area del Personale  
f.to digitalmente Giovanni Longo

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**Attached documents:**

- Summary table of activated positions;
- Att. 1 - DIFA - FIS/01, 1 position
- Att. 2 - DEI - ING-INF/04, 1 position
- Att. 3 - DISI - ING-INF/05, 2 positions
- Att. 4 - CHIMIND - CHIM/04, 1 position
- Att. 5 - CHIMIND - CHIM/04, 1 position
- Att. 6 - DICAM - ICAR/06, 1 position
- Att. 7 - DISI - INF/01, 1 position

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| SUMMARY TABLE  |   |   |           |            |
|--|---|---|-----------|------------|
| Department   | SC  | SSD   | Positions | Place      |
| Physics and Astronomy<br>"Augusto Righi" - DIFA                                    | 02/A1 - Experimental Physics of<br>Fundamental Interactions | FIS/01 - Experimental<br>Physics                | 1         | Bologna    |
| Electrical, Electronic and<br>Information Engineering<br>"Guglielmo Marconi" - DEI | 09/G1 - Systems and Control<br>Engineering                  | ING-INF/04 - Systems and<br>Control Engineering | 1         | Imola      |
| Computer Science and<br>Engineering - DISI   | 09/H1 - Information Processing<br>Systems                   | ING-INF/05 - Information<br>Processing Systems  | 2         | Lugo/Imola |
| Industrial Chemistry "Toso<br>Montanari" - CHIMIND                                 | 03/C2 - Industrial and Applied<br>Chemistry                 | CHIM/04 - Industrial<br>Chemistry               | 1         | Bologna    |
| Industrial Chemistry "Toso<br>Montanari" - CHIMIND                                 | 03/C2 - Industrial and Applied<br>Chemistry                 | CHIM/04 - Industrial<br>Chemistry               | 1         | Imola      |
| Civil, Chemical,<br>Environmental, and Materials<br>Engineering - DICAM            | 08/A4 - Geomatics   | ICAR/06 - Surveying and<br>Mapping              | 1         | Bologna    |
| Computer Science and<br>Engineering - DISI   | 01/B1 - Informatics   | INF/01 - Informatics                            | 1         | Cesena     |



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## ATTACHMENT 1

The specific elements of the current procedure are as follows:

- **Professional-oriented Degree Course Name:** Mechatronics
- **Department:** Department of Physics and Astronomy "Augusto Righi" - DIFA
- **Main place of employment:** Bologna
- **Project Implementation Location/Location of the Degree Course:** Bologna
- **Competition sector (SC):** 02/A1 - Experimental Physics of Fundamental Interactions
- **Academic Disciplinary Sector (SSD):** FIS/01 - Experimental Physics
- **Number of positions:** 1
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD position (Researcher Type a) presented by the Mechatronics degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace".
- **Contract type:** Full-time
- **Project title:** Innovation for the Mechatronics Industry through studies of Artificial Intelligence, Robotics, Data Acquisition and Sensors, Digital Transition and Technology Transfer from the Academy to the industrial world
- **Project manager:** Alessandro Gabrielli
- **Brief project description:** The RTDa researcher will have a fundamental role in the management of internships for the entire training course of the professionally oriented degree in Mechatronics, as well as guaranteeing 60 hours of frontal and laboratory teaching activity per year in the fields of physics and mathematics. It will also have to deal with digitalisation, artificial intelligence, big data (businesses and public administration), Manufacturing 4.0, connectivity of systems on the ground and in space and sustainable and innovative mobility and motoring. As regards experimental physics, the research will be oriented towards the emerging sectors of technologies applied to international high energy physics experiments for the treatment and processing of experimental data through hardware accelerators (with firmware development) with the possible implementation of deep logic and machine learning.
- **Objective of the research project:** The scientific productivity objectives will be aimed, over the three-year period, at the production of no less than 8 scientific publications in international journals, regarding the research activities carried out and specific to the scientific disciplinary sector of reference (FIS/01). The scientific results obtained will also be presented in no less than 4 national or international conferences. The RTDa of the Course in Mechatronics, in addition to carrying out teaching activities guaranteeing 60 hours of frontal

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teaching within the courses of the Course, to be developed mainly at the Bologna site, but also in Imola and Lugo di Romagna, will contribute to industrial research projects to be identified and conducted together with the companies involved in the activities of the CdL, also in this case with particular attention to the companies that gravitate around the Bologna headquarters and in the surrounding area.

- **Annual number of hours of face-to-Face teaching:** 60
- **Admission requirement:** Ph.D.
- **Maximum number of publications to be presented:** 12
- **Language for the interview:** Italian with verification of the adequate knowledge of the English language.

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## ATTACHMENT 2

The specific elements of the current procedure are as follows:

- **Professional-oriented Degree Course Name:** Mechatronics
- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **Main place of employment:** Bologna
- **Project Implementation Location/Location of the Degree Course:** Imola
- **Competition sector (SC):** 09/G1 - Systems and Control Engineering
- **Academic Disciplinary Sector (SSD):** ING-INF/04 - Systems and Control Engineering
- **Number of positions:** 1
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD (Researcher Type a) position presented by the Mechatronics degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace."
- **Contract type:** Full-time
- **Project title:** Design and development of autonomous and cooperative mobile manipulation systems for the industry of the future
- **Project manager:** Gianluca Palli
- **Brief project description:** The research project focuses on the applications of mobile manipulation, i.e. carried out using collaborative industrial manipulators installed on a mobile base, and on how these solutions can support manufacturing activities, with particular attention to companies that support the Mechatronics degree. The research activity will be characterized by the study of sensor and vision systems and the related processing systems, also based on the exploitation of artificial intelligence techniques, which are necessary to make it possible to adapt the robot's behavior to changing working conditions. The aspects relating to the interface between the machine and the workers will also be studied, also through the use of wearable interfaces and augmented reality systems. The planned teaching activity consists of 60 hours of institutional assignment to be carried out as part of the courses of the degree in Mechatronics, mainly by the Imola teaching hub.
- **Objective of the research project:** The Candidate is required to publish at least one article per year in international journals with a high Impact Factor in the sector (such as IEEE Transactions on Robotics, IEEE Transactions on Automation Science and Engineering, IEEE Control Systems Technology, IEEE/ASME Transactions on Mechatronics, IEEE Robotics and Automation Letters) and at least three on international conference proceedings relevant to the sector (such as

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IEEE/RSJ International Conference on Intelligent Robots and Systems, IEEE International Conference on Robotics and Automation, IFAC World Congress)..

- **Annual number of hours of face-to-Face teaching:** 60
- **Admission requirement:** Ph.D. (Doctorate)
- **Maximum number of publications to be presented:** 12
- **Language for the interview:** Italian with verification of the adequate knowledge of the English language.

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### ATTACHMENT 3

The present procedure aims at the selection of two positions. Below, the common elements for both positions are identified; subsequently, the specific elements for each one will be highlighted.

- **Department:** Department of Computer Science and Engineering - DISI
- **Competition sector (SC):** 09/H1 - Information Processing Systems
- **Academic Disciplinary Sector (SSD):** ING-INF/05 - Information Processing Systems
- **Number of positions:** 2
- **Contract type:** Full-time
- **Annual number of hours of face-to-Face teaching:** 60
- **Admission requirement:** Ph.D. (Doctorate)
- **Maximum number of publications to be presented:** 12
- **Language for the interview:** Italian with verification of the adequate knowledge of the English language.

Specific elements for each position:

**1) Project 1. Title:** "Design and development of AI-based computer vision systems for the industry of the future".

- **Professional-oriented Degree Course Name:** Mechatronics
- **Main place of employment:** Bologna
- **Project Implementation Location/Location of the Degree Course:** Lugo (RA)
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD (Researcher Type a) position presented by the Mechatronics degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace".
- **Project manager:** Luigi Di Stefano
- **Brief project description:** The research project will address computer vision techniques aimed at reconstruction/generation of 3D shapes, with special emphasis on non-lambertian surfaces as well as modern neural modeling/rendering approaches. The above research will define a framework to develop ML/DL models pursuing detection of anomalies and defects from images and 3D scans of highly varying objects, such as those to be dealt with in a number of challenging applications in manufacturing and agri-food industries. Attention will also be paid to ML/DL models amenable to Edge-AI implementations. As such, the resulting methodologies and solutions will be applicable to industrial scenarios relevant to the companies that support the Mechatronics degree. The planned teaching activity consists of 60 hours of institutional assignment to be carried out as part of the courses of the degree in Mechatronics, mainly by the Lugo teaching hub.

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- **Objective of the research project:** The Candidate is required to publish at least three articles in international journals with a high Impact Factor in the sector (such as, e.g., IEEE Transactions on PAMI, Journal on Machine Learning Research, Artificial Intelligence, International Journal of Computer Vision, IEEE Transactions on Neural Networks and Learning Systems, IEEE Access, ..) and at least six articles in international conference proceedings relevant to the sector (such as, e.g., CVPR, ICCV, ECCV, NeurIPS, ICLR ICML, WACW, AAAI, 3DV, BMVC, ACCV, ICRA, IROS..).

2) **Project 2. Title:** "Computer Science".

- **Professional-oriented Degree Course Name:** Information Systems Technology.
- **Main place of employment:** Bologna
- **Project Implementation Location/Location of the Degree Course:** Imola (BO)
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD (Researcher Type a) position presented by the Computer Systems Technologies degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace".
- **Project manager:** Davide Maltoni
- **Brief project description:** The researcher's scientific activity will be focused on one or more topics, relevant for the DISI department: Distribute and Mobile systems, Middleware, Big Data, Internet of Things, HCI, Cloud computing, Artificial Intelligence, Artificial Vision, Machine Learning. The researcher will conduct the following activities: theoretical study, modelling, design, development, integration or exploitation, experimental validation and evaluation of systems and advanced technologies to implement, technology transfer applications devoted to complex problems in real contexts. Activities will be conducted collaborating with one or more DISI research groups. The researcher will: collaborate with national and international academic and industrial research groups (including companies supporting the professional degree on Informatic System Technologies, in Imola); prepare funding requests; participate in research projects and cultural and industrial consultations, in national and international contexts.
- **Objective of the research project:** The goal of the researcher's scientific production, during the 3 years will be the publication of at least 3 papers in international venues (scientific journals and conference proceedings), with at least 1 of them in international journals.

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#### ATTACHMENT 4

The specific elements of the current procedure are as follows:

- **Professional-oriented Degree Course Name:** Chemical Methodologies for Products and Processes
- **Department:** Department of Industrial Chemistry "Toso Montanari" - CHIMIND
- **Main place of employment:** Bologna
- **Project Implementation Location/Location of the Degree Course:** Bologna
- **Competition sector (SC):** 03/C2 - Industrial and Applied Chemistry
- **Academic Disciplinary Sector (SSD):** CHIM/04 - Industrial Chemistry
- **Number of positions:** 1
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD (Researcher Type a) position presented by the Chemical Methodologies for Products and Processes degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace."
- **Contract type:** Full-time
- **Project title:** Development of more sustainable processes and materials for the chemical and formulation industry from a circular economy point of view
- **Project manager:** Stefania Albonetti
- **Brief project description:** The researcher, in addition to 60 teaching hours, will collaborate with the Coordinator of the Study Program in the management and planning of the CdS internships and in maintaining relations with the companies involved in the course. It will also contribute to industrial research projects to be identified and carried out together with the companies and institutions. The research activity will concern the development of processes and materials for advanced applications in the field of CO<sub>2</sub> capture and use and in the circular economy and bioeconomy sector, with a strong orientation towards industrial application. To this end, materials and processes will have to be developed for the capture and use of CO<sub>2</sub> produced by relevant industries in the Emilia Romagna area, and in-depth sector studies will be carried out for the development of processes, including catalytic ones, which allow the waste valorisation from specific supply chains of our region like the agri-food sector
- **Objective of the research project:** The requirements of scientific productivity will be the publication of at least 6 papers on international peer reviewed journals on the topics of the research activity and fully coherent with the scientific sector CHIM/02. The presentation of contributions to at least 3 (national or international) conferences is also required..
- **Annual number of hours of face-to-Face teaching:** 60
- **Admission requirement:** Ph.D. (Doctorate)

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- **Maximum number of publications to be presented: 12**
- **Language for the interview:** Italian with verification of the adequate knowledge of the English language.

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## ATTACHMENT 5

The specific elements of the current procedure are as follows:

- **Professional-oriented Degree Course Name:** Polymeric composites materials
- **Department:** Department of Industrial Chemistry "Toso Montanari" - CHIMIND
- **Main place of employment:** Bologna
- **Project Implementation Location/Location of the Degree Course:** Imola
- **Competition sector (SC):** 03/C2 - Industrial and Applied Chemistry
- **Academic Disciplinary Sector (SSD):** CHIM/04 - Industrial Chemistry
- **Number of positions:** 1
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD (Researcher Type a) position presented by the Polymeric Composites degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace."
- **Contract type:** Full-time
- **Project title:** Advanced and sustainable polymer matrix composites
- **Project manager:** Loris Giorgini
- **Brief project description:** The researcher, in addition to 60 hours of lessons, will collaborate with the CDS Coordinator in managing internships, relationship with companies and in industrial research projects. The research activity will concern the development of polymer composite materials for advanced applications for industrial application. Multiphase materials will be developed, with a thermoplastic and/or thermosetting matrix, in which the synergistic interactions between nano-reinforcements and nano-additives with a polymer phase are maximized, to obtain improved properties compared to the individual components. The materials obtained will be characterized using instrumental techniques to verify their chemical-physical, mechanical and structural properties, and to study their structure-property correlations to evaluate their industrial application. The recycling of composite materials at the end of their life will also be evaluated to valorize them as secondary raw materials
- **Objective of the research project:** The requirements of scientific productivity will be the publication of at least 6 papers on international peerreviewed journals on the topics of the research activity and fully coherent with the scientific sector CHIM/04. The presentation of contributions to at least 3 (national or international) conferences is also required.
- **Annual number of hours of face-to-Face teaching:** 60
- **Admission requirement:** Ph.D. (Doctorate)
- **Maximum number of publications to be presented:** 12

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- **Language for the interview:** Italian with verification of the adequate knowledge of the English language

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## ATTACHMENT 6

The specific elements of the current procedure are as follows:

- **Professional-oriented Degree Course Name:** Building and Land Use Techniques
- **Department:** Department of Civil, Chemical, Environmental, and Materials Engineering - DICAM
- **Main place of employment:** Bologna
- **Project Implementation Location/Location of the Degree Course:** Bologna
- **Competition sector (SC):** 08/A4 - Geomatics
- **Academic Disciplinary Sector (SSD):** ICAR/06 - Surveying and Mapping
- **Number of positions:** 1
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD (Researcher Type a) position presented by the Techniques for Construction and Territory degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace."
- **Contract type:** Full-time
- **Project title:** In situ and remote land surveying monitoring systems of the territory and structures and management of the building heritage.
- **Project manager:** Luca Vittuari
- **Brief project description:** The activity envisaged for this figure of RTDa is at the same time characterized by aspects of scientific and technological research, together with the development of innovative teaching methodologies for professional training, through a continuous comparison of integration and technological transfer of knowledge and skills between the academic and productive sides, realities that collaborate within the Degree Course in Building and Territorial Techniques, of the University of Bologna. The main research fields concern in situ and remote monitoring systems of the territory and structures and management of the building heritage.
- **Objective of the research project:** At least no. 3 papers published in scientific journal and 3 regionally disseminated technical reports concerning the project's activities.
- **Annual number of hours of face-to-face teaching:** 60
- **Admission requirement:** Ph.D. (Doctorate)
- **Maximum number of publications to be presented:** 12
- **Language for the interview:** Italian with verification of the adequate knowledge of the English language

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## ATTACHMENT 7

The specific elements of the current procedure are as follows:

- **Professional-oriented Degree Course Name:** Information Systems Technology
- **Department:** Department of Computer Science and Engineering - DISI
- **Main place of employment:** Cesena
- **Project Implementation Location/Location of the Degree Course:** Cesena
- **Competition sector (SC):** 01/B1 - Informatics
- **Academic Disciplinary Sector (SSD):** INF/01 - Informatics
- **Number of positions:** 1
- **Theme of the Regional Smart Specialization Strategy:** The research project is related to several themes within the Smart Specialization Strategy of the Emilia-Romagna Region.
- **PNR topics and articulations:** The research training project of the RTD (Researcher Type a) position presented by the Computer Systems Technologies degree program is in line with the scope of the PNR 2021-2027 "Digital, Industry, Aerospace."
- **Contract type:** Full-time
- **Project title:** Computer Science
- **Project manager:** Silvia Mirri
- **Brief project description:** The researcher's scientific activity will be focused on one or more topics, relevant for the DISI department: Distribute and Mobile systems, Middleware, Big Data, Internet of Things, HCI, Cloud computing, Artificial Intelligence, Artificial Vision, Machine Learning. The researcher will conduct the following activities: theoretical study, modelling, design, development, integration or exploitation, experimental validation and evaluation of systems and advanced technologies to implement, technology transfer applications devoted to complex problems in real contexts. Activities will be conducted collaborating with one or more DISI research groups. The researcher will: collaborate with national and international academic and industrial research groups (including companies supporting the professional degree on Informatic system Technologies, Cesena); prepare funding requests; participate in research projects and cultural and industrial consultations, in national and international contexts.
- **Objective of the research project:** The goal of the researcher's scientific production, during the 3 years will be the publication of at least 3 papers in international venues (scientific journals and conference proceedings), with at least 1 of them in international journals.
- **Annual number of hours of face-to-Face teaching:** 60
- **Admission requirement:** Ph.D. (Doctorate)
- **Maximum number of publications to be presented:** 12

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- **Language for the interview:** Italian with verification of the adequate knowledge of the English language

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