



**UNIVERSITÀ
DEGLI STUDI
DI BERGAMO**

Area Risorse
Umane

Settore Gestione Giuridica del Personale
Servizio Personale TA e Collaboratori

CHANCELLOR'S DECREE

*Data that can be deduced from the registration in the protocol:
Repertoire Number, Protocol Number, Title,
Class File Attachments and References*

Object: Public selection based on qualifications and interview for the awarding of no. 7 Early-stage grants for conducting research pursuant to art. 22 of law no. 240/2010 at the Departments of University of Bergamo - Pica Code 24AR039

THE CHANCELLOR

- GIVEN Law No. 168 of 9 May 1989 laying down rules on the "*Establishment of MIUR*";
- GIVEN Law No. 240 of 30 December 2010 "*Norms in terms of organization of universities, of academic personnel and their recruitment, as well as mandate to the Government to subsidize quality and efficiency of academic systems*", in particular art. 22 on research grants;
- GIVEN the current Statute of the University of Bergamo;
- GIVEN the University's current Regulations for awarding grants for conducting research;
- GIVEN Ministerial Decree Prot. No. 102 of 09 March 2011, recorded at the Court of Auditors on 13 May 2011, which revalued the minimum gross annual amount of grants for conducting research;
- GIVEN Decree-Law No. 192 of 31 December 2014 "*Extension of terms provided for by legislative provisions*", converted, with amendments, by Law No. 11 of 27 February 2015 and, in particular, Art. 6 paragraph 2 bis which extended by two years the total duration of grants established under Art. 22 of Law No. 240/2010, taking it from four to six years;
- GIVEN
- the D.L. No. 36/2022, converted, with amendments, into Law no. 79/2022, which in art. 14 paragraph 6-quaterdecies establishes that "for one hundred and eighty days following the entry into force of the decree conversion law, limited to the already programmed resources on the mentioned date, or approved by the respective governing structures within the mentioned term of one hundred and eighty days, universities [...] may call for awarding procedures of research grants pursuant to article 22 of law no. 240, in the current text before the entry into force of this decree conversion law";
 - the Legislative Decree n. 198/2022 and art. 6 paragraph 1 establishes that the transitional regulation relating to the possibility of calling for research grants has been extended until 31 December 2023;
 - the Legislative Decree n.215/2023 and art. 6 paragraph 4 establishes that the transitional regulation relating to the possibility of calling for research grants has been extended until 31 July 2024;
 - the Legislative Decree 71/2024 which in art. 15 establishes that the transitional regulation relating to the possibility of calling for research grants has been extended until 31 December 2024;

Referring also to:

- the University's Code of Ethics issued with Chancellor's Decree. Prot. No. 14405/I/003 of 19.7.2011 and amended with Chancellor's Decree. Rep. No. 262/2018, Prot. No. 60030/I/003 of 12.4.2018;
- the University's Regulations on research integrity and ethics, enacted with Chancellor's Decree Index No. 387/2016 of 18 July 2016;
- the University's Patent Regulations enacted with Chancellor's Decree Index No. 390/2016 of 19 July 2016 and amended with Chancellor's Decree Index No. 158/2018 of 26 February 2018 and with Chancellor's Decree Index No 421/2020, of 9.9.2020;
- the Legislative Decree n.215/2023 and art. 6 paragraph 4 establishes that the transitional regulation relating to the possibility of calling for research grants has been extended until 31 July 2024;



GIVEN

- the Legislative Decree of 30 April 2022, n. 36, converted with amendments by law 29 June 2022, n. 79, in particular art. 14, paragraphs 6-bis and 6-ter, which establishes that the updating of the scientific-disciplinary groups and sectors is carried out by decree of the Minister, upon proposal of the CUN, on a three-yearly basis and that starting from the date of adoption of the decree referred to in paragraph 1 of article 15 of law 30 December 2010, n. 240, as amended by paragraph 6-bis of this article, references to competition sectors and competition macro-sectors contained in legislative and regulatory provisions are intended to refer to scientific-disciplinary groups;
- the Ministerial Decree of 05.02.2024 "Decree containing the determination of the scientific-disciplinary groups and the related declarations, as well as the rationalization and updating of the scientific-disciplinary sectors and the attribution of the latter to the scientific-disciplinary groups, pursuant to 'art. 15, of law 30 December 2010 n. 240" with which the Ministry of University and Research determined the rules of correspondence between the new scientific-disciplinary groups and the macro-sectors and competition sectors referred to in the ministerial decree of 30 October 2015, n. 855;

ACQUIRED the resolutions of the Councils of the Structures involved referred to in Annex A which approved the annual research projects and resolved on the requirements for candidates' admission to the selection;

GIVEN the resolutions of the Academic Senate and of the Board of Directors reported in Annex A which approved the research grants activation in various Departments;

ASCERTAINED the financial backing reported in annex A;

DECREES

Article 1

Call for public selection

A public selection is launched based on qualifications and interview for the awarding of No. 7 grants for conducting research pursuant to Art. 22 of L. No. 240/2010 with a contract under private law as specified in Annex A to this notice which constitutes an integral part thereof.

Each grant is paid to the contract holder in monthly instalments of equal amount.

The research projects are described in Annex A of this call constituting an integral part hereof.

Article 2

Requirements for admission to the selection

The selection procedure is open to **scholars in possession of a professional scientific curriculum suitable for conducting the scientific research provided for by this call, as well as of the following requirements:**

- **2nd cycle degree: Diploma di Laurea Specialistica (LS) or Laurea Magistrale (LM)** and equivalent qualifications **or Diploma di Laurea (DL)** obtained according to the procedures preceding the entry into force of Ministerial Decree 509/1999 and following amendments and integrations and equivalent qualifications for admission to public competitions (**see the following Annex A**).
- **knowledge of one or more foreign languages (see the following Annex A).**

To establish the equivalence among **Diploma di Laurea (DL)** and **Diploma di Laurea Specialistica (LS) or Laurea Magistrale (LM)**, it is possible to refer to the following link:
<http://attiministeriali.miur.it/UserFiles/3160.pdf>

The Decrees that govern the equivalence among Italian academic qualifications for participating in public competitions are available at the following link:
<http://hubmiur.pubblica.istruzione.it/web/universita/equipollenze-titoli>

The qualifications obtained abroad must be recognised as valid in the Italian territory.

As regards qualifications obtained abroad that have not already been recognised in Italy with formal procedure pursuant to the applicable laws, the Commission is competent to assess the equivalence –



as to the nature, level and subject correspondence (cycle degree) – to the qualifications required by this call, for the sole purposes of admission to the present selection.

As regards qualifications obtained abroad, required by the call for the purpose of admission to this selection, the applicant:

- in the event of qualifications already recognised as valid in the Italian territory, must indicate in the application **the details of the provision attesting the occurred recognition** pursuant to the applicable laws;
- in the event of **qualifications not yet recognised**, in order to ensure the widest participation in the selection, the candidate with a qualification not yet recognised or with the recognition procedure in progress, **must obligatorily attach to the application, under penalty of exclusion, one or more of the following documents:**
 - o **a certified copy of the statement of qualification equivalence**, issued by the competent Italian diplomatic and consular authorities abroad;
 - o **the diploma supplement or transcript of record**, legalized and written in Italian or in English;
 - o **a copy of the qualification** with a translation into Italian or English

In the PICA procedure for forwarding applications to participate in the selection, it is only necessary to indicate the qualification required by the call (master's degree) and insert, where necessary, the required attachments. Qualifications superior or additional to the one valid for admission (e.g., PhD) can be declared in the section referring to other qualifications/titles.

In the event of qualifications not yet recognized, the candidate is admitted with reserve.

If the candidate turns out to be the winner, he must start the equivalence procedure above indicated, within the term of 90 days since the subscription of the contract.

Moreover, the applicant is also required:

- **to be at least 18 years old;**
- **to be in possession of civil and political rights;**
- **to have no criminal convictions or ongoing criminal proceedings that would prevent, in accordance with the regulations in force, the establishment of an employment relationship.**

The selective procedure does not allow admittance to:

- those who have a degree of kinship or affinity, up to and including the fourth degree, with a professor from the relevant structure, or with the Chancellor, the General Manager or a member of the University's Board of Directors;
- those who have been holders, including any renewals, of research grants awarded pursuant to Art. 22 of Law No. 240/2010 for a period which, added to the duration of the contract provided for by this call, exceeds a total of six years, except for the period in which the grant was used in coincidence with the PhD within the maximum legal duration of the relevant course;
- those who were contracted as research fellow or fixed-term researcher as per ss. 22 and 24 of Law 240/2010 at the University of Bergamo or other Italian public, private or online Athenaeums, as well as any other Body indicated in para 1 of s. 22 of Law 240/2010 for a length of time which, if summed to the duration of the contract in this announcement, exceeds 12 years in total, albeit not consecutive; periods of time spent on maternity or sick leaves do not count to the purpose of the duration of the aforementioned relationships, in accordance with current Laws;

The applicant enrolled in a Diploma di Laurea (DL), Diploma di Laurea Specialistica (LS), Laurea Magistrale (LM), PhD with study grant or medical specialisation in Italy or abroad can participate in the selection object hereof; should the applicant be the winner, the research grant will be awarded subject to withdrawal from studies or PhD study grant.

Pursuant to art. 22 paragraph 2 of Law 240/2010 cannot be recipient of the grants the regular personnel at universities, institutions and public entities of research and experimentation, the Italian National Agency for new technologies, energy and sustainable economic development (ENEA) and the Italian Space Agency (ASI) and institutions whose scientific specialization diploma was recognised



equivalent to a PhD pursuant to the fourth paragraph under article 74 of Presidential Decree of 11 July 1980, No. 382.

The holder of the grant can attend PhD courses whose subjects are related to the research activities connected with the grant, upon prior evaluation of the Structure of reference. However, the research grant is incompatible with the enjoyment of the PhD study grant.

These requirements must be met on the date of expiry of the deadline for submitting the application for the admission to this selection.

This Administration guarantees equality and equal opportunities between men and women as to access to employment and treatment at work.

Article 3

Exclusion from the procedure

The following reasons are causes of exclusion:

- lack of signature on the application form;
- lack of admission requirements as provided for by Art. 2;
- failure to meet the procedures for submitting the application as mentioned under the following Art. 4.

The applicant is admitted if selected; should additional investigations be necessary; the applicant must regularize his/her application within the time peremptorily established.

The Administration may decide to exclude the applicant from the selection launched with this call, at any time, by reasoned Chancellor's Decree.

Article 4

Terms and conditions for submitting application

Under penalty of exclusion applications for participation in the competition, along with the relevant qualifications held and the relevant scientific publications, shall be submitted online through the following online application procedure:

<https://pica.cineca.it/unibg/>

The candidate will be able to register and access the platform using the Public Digital Identity System (SPID - security level 2). In case the candidate does not have one, he or she can request it according to the procedure indicated on the website www.spid.gov.it. Alternatively, the candidate can register and log in using the credentials released directly by the PICA platform.

It is of utmost importance to provide a valid email address in order to enable the registration process on the electronic procedure.

Applicants shall upload all personal and professional data as requested by the application procedure; all documents must be uploaded in PDF format (.pdf). Each applicant can produce a maximum of no. 40 publications and a maximum of no. 40 other titles and qualifications.

Failure to comply with the online application procedure will result in exclusion of the applicant.

Prior to final submission, and within the given deadline for applications submission, the online application procedure allows to modify and save the inserted information in a draft copy.

Confirmation of final submission date will be certified by an automatic notification email.

Submissions after the given deadlines will not be accepted by the system, as the online application procedure won't be accessible.

Each application will be given a registration number. For all further communications, the registration number shall be quoted along with the code of the research grant competition.

The online application and the submission procedure must be completed by and no later than **12.00 (Italian time) on the thirtieth day** from the notice publication date on the University website. Should the indicated deadline fall on a non-business day, it shall be postponed no later than 12.00 (Italian time) of the next business day.

The submission of the online application must be completed and finalized:

- **no digital signature:** in this case the candidate has to download the pdf file of the application by the system; the PDF file shall not be modified in any way, it is to be printed, signed in original, scanned in a pdf file and uploaded again on the website;



- **sign the application on the server using ConFirma service:** in order to sign digitally the application it is necessary to have a hardware (e.g., smart card or USB with digital signature certificate issued by an approved certification body) compatible with ConFirma service; after signing, applicants can download the signed pdf application;
- **sign the application digitally on your PC:** In order to sign digitally the application, it is necessary to have a hardware (e.g., smart card or USB with digital signature certificate issued by an approved certification body) and a software for digital signatures in order to create a pdf.p7m file from the pdf file downloaded from this site. The pdf.p7m file must be uploaded on the website again;
- **in case of submission of the application through SPID,** it will not be necessary to sign the application form as it is automatically acquired by the procedure.

The application must contain all the required data by the system and must be signed and accompanied by a valid identification document of the candidate, under penalty of exclusion.

For any technical problems, contact support through the link available in the footer <https://pica.cineca.it/unibg>.

Article 5 **Admission application**

The applicant, filling the application, must declare, under his/her own responsibility, pursuant to what provided for by Presidential Decree 445/2000 and following amendments and integrations, as follows:

- his/her citizenship;
- to possess the qualifications mentioned in the attached annex A, indicating the degree cycle, the date on which it was obtained, the Institute that issued it and the final vote/assessment achieved; the applicant with qualification(s) obtained abroad must declare to have obtained the relevant recognition indicating in the application the details of the provision or must annex the required documentation according to what specified hereby;
- to possess any other requirements as mentioned in Annex A;
- to possess other qualifications useful for the assessment;
- to know the foreign language required by this call;
- in case of Italian citizenship: to be enrolled in the electoral lists, specifying the Municipality of belonging and possibly specifying the reasons for non-inclusion or cancellation from the same lists; in case of foreign citizenship: to possess civil and political rights in the Country of belonging or provenance, or the reasons for non-possession of the same;
- not to be excluded from the active political electorate;
- to have no criminal convictions, or declare possible convictions undergone, indicating the details of related sentences, and any pending criminal proceedings;
- to be/not to be a state employee, specifying to be/not to be a regular employee at Universities and other bodies as mentioned in Art. 22 of L. No. 240/2010;
- to have no degree of kinship or affinity, up to and including the fourth degree, with a professor from the relevant structure or with the Chancellor, the General Manager or a member of the University's Board of Directors;
- if enrolled in a Diploma di Laurea (DL), Diploma di Laurea Specialistica (LS), Laurea Magistrale (LM), PhD with study grant or medical specialisation, in Italy or abroad, to be aware that, in the event
- of awarding of the grant, attendance at such courses and the use of the PhD study grant are incompatible with the holding of the contract;
- to hold research grants awarded pursuant to Art. 22 of Law No. 240/2010;
- to hold contracts as fixed-term researcher pursuant to Art. 24 of Law No. 240/2010;
- to have attended a PhD indicating the period, University, date on which the qualification was obtained, cycle, exact title of the course and CUN Area;
- period of enjoyment of any PhD study grant;
- address to which communications concerning this competition are to be sent; it is mandatory to indicate a personal e-mail address as well;



- possible request to conduct the interview via videoconference indicating the phone number and motivation.

In the application for participating in the competition, the applicant, pursuant to Law No. 104 of 5 February 1992, must specify any aid necessary in relation to his/her need, as well as any need for additional time for the interview.

When submitting the application for participating in the selection, the applicant must annex the following documents:

1. a photocopy of the applicant's identity document in course of validity;
2. *curriculum vitae* in European format, dated and signed;
3. a list, signed by the applicant, of the publications and other research products, and other titles considered appropriate for the purposes of the selection such as specialisation degrees, certificates of attendance to postgraduate courses, obtained in Italy or abroad, contracts, study grant or research assignments both in Italy and abroad (cf. Annex B);
4. any publications, other research products or other titles that the candidate wishes to assert to the purpose of the procedure, numbered in progressive order matching the relating numbered list;
5. in the event of foreign applicant, it is necessary to annex: a copy of the residence permit (if the applicant is already in its possession).

For the abroad qualification, required for the purposes of selection admission, it's also necessary:

- in the event of qualifications already recognised as valid in the Italian territory, to indicate in the application **the details of the provision attesting the occurred recognition** pursuant to the applicable laws;
- in the event of qualifications not yet recognised attach to the application **one or more of the following documents**: a certified copy of the statement of qualification equivalence, issued by the competent Italian diplomatic and consular authorities abroad; the diploma supplement or transcript of record, legalized and written in Italian or in English; a copy of the qualification with a translation into Italian or English.

As regards all other qualifications obtained abroad which the applicant intends to provide for the selection as required by the call, it is necessary to annex to the application a copy of the qualifications. Each annex must be in PDF format and must not be larger than 30 MB.

Pursuant to Law No. 183/2011, the Administration cannot accept or request certificates, but only declarations in lieu of certifications or affidavits submitted in substitution of the actual certificates signed by the applicant and submitted together with an unauthenticated photocopy of the applicant's valid identify document. The Administration has the right to carry out suitable controls on the truthfulness of the contents of the declarations in lieu pursuant to what provided for by Presidential Decree No. 445/2000.

The requirements and the qualifications must be owned on the date of the expiry of the call.

It is mandatory to indicate a personal e-mail address to which the communications concerning this selection will be sent. Any variation of said address must be promptly communicated to the Selections Office (Servizio Assegni di ricerca).

Article 6 **Examining Commission**

The Examining Commission is appointed with Chancellor's decree, upon proposal of the Structure's Council, at the expiry of the deadline for submitting the application.

The Commission is authorized to carry out the on-line procedure, in the understanding that such method can be adopted until the conclusion of the relevant works, guaranteeing the security and traceability of communications.

Article 7 **Selection**

During its first meeting, the Examining Commission will establish the assessment criteria and procedures explicitly, according to what provided for by the call, fixing a minimum score for admission to the interview.

The overall assessment is expressed in hundredths, as indicated hereafter:



- up to a maximum of 60 points for qualifications and scientific-professional curriculum; to that end, the following will be object of assessment:
 - graduation vote;
 - PhD (if not already provided for as requirement for admission);
 - specialisation degrees and certificates of attendance to postgraduate courses, obtained in Italy or abroad;
 - publications and other research products;
 - documented research activities – as long as the beginning date and duration of the activities are duly certified – carried out at the premises of public and private subjects with contracts, study grants or assignments, both in Italy and abroad;
- up to 40 points for the interview.

Within the context of its autonomy, the Commission can integrate the above, depending on the research project and on what provided for by this call.

The Commission will evaluate, in particular, what is indicated in Annex A

The applicants will be informed before the interview on the results of the assessment of the qualifications.

The Commission reserves the right to carry out the interview via videoconference, using IT and digital tools, guaranteeing the adoption of technical solutions that ensure the publicity of the same, the identification of the participants, as well as the security of communications, and their traceability. Failed connection at the time established or late connection, unless due to force majeure, will be considered as a renunciation to participate in the selection.

During the interview, the Commission will verify the applicant's ability to cover the topics and themes related to the research project and his/her knowledge of at least one foreign language, according to what provided for by the call.

The interview program is indicated in Annex A

The assessment of the knowledge of the foreign language (or foreign languages) as provided for by this call will be carried out during the selection according to the modalities established by the Commission.

The Commission reserves the right to verify the knowledge of the Italian language for foreign candidates; in this case, Italian language knowledge will be ascertained under ineligibility penalty and will not compete for the final score, unless otherwise established by the Commission.

The date and place of the interview will be communicated with at least a 20-day notice through a communication published on the website of University of Bergamo <http://www.unibg.it>, under the section "Concorsi e selezioni-Assegni. Borse e contratti di ricerca-Assegni di ricerca" supervised by the Servizio Assegni di ricerca.

This notice is to all intents and purposes an official communication. Any changes related to the date of the interview will be communicated to the admitted applicants with at least a 20-day notice through the publication of a communication on the University's website under the section "Concorsi e selezioni-Assegni. Borse e contratti di ricerca-Assegni di ricerca".

Failure to show up at the interview will be considered as a renunciation to participate in the competition for all practical purposes.

At the end of the works, the Commission draws up the list of the applicants examined, indicating the votes obtained during the interview.

The Commission will draft the merit list in descending order according to the overall final score, which is obtained by adding the score of the qualifications and the score of the interview.

Applicants will be inserted in the merit list if they obtain at least 30 out of the 40 points available for the interview.

In the event of equal score, the PhD or equivalent qualification obtained abroad will constitute a preferential qualification, if not required for admission; in the event of equal merit, the younger applicant will be preferred.

The merit list is approved, under the condition precedent of verifying the requirements provided for by the call, with Chancellor's Decree and published on the website under the section "Concorsi e



selezioni-Assegni. Borse e contratti di ricerca-Assegni di ricerca". The term for submitting any appeals will run from the date of publication.

Should the winning applicant renounce to or withdrawal from the contract, the grant can be awarded to successful applicants according to the order of the merit list, upon prior resolution of the Research Structure.

Article 8

Signing of the contract and withdrawal

The winning applicant, in possession of the mentioned requirements, will sign an autonomous work contract under private law with effect, normally, on the first day of the month following the month in which the acts are approved.

As regards foreign applicants needing a residence permit, the date of beginning of the contract will be postponed and subject to the completion of the issuing procedure of said permit.

In the event of admission with reservation for qualifications obtained abroad not recognized as valid in the Italian territory, the winner, prior to signing the contract must submit the documents requested by the office within the terms peremptorily established.

The winner of the selection, convoked by the Administrative Office to sign the contract, will lose the right to the grant for collaboration in research activities if he/she does not state to accept the contract or does not begin the activity within the established term, without prejudice to health reasons or causes of force majeure duly and promptly documented.

The grant as mentioned under Art. 1 can be renewed, under the terms and conditions provided for by the above mentioned Regulations; in any case, the relationship established pursuant to Art. 22 of Law No. 240/2010, including the possible renewal, cannot last more than six years, including the possible renewal, with the exclusion of the period in which the grant was used in coincidence with the PhD within the maximum limit of the legal duration of the relevant course.

Article 9

Rights and obligations of the grant holder

The employment relationship is governed by an individual contract, according to what provided for by the applicable laws and by the University's Regulations.

The research activity is flexible, it has a continuous nature, not merely occasional, and is carried out under the leadership of the Scientific Director, with autonomous conditions as to the research programme and its realisation, without any predetermined working hours.

The grant holder must refer to the Research structure that requested the activation of the contract.

The research activity of the grant holder is carried out within the context of the relevant Structure and in other Structures of the University based on the research programme. Any research activities conducted outside of the University must be approved by the Council of the Research structure.

A period of permanence abroad is allowed at one or more qualified universities or research institutes, upon prior authorisation of the Council of the Research structure. During the period spent abroad, the amount of the grant will be increased by fifty percent to be charged to the Structure of reference or to the funds assigned to the Research structure.

The grant holder can participate in all the activities programmed by the Research structure for the promotion of researches and the dissemination of relevant results; he/she can be a member of the profit exams commissions, in quality of expert.

The Research structure must provide the grant holder all necessary support for realising his/her research programme, guaranteeing access to the equipment, the necessary resources and the use of the technical-administrative services.

The grant holder must comply with what provided for by the University's applicable Regulations on research integrity and ethics.

The winner of the selection who is entitled to the grant, at the time of the signature of the individual contract, should be committed, under penalty of forfeiture of the right to the research grant, to confidentiality and preventive transfer to the University of all intellectual property rights relating to the results produced and/or achieved during the research activities carried out at the University and she/he has the right to be recognized as the author of the his/her results achieved and/or products.



The University recognizes the application of the same economic conditions that the University Patent Regulation grants to its Professors/Researchers.

The research fellow may participate in activities performed on behalf of third parties pursuant to art. 66 of Presidential Decree 382/80, in the context of issues related to its project, and the distribution of related proceeds, in accordance with the current University Regulations on the subject.

Article 10

Taxes, welfare, insurance and mission

With reference to taxes, the grants are subject to what provided for under Art. 4 of Law No. 476/1984, while as regards welfare, they are subject to what provided for under Art. 2, paragraph 26 and following, of Law No. 335/1995, and following amendments. With reference to mandatory maternity leave, they are subject to what provided for by the Decree of the Ministry of Labour and Welfare of 12 July 2007, published in the Official Gazette No. 247 of 23 October 2007, and, as regards sickness leave, they are subject to what provided for by Art. 1, paragraph 788, of Law No. 296 of 27 December 2006, and following amendments.

In the period of mandatory maternity leave, the bonus paid by INPS pursuant to Art. 5 of the mentioned Decree of 12 July 2007 is integrated by the University up to the payment of the total amount of the research grant.

The University will cover the grant holder's accident insurance and civil liability toward third parties' insurance within the scope of his/her research activity.

The covering of the grant holder's mission expenses is financed through the funds of the Scientific Director in charge or the Research structure, according to the modalities provided for by the University's regulations as to missions.

Article 11

Processing of personal data

In accordance with articles 13 and 14 of Regulation (EU) 2016/679 (GDPR), on the protection of personal data, and with D. Lgs. n. 196 /2003 and subsequent amendments, it is made known that data is controlled and managed by the legal representative of the University of Bergamo, via Salvecchio 19, - 24129 Bergamo.

Data will be collected exclusively for the present bid purposes and will be kept only for the necessary time to complete the relevant procedures. The data treatment controller will be appointed within the managing unit in charge of bidding procedure, who will carry out the treatment with all due respect of propriety, legitimacy, scope, transparency and confidentiality of the treatment; and data will be used exclusively for purposes connected to the selection and further conferment of the role and possible contract drafting, as well as management of the following employment position, in compliance with current regulations. Data will be kept for the necessary time to accomplish the selection purposes, subject to the application of norms on document retention, and will be transferred uniquely to public administration bodies directly concerned with the juridical and economic position of the selected applicant, treated in compliance with current regulations and used for personal, welfare, insurance and fiscal position management. Data will be handled by appointed staff through the acquisition of printed and electronic documents and using, even digitalised, filing procedures, to guarantee confidentiality; data treatment will be carried out through a coordinated organization and processing system, applying elevated safety standards. Furthermore, data will not be used for profiling. Applicants who have provided their personal data will be able to access it and exercise their rights as by art. 16 to 22 of GDPR UE 2016/679. Any safeguard request can be addressed to the University Data Protection Officer, who can be contacted through the university website (Privacy and Personal Data Protection section), e-mail dpo@unibg.it. In addition to the right of complaint which can be presented to the Italian Data Protection Authority, Piazza Venezia 11, 00187 Roma.

By presenting their application, candidates thereby authorise and fully consent to publication on the University institutional website of all information concerning the current bid, their own data and the contents of their CV in accordance with 111-bis of D. Lgs.196/2003 stating that, within the scope limits defined by art. 6, par. 1, letter b), of the Regulation, consent is not due for personal data present in a submitted CV.



Article 12

Person in charge of the procedure

The Person in charge of the selection procedure within this call is Dr. Isabella Arfiero of Personale TA e Collaboratori, Viale Papa Giovanni XXIII, 106 - 24121 Bergamo, phone (+39) 035 2052 594 - 583 - 878, e-mail address: assegni.ricerca@unibg.it.

Article 13

Publication

This call is published in the University's Official Registry, on the website of the Conference of the Italian University Chancellors (www.cru.it), on the website of the Ministry of Education, Research and University (MIUR) at the link <http://bandi.miur.it>, and on the website of the European Union at the link <http://ec.europa.eu/euraxess> in the form of a notice.

The full competition and related annexed forms are available on the website of the University of Bergamo www.unibg.it under the specially devoted section "*Concorsi e selezioni-Assegni. Borse e contratti di ricerca-Assegni di ricerca*".

The call is also published on "*Piattaforma Integrata Concorsi Atenei*" (PICA) - link <http://pica.cineca.it/unibg/> from which it is possible to fill the application online for participation at the selection.

Article 14

Final provisions

For all matters not provided for by this call, the following will be applied: Law No. 240/2010 and following amendments and integrations, the University's Regulations on the awarding of research grants, the University's Regulations in force, and the Regulations on employment relationships in the public administration.

Bergamo, *as per protocol registration*

THE CHANCELLOR
(Prof. Sergio Cavalieri)
Documento firmato digitalmente ai sensi
dell'art. 24 del D. Lgs. 82/2005



ANNEX A

RESEARCH PROJECT - CODE 1

"Integration of ecodesign artificial intelligence methods and tools to promote environmental, social, and economic sustainability"

Research structure: Department of Engineering and Applied Sciences

Department resolution: 10.09.2024

Resolution of the Academic Senate: 08.07.2024

Resolution of the Board of Directors: 10.07.2024

Gross annual amount: € 25.000,00

Financial coverage:

ASSEGN024DIGIP CUP F53C24000110005.

Duration of the grant: 12 months

Scientific area: 09 - Industrial and Information Engineering

Competition sector: 09/IIND-03 Industrial Design, Machine Construction and Metallurgy

Scientific disciplinary sector: IIND-03/B Design Methods for Industrial Engineering

Scientific director: Prof. Daniele Landi

Entry requirement:

Laurea Specialistica (LS) o Laurea Magistrale (LM) in Ingegneria gestionale (classe LM-31 o 34/S), o in Ingegneria informatica (classe LM-32 o 35/S), o in Ingegneria meccanica (classe LM-33 o 36/S) ed equiparati, ovvero Diploma di Laurea (DL) conseguito secondo le modalità precedenti all'entrata in vigore del D.M. 509/1999 e s.m.i. e titoli equipollenti ai fini dell'ammissione ai pubblici concorsi.

Knowledge of the language:

English

Additional qualifications evaluated by the Commission:

- Consistency of the candidate's overall profile with respect to the content of the research programme for selection.
- Close relevance of publications submitted with the research programme object of selection.
- Specialization diplomas and certificates of attendance for post-graduate advanced courses, obtained in Italy or abroad.

Interview schedule:

Interview aimed at ascertaining the candidate's aptitude for the research object of the selection. In particular:

- Generative AI tools designed to analyze scientific documentation (patents, scientific articles, conference proceedings, etc.) in order to extrapolate information necessary for sustainable design.
- Methods and tools for systematic innovation (e.g., problem-solving methods, idea generation, TRIZ, conceptual design FBS).
- State-of-the-art Design for Sustainability methods and tools.

Description of the research project:

The growing concern over the environmental impact of human activities has led to increased attention to sustainable practices across all sectors. Ecodesign, an approach that integrates environmental considerations into the design of products and services, has emerged as a key strategy



for reducing ecological footprint Concurrently, artificial intelligence (AI) is revolutionizing numerous fields, offering innovative solutions to complex problems. This research project aims to explore how AI can be integrated into ecodesign to promote more environmentally, socially, and economically sustainable practices in accordance with the SDGs (Sustainable Development Goals). In this context, the research objectives can be summarized in the following points:

Analyze the current state of ecodesign and identify areas where AI could bring significant improvements. Starting from the limitations of ecodesign already known in literature, propose new approaches to integrate new intelligent systems into product development. The specific objectives can be summarized in the following points:

- Implement an AI system for intelligent material selection and substitution:
- Develop algorithms that automatically identify more sustainable alternatives to conventional materials and create a predictive system to anticipate the long-term availability and environmental impact of materials.
- Develop generative AI tools for reading scientific documentation (patents and articles).



RESEARCH PROJECT - CODE 2

"Entrepreneurship and innovation in family businesses."

Research structure: Department of Engineering and Applied Sciences

Department resolution: 10.09.2024

Resolution of the Academic Senate: 08.07.2024

Resolution of the Board of Directors: 10.07.2024

Gross annual amount: € 25.000,00

Financial coverage:

ASSEGNO24DIGIP CUP F53C24000110005

Duration of the grant: 12 months

Scientific area: 09 - Industrial and Information Engineering

Competition sector: 09/IEGE-01 Business and Management Engineering

Scientific disciplinary sector: IEGE-01/A Business and Management Engineering

Scientific director: Prof.ssa Mara Brumana

Entry requirement:

Laurea Specialistica (LS) o Laurea Magistrale (LM) in Scienze dell'economia (classe LM-56 o 64/S), Ingegneria gestionale (classe LM-31 o 34/S), Scienze economico aziendali (classe LM-77 o 84/S) ed equiparati, ovvero Diploma di Laurea (DL) conseguito secondo le modalità precedenti all'entrata in vigore del D.M. 509/1999 e s.m.i. e titoli equipollenti ai fini dell'ammissione ai pubblici concorsi.

Knowledge of the language:

English

Additional qualifications evaluated by the Commission:

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Interview schedule:

- Entrepreneurship and family firms: definitions, types of entrepreneurial initiatives and levels of analysis.
- Innovation in family firms: antecedents, outcomes, and key elements that favor or limit innovation in the context of family businesses.
- Methodologies for investigating entrepreneurship and innovation phenomena in family firms.
- Opportunities for managerial contributions and practical implications especially for family SMEs.

Description of the research project:

Family businesses are one of the most widespread organizational forms in the world. Their main distinguishing feature is related to the decision-making processes that lead them to prioritize non-economic objectives in addition to economic ones. This characteristic in turn leads to a long-term orientation that allows these organizations to efficiently cultivate deep historical roots and gives them the ability to achieve considerable organizational size and influence. Tradition and innovation need to be constantly balanced and this peculiarity makes family businesses the subject of a growing academic debate, especially on the propensity to take risk in entrepreneurial decisions. In particular, it has been shown that stakeholders' perceptions and evaluations of family businesses are influenced by the marked difference in their organizational behavior. However, how these evaluations by external and internal stakeholders affect entrepreneurial decisions has been little investigated and offers room for new research.



In fact, although some studies have begun to address the topic of stakeholder management in relation to strategic and entrepreneurial decisions, we know little about the mechanisms through which family businesses can operate to manage their stakeholders and foster entrepreneurial behavior aimed at sustaining the business over time. Therefore, the need for further investigations into the role that collaborators and external stakeholders play, through their perceptions and evaluations, on the behavior of family businesses becomes relevant to understand what determines the success of one of the most present organizational forms in economies around the world. Among the most relevant aspects, the communication and understanding of a clear corporate purpose inside and outside the organization could have a non-negligible impact on the entrepreneurial decisions of family businesses, for example, related to the timely adoption of emerging technologies (including artificial intelligence) or the creation of new businesses and spin-offs.

Furthermore, it is becoming increasingly significant to understand how family businesses differ from each other. The priority of non-economic objectives over economic ones may underlie the heterogeneity of family businesses and the impact of different stakeholder management in different family businesses may affect their decisions in the fields of innovation and entrepreneurship differently.

The project aims to investigate how and why family businesses can be favored or disadvantaged by stakeholder perceptions and evaluations especially in making decisions in fields characterized by emerging technologies (e.g. artificial intelligence). Among family businesses, particular attention will be given to small and medium-sized enterprises and start-ups, organizational forms that themselves may be more (start-ups) or less (small and medium-sized enterprises) prone to making entrepreneurial decisions in highly innovative contexts.

From a methodological point of view, the project will promote the application of new approaches based on big data to investigate managerial and organizational phenomena with a qualitative, inductive design and a longitudinal temporal scope. The integration of different methodological approaches and the use of multiple databases and archives will be encouraged, allowing for in-depth analysis and an appropriate level of analysis to answer the questions based on the research project.



RESEARCH PROJECT - CODE 3

"Evaluating the impact of a business model focused on the clients' financial health: An empirical study"

Research structure: Department of Management

Department resolution: 10.09.2024

Resolution of the Academic Senate: 16.09.2024

Resolution of the Board of Directors: 17.09.2024

Gross annual amount: € 20.256,00

Financial coverage:

Codici progetto: DIPSABCAPOPLV2024, 60DIPSA2020, 60CASTD23 e 60CASTD24

Duration of the grant: 12 months

Scientific area: 13 - Economics and Statistics

Competition sector: 13/ECON-09 Financial Markets, Financial Institutions, Corporate Finance

Scientific disciplinary sector: ECON-09/B Financial Markets and Institutions

Scientific director: Prof. Davide Castellani

Entry requirement:

Laurea Specialistica (LS) o Laurea Magistrale (LM), ed equiparati, ovvero Diploma di Laurea (DL) conseguito secondo le modalità precedenti all'entrata in vigore del D.M. 509/1999 e s.m.i. e titoli equipollenti ai fini dell'ammissione ai pubblici concorsi.

Knowledge of the language: English

Additional qualifications evaluated by the Commission:

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Interview schedule:

The following topics will be subject to evaluation, in particular:

- The management of financial institutions;
- Financial inclusion and financial wellbeing;
- Field data collection methodologies;
- Econometric analysis, with particular reference to panel regression analysis.

Description of the research project:

The main objective of this research project is to conduct an empirical study to analyze the impact that a business model focused on clients' financial health can have on the performance of microfinance intermediaries, measured through various metrics, including the level of satisfaction with the products and services offered, retention rates, financial outcomes, and overall growth.

In recent years, there has been increasing emphasis on the importance of financial health, defined as the extent to which an individual can manage their current financial obligations without difficulty and has confidence in their financial future. The primary hypothesis is that this shift toward a model more oriented toward clients' financial health can lead to greater benefits for both the clients themselves and the intermediaries.

The researcher will be responsible for designing and implementing a field study that will evaluate the impact of this approach on a microfinance institution. The work is divided into two phases. The first



phase will involve a thorough review of the existing literature, the development of a theoretical framework, and the empirical strategy. The second phase will focus on the implementation of the empirical strategy, data collection and analysis using the tools identified during the first phase.

The total estimated time for completing the project is approximately 12 months.

The activity plan includes the following indicative timeline: 1 month for the mapping and review of the literature, 1 month for the development of the theoretical framework and empirical strategy, 1 month for the implementation of the empirical strategy, 5 months for data collection and analysis, and 3 months dedicated to promoting and disseminating the research through the writing of a working paper and its presentation at least one international conference.



RESEARCH PROJECT - CODE 4

"Municipal fiscal policies, local challenges and political careers"

Research structure: Department of Economics

Department resolution: 03.09.2024

Resolution of the Academic Senate: 08.07.2024

Resolution of the Board of Directors: 10.07.2024

Gross annual amount: € 25.000,00

Financial coverage:

ASSEGNO24DSE – CUP. F53C24000110005

Duration of the grant: 24 months

Scientific area: 13 - Economics and Statistics

Competition sector: 13/ECON-01 - Economics

Scientific Disciplinary Sector: ECON-01/A - Economics

Scientific director: Prof. Luigi Moretti

Entry requirement:

Laurea Specialistica (LS) o Laurea Magistrale (LM) ed equiparati, ovvero Diploma di Laurea (DL) conseguito secondo le modalità precedenti all'entrata in vigore del D.M. 509/1999 e s.m.i. e titoli equipollenti ai fini dell'ammissione ai pubblici concorsi.

Knowledge of the language:

English

Additional qualifications evaluated by the Commission:

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Interview schedule:

Presentation of candidate's research work related to the project's topics, followed by a discussion in English.

Description of the research project:

The research project is at the intersection between local public finance and political economy and aims to contribute to the literature that empirically assesses how the fiscal policy decisions of municipal administrations influence a broader set of public finance outcomes and socio-economic and environmental factors at the local level, as well as the political careers of municipal political leaders. Among the various challenges that municipalities currently face, two are of particular interest to this project: (i) administrations often operate under conditions of fiscal uncertainty, caused by frequent changes in fiscal rules and variations in the availability of external revenues, including intergovernmental transfers; (ii) like in other elective institutions, younger cohorts of the electorate tend to be underrepresented in municipal governing bodies, raising interest in investigating whether local policy choices may be influenced by generational biases. The project will explore how municipal political leaders with different individual characteristics (including age, experience, education level, and political ambitions), operating in contexts with varying degrees of financial constraints, differ in terms of expenditure allocation across sectors, procurement management, and management of outstanding liabilities and receivables, as well as adjustments in local taxation. The study will also investigate how these policy decisions influence the re-election prospects and political career advancement of municipal leaders.



RESEARCH PROJECT - CODE 5

"Integration of Artificial Intelligence and Public Law in Italy: What implications for constitutional fundamental rights, what synergies and what opportunities?"

Research structure: Department of Law

Department resolution: 10.09.2024

Resolution of the Academic Senate: 16.09.2024

Resolution of the Board of Directors: 17.09.2024

Gross annual amount: € 25.000,00

Financial coverage:

Codice Progetto ASSEGN023BIDIGIU – CUP F53C23000190005

Duration of the grant: 24 months

Scientific area: 12 - Law Studies

Competition sector: 12/GIUR-05 – Constitutional and Public Law

Scientific disciplinary sector: GIUR-05/A – Constitutional and Public Law

Scientific director: Prof. Angelo Maestroni

Entry requirement:

Laurea Specialistica (LS) o Laurea Magistrale (LM) in Giurisprudenza (classe LMG/01 o 22/S o 102/S Teoria e tecniche della normazione e dell'informazione giuridica) ed equiparati, ovvero Diploma di Laurea (DL) conseguito secondo le modalità precedenti all'entrata in vigore del D.M. 509/1999 e s.m.i. e titoli equipollenti ai fini dell'ammissione ai pubblici concorsi.

Knowledge of the language:

English

Additional qualifications evaluated by the Commission:

- PhD or an equivalent degree obtained in Italy or abroad or its possible achievement;
- experience in teaching university activity;
- experience in organization and management of training activities;
- participation in clinical legal activity;
- internship at the judicial offices or at law firms;
- research activity in the university field, particularly on artificial intelligence.

Interview schedule:

The interview will be intended to assess the candidate's competence in the general principles of public law, knowledge of the topics covered by the research project, and research aptitude. The interview will be held in Italian and English.

Description of the research project:

The research project aims to contribute to the understanding of how the perception, classification, and prediction activities of Artificial Intelligence - based on data that "present themselves as they are and not as we would like them to be" and on a statistical model - can be integrated into the Italian legal system in a manner consistent with fundamental principles and constitutional rights.

An additional, but not secondary, goal is to verify the prerequisites for implementing collaboration between the various disciplinary sectors in the field of AI, and this in order to identify models that will



guarantee that the applications and technologies that derive from them are in accordance with the founding values of our democracy, with particular reference to the reliability and completeness of data relating to legal and judicial issues.

The hoped-for conclusions could contribute both to the formation of shared guidelines that are useful to both the legislator and the academy, and to the regulation of this sector, which is clearly expanding. Finally, practical guidance on how to implement AI in a responsible and inclusive manner would be provided to judges, notaries, lawyers, employment consultants, business lawyers, accountants, tax professionals, and their professional associations, as well as to students and teachers who are interested in expanding their capabilities thanks to this powerful tool.



RESEARCH PROJECT - CODE 6

"The right to sport as a vector of social inclusion. A comparison between projects and research in Italy, Finland and Spain"

Research structure: Department of Human and Social Sciences

Department resolution: 09.10.2024

Resolution of the Academic Senate: 08.07.2024

Resolution of the Board of Directors: 10.07.2024

Gross annual amount: € 25.000,00

Financial coverage:

ASSEGN024DSUS - CUP F53C24000110005.

Duration of the grant: 24 months

Scientific area: 11- History, Philosophy, Pedagogy and Psychology

Competition sector: 11/PAED-02 - Educational Research, Didactics, Special Pedagogy and Experimental Pedagogy

Scientific disciplinary sector: PAED-02/A - Didactics and Special pedagogy

Scientific director: Prof. Antonio Borgogni

Entry requirement:

Laurea Specialistica (LS) o Laurea Magistrale (LM) in Scienze pedagogiche (classi LM-85 o 87/S) ed equiparati, ovvero Diploma di Laurea (DL) conseguito secondo le modalità precedenti all'entrata in vigore del D.M. 509/1999 e s.m.i. e titoli equipollenti ai fini dell'ammissione ai pubblici concorsi.

Knowledge of the language:

English

Additional qualifications evaluated by the Commission:

The methodological competence in relation to the complexity of the research contexts.
Previous experience in fields related to the research project at doctoral or graduate level.

Interview schedule:

The oral exam will be aimed at testing the aptitude and experience to collaborate in the research project under call. The exam will verify the theoretical and methodological knowledge inherent to the theme of social and educational intervention in sports, in both Italian and English.

Description of the research project:

The Article 31 of the Convention on the Rights of the Child (UN, 1989) states that every child has the right to 'engage in play and recreational activities'; these include physical and sport activities, which help improve physical and mental health, as well as foster social relationships. The Convention specifies that States Parties must 'encourage the provision of appropriate and equal opportunities for cultural, artistic, recreational, and leisure activities.' However, not all children, due to conditions of economic and educational poverty, have the opportunity to participate in these activities and enjoy their benefits.

Over the years, political attention to the importance of physical and sport activities in social intervention has increased. For instance, the recent amendment to Article 33 of the Italian Constitution recognized 'the educational, social, and well-being-promoting value of sport activities.'



In fact, the social value of sport has long played an increasingly significant role in the policies of national and international bodies. Already mentioned in 1978 by UNESCO in the International Charter of Physical Education, Physical Activity, and Sport, in the European Union, the 2007 White Paper on Sport marked a turning point by giving priority to its social dimension over its economic and organizational aspects. The UN's 2030 Agenda for Sustainable Development (2015) acknowledged its importance for social inclusion. On an operational level, the 2008 'Pierre de Coubertin' action plan at the European level, and the 2017 Kazan Action Plan at the global level, provided States with guidelines for implementing these measures. In Italy, numerous national, regional, and local projects aim to promote the social inclusion of individuals facing educational poverty and discomfort. Notable examples include the 'Sport and Inclusion' calls by Sport and Health, in collaboration with the Ministry of Sport and Youth, and those by the Lombardy Region.

While sport is recognized for their educational, social, and inclusive value, this opportunity should not be taken for granted. The social inclusion of young people in educational poverty and difficult situations through sport depends on various factors related to the social context and the availability of opportunities, both in sport and extracurricular activities. Particularly important is the welfare system network in which the inclusion project is embedded.

This research project aims, first, to study the relevance of physical activity, sport, and the right to participate in them in the laws of other European countries. Secondly, it seeks to identify and analyze projects and actions carried out at the European level to understand their limitations and elements of success.

The first phase of the research will be devoted to a literature review to deepen the understanding of the social and inclusive role of sport, examine the regulations of European states, and gather information on the projects developed.

In the second phase, the regulations and measures implemented in Finland and Spain will be analyzed in more depth, and the development of research tools will be conducted in collaboration with researchers from the University of Jyväskylä and INEFC-University of Barcelona, with whom a well-established research partnership exists.

In the third phase, two research visits are planned at the aforementioned institutions, where the research tools will be refined, and the social and educational role of sport in the studied contexts will be explored further through additional documentation collection, observations, and interviews.

In the fourth phase, the information and data will be processed and interpreted to compare the actions carried out in the two countries and in Italy.



RESEARCH PROJECT - CODE 7

"Intelligent Artificial Pancreas: Development of Model Predictive Control strategies for the management of insulin sensitivity variability"

Research structure: Department of Management, Information and Production Engineering

Department resolution: 02.10.2024

Resolution of the Academic Senate: 14.10.2024

Resolution of the Board of Directors: 15.10.2024

Gross annual amount: € 20.000,00

Financial coverage:

Project code: 60DIGIP22 - DIGIPFIS22 - DIGIPRESIAPPUB

Duration of the grant: 12 months

Scientific area: 09- Industrial and Information Engineering

Competition sector: 09/IINF-04 - Systems and Control Engineering

Scientific disciplinary sector: IINF-04/A - Systems and Control Engineering

Scientific director: Prof. Antonio Ferramosca

Entry requirement:

Laurea Specialistica (LS) o Laurea Magistrale (LM) in Ingegneria Informatica (classe LM-32 o 35/S), o in Ingegneria Biomedica (classe LM-21 o 26/S), o in Ingegneria Gestionale (classe LM-31 o 34/S) ed equiparati, ovvero Diploma di Laurea (DL) conseguito secondo le modalità precedenti all'entrata in vigore del D.M. 509/1999 e s.m.i. e titoli equipollenti ai fini dell'ammissione ai pubblici concorsi.

Knowledge of the language:

English

Additional qualifications evaluated by the Commission:

Previous experience in the field of automatic control, and dynamic system identification from experimental data.

Interview schedule:

- Foundations of automatic control.
- Foundations of system identification.

Description of the research project:

The proposed research program is part of the study of automatic control algorithms for blood glucose regulation in Type 1 diabetic patients, also known as the Artificial Pancreas. Specifically, the proposed research aims to implement an advanced control scheme, known as Model Predictive Control (MPC), which can be adaptable and customizable for each individual patient. An MPC control scheme, as suggested by its name, requires a model of the system to be controlled (in this case, the diabetic patient) to make predictions about the future open-loop behavior of the system. These predictions must be optimized by minimizing a certain cost functional.

In the case of diabetic patients, reference population models can be identified, thus incorporating some level of generality. However, diabetic patients are subject to high inter- and intra-patient variability. In particular, a single patient experiences a circadian variation in insulin sensitivity: this means that the amount of insulin required to metabolize 1 gram of carbohydrates may not be the same throughout the day. A generic time-invariant model may therefore not adequately represent every



individual patient, leading the MPC controller to perform poorly. Due to an inaccurate model, the controller could make incorrect predictions, resulting in wrong control decisions. Such errors caused by a mismatch between the plant and the predictive model can be particularly dangerous, especially if they lead the controller to administer higher-than-necessary amounts of insulin, potentially causing the patient to experience hypoglycemic episodes or even insulin-induced coma.

To address this issue, the proposed strategy is to develop a data-driven MPC controller, where the predictive model is not identified a priori in a generic form for a patient population, but rather is based on process data and thus customized and customizable for each individual patient. The project development will begin with a preliminary study and replication of the relevant literature. Subsequently, the focus will shift to the implementation phase, which can be further divided into an initial data collection phase and a subsequent phase of developing the MPC controller. For the data collection phase, the DMMS (Diabetes Mellitus Metabolic Simulator), also known as the virtual patient or UVA/Padova simulator (named after the two universities that developed it), will be used. This simulator is the only one recognized by the US FDA as a substitute for real patients in in-silico trials. The version licensed to us at CAL includes a population of 10 adults, 10 adolescents, and 10 children, as well as an average virtual patient for each age group. The collected data will be used to implement a data-driven MPC that is personalized for each individual patient.

In this way, we expect to achieve superior performance from the control algorithm, which should be able to capture both inter-patient differences and intra-patient variations (such as changes in insulin sensitivity throughout the day). The algorithm will thus not only need to control the system according to the principles of MPC but also dynamically adapt the predictive model for each individual patient, based on the new data collected. The long-term goal of this research program is to develop a reliable, robust, fully automated, and customizable blood glucose regulation system.