



INSTITUTE OF ENERGY AND ENVIRONMENT OF THE UNIVERSITY OF SÃO PAULO

Contest for Doctor Professor

Announcement DVACAD-IEE-001/2023

OPEN REGISTRATION FOR THE PUBLIC COMPETITION FOR TITLES AND TESTS AIMING AT THE PROVISION OF 01 (ONE) POSITION OF DOCTOR PROFESSOR AT THE INSTITUTE OF ENERGY AND ENVIRONMENT OF THE UNIVERSITY OF SÃO PAULO

The Director of the Institute of Energy and Environment of the University of São Paulo (IEE/USP) announces to all interested parties that, as decided by the Deliberative Council in an ordinary session held on 06/19/2023, the of 60 (sixty) days, starting at 8:00 am (Brasília time) on 08/01/2023 and ending at 5:00 pm (Brasília time) on 09/29/2023, registrations for the public tender for titles and evidence for filling 01 (one) position of Doctor Professor, reference MS-3, in Full Dedication to Teaching and Research Regime (RDIDP), course/position No. 1020595, with salary of BRL 14,761.10 (May/2023), with the Institute of Energy and Environment, in the area of knowledge “Energy and Environment”, pursuant to art. 125, paragraph 1, of the [General Regulations of USP](#), and the respective program that follows and in the justification, attached, presented to Public Notice CCD 001/2022 that granted the clear/position in the “Culture and University Extension” aspect to the Institute of Energy and Environment :

1. Energetic biomass and Bioenergy - conceptualization, sources, classification and origin, importance in the world and national energy matrix for a renewable energy transition.
2. Technological routes for converting residual biomass into bioenergy - main products and uses.
3. Biodigestion of residual biomass - types of technologies; substrates, raw materials, products, costs, technical performance, fundamentals of biochemistry and microbiology applied to waste treatment.
4. Management and operation of residual biomass biodigestion systems: planning, operation, maintenance and safety of plants fed with organic waste.
5. Solid urban and agricultural waste as raw material for biodigestion - main physical, physical-chemical and biological characteristics (gravimetric composition, humidity, C/N rate and others); ways of obtaining the raw material (conventional collection, selective collection, from large generators, from the general public and others); forms of use of the raw material (in natura, separation at the source, granulometry reduction, inoculation and others), and evaluation of the potential for methane production.
6. Urban, agricultural and industrial effluents as raw material for biodigestion - main physical, physical-chemical and biological characteristics (gravimetric composition, humidity, C/N rate and others); ways of obtaining the raw material (conventional collection, selective collection, from large generators, from the general public and others); forms of use of the raw material (in natura,



separation at the source, granulometry reduction, inoculation and others), and evaluation of the potential for methane production.

7. Processes for receiving, sorting, crushing, adapting, monitoring, testing, and quality control of substrates for feeding in bioreactors.

8. Residual biomass biodigestion products and their characterization in terms of energy content, stage of development, performance, costs, regulatory stage.

9. Biogas purification processes and biomethane production.

10. Potential for biomethane recovery through conversion into by-products such as ammonia, hydrogen, biomethanol.

11. Hybrid systems incorporating residual biomass biodigestion for electricity generation, distributed generation, technological possibilities and regulation

12. Regulation of the insertion of biomethane in piped gas networks and for use as vehicle fuel.

13. Biogas conversion processes into electricity and distributed generation: technologies and regulation

14. Treatment and use of digestate and adaptation processes as fertilizer, nutrient recovery technologies and economic valuation.

15. Solid waste management and the National Solid Waste Policy; Public policies that consider the energy use of residual biomass in Brazil, links and implications.

16. The role of waste biodigestion as a tool for universal access to energy - electricity, gas, heat, cold.

17. Industry, university and society integration for the energetic use of Waste; barriers to the expansion of residual biomass biodigestion in Brazil and coping strategies - the role of academic extension.

The competition will be governed by constitutional principles, notably that of impersonality, as well as the provisions of the [Statute](#) and [General Rules of the University of São Paulo](#) and the [Rules of the USP Institute of Energy and Environment \(IEE/USP\)](#).

In view of the granting of the position under the terms of Public Notice CCD nº 001/2022, the greater weight of the professional performance of the appointed professor must correspond, in all evaluations of his career, to the aspect "Culture and University Extension", which does not however, it will release the obligation to act in all three areas ("Education", "Research and Innovation" and "Culture and University Extension").



1. Applications must be made exclusively through the link <https://uspdigital.usp.br/gr/admissao> within the period indicated above, and the candidate must fill in the requested personal data and attach the following documents:

I – detailed memorandum and evidence of the published works, the activities carried out related to the competition and other information that allows the evaluation of their merits, in digital format;

II – proof that you hold the title of Doctor granted by USP, recognized by it or valid nationally;

III – proof of discharge from military service for male candidates;

IV – electoral discharge certificate or detailed certificate issued by the Electoral Court less than 30 days before the beginning of the enrollment period;

V – official identity document.

§ 1 - Supporting elements of the memorial referred to in item I, such as models, works of art or other materials that cannot be digitized must be presented by the last working day before the start of the competition.

§ 2 - Links from Dropbox or Google Drive or any other referring to the page subject to alteration by the candidate will not be accepted as proof of the items contained in the memorial.

§ 3 - For the purposes of item II, minutes of defense will not be accepted without information on homologation when the granting of the Doctor's title depends on this measure within the scope of the issuing Educational Institution, being the candidate already aware that in this case the absence of proof of such approval will result in the rejection of your registration.

§ 4 - Professors working at USP will be exempt from the requirements referred to in items III and IV, provided that they have proven due discharge at the time of their initial contract.

§ 5 - Foreign candidates will be exempt from the requirements of items III and IV, and must prove that they are in good standing in Brazil.

§ 6 - The foreign candidate approved in the competition and indicated to fill the position may only take office if he presents a temporary or permanent visa that allows him to carry out remunerated activity in Brazil.

§ 7 - At the time of registration, candidates with disabilities must submit a request for the necessary conditions to be provided for the tests.

§ 8 - It is the candidate's full responsibility to upload each of their documents in the specific field indicated by the system at the link <https://uspdigital.usp.br/gr/admissao>, and the candidate is already aware that



uploading documents in an order other than that established therein will result in the rejection of your registration.

§ 9 - It is the candidate's full responsibility to present their documents in their entirety (front and back) and in a readable file, and the candidate is already aware that, if they do not remedy any irregularity in the document upload during the registration period incomplete or illegible, your entry will be rejected.

§ 10 - The extemporaneous presentation of documents by the candidate will not be admitted, even at the appeal level.

§ 11 - Upon registration, the candidate who declares himself to be black, brown or indigenous will express his interest in participating in the differentiated score provided for in item 11 and its paragraphs of this Public Notice.

§ 12 - In order to be entitled to the bonus for self-declared black and brown candidates, the candidate must have phenotypic traits that characterize him as black, black or brown.

§ 13 - The self-declaration as black or brown made by the candidate who expresses his interest in participating in the differentiated score will be subject to confirmation by means of a hetero-identification bank.

§ 14 - In the event of non-confirmation of the self-declaration of racial belonging, the candidate will be eliminated from the contest and, if nominated, will be subject to the annulment of his admission to public service or employment, after an administrative procedure in which he is assured the contradictory and full defense, without prejudice to other applicable sanctions.

§ 15 - In order to confirm the self-declaration of the indigenous candidate, the Administrative Birth Registration of the Indian - Rani or, in the absence of this, the Administrative Birth Registration of an Indian - Rani of one of his/her parents will be required.

§ 16 – Exceptional situations may be evaluated by the Council for Inclusion and Belonging, which may admit confirmation of the candidate's self-declaration as an indigenous person through, cumulatively, a memorial and a declaration of ethnic belonging signed by chiefs, tuxauas, indigenous leaders of communities, associations and/or representative organizations of the indigenous peoples of the respective regions, under the penalties of the Law.

2. The inscriptions will be judged by the Deliberative Council of the Institute of Energy and Environment of USP, in its formal aspect, publishing the decision in public notice.

Sole Paragraph – The contest must be held within thirty to one hundred and twenty days, counting from the date of publication in the Official Gazette of the State of the approval of entries, in accordance with article 134, sole paragraph, of the General Rules of USP.



3. The competition will be carried out according to objective criteria, in two phases, through the attribution of marks in tests, divided as follows:

1st phase (elimination): written test - weight 01

2nd phase: I) Judgment of the memorial with public proof of argument - weight 01

II) didactic test - weight 01

§ 1 - The call for applicants to take the tests will be published in the Official Gazette of the State.

§ 2 - Candidates who present themselves after the established time will not be able to take the tests.

4. The written test, which will deal with a general and doctrinal subject, will be carried out in accordance with the provisions of art. 139, and its sole paragraph, of the USP General Regulations.

I – the commission will organize a list of ten points, based on the competition program and will inform the candidates, 24 (twenty-four) hours before the point draw, being allowed to require the candidates to carry out other activities in that period. period;

the candidate may propose the replacement of points, immediately after becoming aware of their statements, if they understand that they do not belong to the competition program, and it is up to the judging committee to decide, at a glance, on the origin of the allegation;

III – once the point is drawn, the non-extendable period of five hours of duration of the test begins;

IV – for sixty minutes, after the draw, consultation with books, periodicals and other bibliographic documents will be allowed;

V – the notes taken during the consultation period may be used during the course of the test, and must be made on paper initialed by the committee and attached to the final text;

VI – the test, which will be read in a public session by the candidate, must be reproduced in copies that will be delivered to the members of the judging commission, when the session opens;

VII – each test will be evaluated individually by the members of the judging committee;

VIII – candidates who obtain a minimum score of seven from the majority of the members of the judging committee will be considered qualified for the second phase;

IX – the judging commission will present, in a public session, the grades received by the candidates.



5. At the end of the assessment of the written test, each candidate will receive a final grade from each examiner, observing the possible application of the differentiated score under the terms of item 11 of this Public Notice.

6. Only candidates approved in the first phase will participate in the second phase.

7. The judgment of the memorial, expressed by means of a global score, including questioning and evaluation, must reflect the candidate's merit.

Sole Paragraph – When judging the memorial, the commission will assess:

I – scientific, literary, philosophical or artistic production;

II – university didactic activity;

III – activities related to providing services to the community;

IV – professional or other activities, when applicable;

V - diplomas and other university dignities.

8. The didactic test will be public, with a minimum duration of forty and a maximum of sixty minutes, and will deal with the program of the aforementioned area of knowledge, under the terms of article 137 of the USP General Regulations.

I - the judging commission, based on the competition program, will organize a list of ten points, which the candidates will be aware of immediately before the point draw;

II – the candidate may propose the replacement of points, immediately after becoming aware of their statements, if they understand that they do not belong to the contest program, and the judging committee will decide, at the outset, on the origin of the allegation;

III – the test will take place 24 (twenty-four) hours after the drawing of the point, which will be at the candidate's free disposal, not being required to carry out other activities during this period;

IV – the candidate may use the didactic material he deems necessary;

V – if the number of candidates so requires, they will be divided into groups of a maximum of three, observing the order of registration, for the purposes of drawing lots and carrying out the test;

VI – when the 60th (sixtieth) minute of the test is reached, the Judging Committee must interrupt the candidate;

VII – if the candidate's presentation ends less than the 40th minute of the test, the examiners must give the candidate a zero score in the respective test.



9. At the end of the assessment of the tests, each candidate will receive a final score from each examiner, which will be the weighted average of the scores given by him in the two phases, observing the weights mentioned in item 3 and the possible application of the differentiated score under the terms of item 11 of this notice.

10. The test scores may vary from zero to ten, with approximation to the first decimal place.

11. Different scores will be applied to black, brown and indigenous candidates, under the terms specified herein.

§ 1 - The formula for calculating the differentiated score to be attributed to blacks, browns and indigenous people, in all phases of the public contest is:

$$PD = (MCA - MCPPI) / MCPPI$$

Where:

- PD is the differentiated score to be added to the scores, at each stage of the public tender, of all black, brown or indigenous candidates who have expressed interest in participating in the differentiated score.

- MCA is the average score of the broad competition among all candidates who scored, excluding the disqualified, that is, those who did not reach the minimum score referred to in items 4 and 13 of this Notice. "Broad competition" is understood as all candidates who scored and who did not declare themselves as black, brown or indigenous and those who, having declared themselves black, brown or indigenous, chose not to participate in the differentiated scoring.

- MCPPI is the average PPI competition score among all scoring candidates, excluding disqualified candidates.

§ 2 - The formula for applying the differentiated score to the final grades of blacks, browns and indigenous people in each phase of the public contest is:

$$NFCPPI = (1 + PD) * NSCPPI$$

Where:

- NFCPPI is the final score in the public tender phase, after applying the differentiated score and which will generate the candidate's classification in the public tender stage, limited to the maximum score provided for in the public notice. At the end of the public tender phase, the final grade will be considered the simple grade of the candidate.

- NSCPPI is the simple score of the beneficiary candidate, on which the differentiated score will be applied.

§ 3 - The calculations referred to in §§ 1 and 2 of this item must consider two decimal places and fractions greater than or equal to 0.5 (five tenths) must be rounded to the next whole number.



§ 4 - The differentiated score (PD) provided for in this item applies to all qualified beneficiaries, that is, those who have reached the minimum performance established in the bidding notice, considered, for this last purpose, the simple score.

§ 5 - In the absence of candidates benefiting from the differentiated score among the qualified ones, the differentiated score will not be calculated.

§ 6 - The differentiated score will not be applied when, in the formula for calculating the differentiated score (PD), the MCPPI (average score of the PPI competition) is greater than the MCA (average score of the broad competition).

12. The result of the competition will be proclaimed by the judging commission immediately after its conclusion, in a public session.

13. Candidates who obtain, from the majority of examiners, a minimum final grade of seven will be considered qualified.

14. The nomination of candidates will be made by an examiner, according to the grades given by him.

15. The candidate who obtains the highest number of nominations from the judging committee will be proposed for appointment.

16. The appointment of the nominated candidate will be subject to approval in a medical examination carried out by the State Department of Medical Expertise – DPME, pursuant to Article 47, VI, of [Law No. 10,261/68](#).

17. The appointment of the teacher approved in the competition, as well as the other resulting measures, will be governed by the terms of [Resolution No. 7271 of 2016](#).

18. RDIDP professors must maintain an exclusive employment relationship with USP, pursuant to article 197 of USP's General Regulations.

19. The contest will be valid immediately and only the candidate nominated for the position placed in the contest will be proposed for appointment.

20. The candidate will be called to take office by the Official State Gazette.

21. Further information, as well as the relevant rules for the competition, are available to interested parties at the Academic Division of the Institute of Energy and Environment of the University of São Paulo, at Avenida Prof. Luciano Gualberto, 1289, Building F, Rooms F14 and F21, phones 55-11-3091-2505 and 55-11-3091-2524, email address divisaoacademica@iee.usp.br, or on our [website](http://www.iee.usp.br) (<http://www.iee.usp.br>).



JUSTIFICATION SUBMITTED TO PUBLIC NOTICE CCD 001/2022:

The Institute of Energy and Environment (IEE), in partnership with the Superintendence of Environmental Management (SGA) and the CUASO City Hall, has been developing teaching and research activities for organic waste management at the University of São Paulo (USP). The main initiatives focus on adapting the management of these residues for the production of bioenergy through the concept of biorefineries, and the lifting of their technological, social and, mainly, regulatory, economic and industry organization barriers.

Since 2016, this line of research has been structured at the IEE through, initially, the implementation of the Biofuel Development Laboratory, with resources from the FAPESP technical reserve. The laboratory has infrastructure for analyzing the potential for biogas production from various organic wastes, validating and optimizing biodigestion parameters and studying different configurations of bioreactors. The laboratory analyzes allowed the planning of the experimental biogas plant from the co-digestion of organic waste and its implementation was carried out within the scope of the project “Integrated evaluation of distributed generation, demand management, monitoring, quality and performance of the network aiming at optimizing investments and tariff regulation in an underground network”.

The experimental biogas plant, built in partnership with the national company ER-BR with funds from the ENEL/ANEEL project, has two CSTR-type bioreactors and another digestate storage tank, all with a volume of 430 m³. Currently, it has the capacity to absorb 20 tons of organic waste per day and can produce 5 MWh of electricity per year at the base, and can be expanded up to twice, with frontier technologies, already available on the market. Thus, the operation of the experimental biogas plant will allow the definition and creation of solutions in the short, medium and long term for the valorization of organic waste through the production of biogas, which can be converted into electricity or biomethane for vehicle use or injection in pipelines; and biofertilizers, replacing imported inorganic fertilizers.

Teaching and research activities are supported through Research, Development and Innovation projects and undergraduate and graduate courses. The incorporation of a Professor with a focus on Culture and Extension activities, without excluding teaching and research activities, aims to expand the valuation of organic waste outside the university walls, dialoguing with relevant current issues such as the National Policy for Solid Waste, the Sustainable Development Goals, circular economy, climate change, ESG, among others. Within the context of mitigating global warming and climate change, the Professor will play an important role for USP, establishing a bridge with decision makers.

The experimental biogas plant was licensed by CETESB, which provides technical and environmental credibility for the developed system, thus enabling its dissemination in urban centers. The replication of this set allows us to visualize the following potential: 600 similar units could process all of the domestic organic waste in the city of São Paulo, around 7,000 for the country, providing an adequate destination for organic waste, the most problematic fraction of urban waste, realizing the concept of circular economy. The exposed boundary conditions open up several perspectives, in particular, the potential for



hosting activities that can be qualified and quantified in the extension curriculum for undergraduate courses stands out.

Given the above, the IEE gathers favorable conditions for the execution of University Extension activities of interest to society. In particular the strengthening of municipalities for the integrated and sustainable management of waste. Therefore, hiring a professor will allow for the advancement of research for technological improvement and consolidation, dissemination across undergraduate and graduate disciplines, extension courses, in addition to interaction with industry, companies and municipalities.