CALL FOR FACULTY POSITION

ANNOUNCEMENT 19/2025/CENA/DVACAD

APPLICATIONS ARE NOW OPEN FOR THE SELECTION PROCESS FOR A DOCTOR PROFESSOR POSITION AT THE CENTER OF NUCLEAR ENERGY IN AGRICULTURE, UNIVERSITY OF SÃO PAULO, BRAZIL.

The Director of the Center of Nuclear Energy in Agriculture, University of São Paulo (CENA/USP), Brazil, announces all interested persons that, per the decision reached at the ordinary session of the Deliberative Council held on June 10th, 2025, applications are open for 90 (ninety) days, from July 1st, 2025, at 8 a.m., to September 29th, 2025, at 5 p.m. (GMT -3), for the selection process of titles and examinations to fill one (1) position of Doctor Professor, position nº 1264044, in full-time dedication service.

The position requires commitment to teaching and ability to conduct independent research in the study area: "**Radiocarbon and Paleoenvironmental Reconstruction Studies**". The selection process will comprehend the following program:

- ^{14}C dating: fundamentals, sampling types and pretreatment of environmental interest samples (agronomic, archaeological, geological, etc.); synthesis of benzene from inorganic and organic samples; graphitization of samples for analysis via accelerator mass spectrometry (AMS).
- Detection of ^{14}C via low-background liquid scintillation spectrometry and AMS: fundamentals, corrections of the conventional ^{14}C age in relation to the isotopic fractionation of C in inorganic and organic samples and the reservoir effect in marine samples; calibrations of the conventional ^{14}C age.
- Determination of stable isotopes ($^{13}C/^{12}C$ and $^{15}N/^{14}N$, ‰) ratio of and elemental C and N by isotope ratio mass spectrometry: fundamentals and instrumentation; samples preparation from different substrates and technique use in paleoenvironmental reconstruction studies.
- Vegetation reconstruction with climatic inferences in the late Quaternary: mineral soils ^{14}C dating; atmospheric and plants CO_2 isotopic composition with C3, C4 and CAM photosynthetic cycles; of the $^{13}C/^{12}C$ ratio variation in soil profile; relevant environmental factors of the isotopic composition in the respective reservoirs; sample preparation and use of phytoliths; comparison of ^{14}C ages of the humin fraction with fragments of charcoal naturally buried in the soil profile; sample preparation and use of anthracology.
- Environmental and vegetation reconstruction with climatic inferences in the late Quaternary: ^{14}C dating of lake and marine sediments and organic soils; stratigraphic analyses (radiographies, granulometry, color and facies), isotopic and elemental analyses of C and N, geochemical analyses (XRF, etc.) and bioindicators (diatom algae, sponge spicules, phytoliths, pollen, etc.).
- Holocene relative sea level reconstruction using bioindicators: fundamentals, leveling and ^{14}C dating of vermetids and other *in situ* bio-constructive organisms.
- Climate and vegetation reconstruction in the late Quaternary using speleothems from caves in carbonate terrains: fundamentals, sample collection and preparation, dating methods and use of C and O stable isotopes.
- Alternative dating methods to ^{14}C in paleoenvironmental reconstruction studies in the late Quaternary: foundations and minimum and maximum chronological ranges and the advantages and disadvantages of

two common or promising methods; convergences and/or divergences of results with the ^{14}C method; examples based on national and/or international literature and discussions.

- Use of geospatial data to support paleoenvironmental interpretation: Geographic Information Systems (GIS) and remote sensing use for analysis of past landscapes; integration of spatial data with sedimentary records; paleogeographic modeling and environmental reconstruction

- The Anthropocene in sedimentary records and other substrates: concept of Anthropocene and its discussion in Geoscience; archaeological, dendrochronological and stratigraphic evidence of human activity; recent environmental changes and anthropogenic impacts in coastal and continental areas.

The selection process will be governed by Brazilian constitutional principles, notably that of impersonality, as well as by the provisions of the Statute and General Rules of the University of São Paulo and the Internal Rules of the Center of Nuclear Energy in Agriculture.

The selection process will be carried out according to objective criteria, in two stages, through the attribution of scores in exams, divided as follows:

1st stage (eliminatory) - written exam (weight 1)
2nd stage:
I) evaluation of the Memorial with public proof of argumentation (weight 4)
II) didactic exam (weight 2)
III) presentation of the research project and respective arguments (weight 3)

The exams can be performed in Portuguese or English.

The call for applicants to take the exams will be published in the Official State Gazette. Candidates who present themselves after the established time will not be able to take the exams.

The official announcement in Portuguese is available at https://uspdigital.usp.br/gr/admissao where registration applications must be made during the period stated above.