

UNIVERSITY OF SÃO PAULO
INSTITUTE PHYSICS

Academic Assistance

EXAMINATION FOR THE POSITION OF PROFESSOR WITH A DOCTORAL DEGREE – 1 PHASE

IF- 22, 2017 PUBLIC NOTICE

OPENING OF THE EXAMINATION REGISTRATION OF GRADES AND EXAMINATIONS FOR THE POSITION OF PROFESSOR WITH A DOCTORAL DEGREE AT THE NUCLEAR PHYSICS DEPARTMENT AT THE INSTITUTE OF PHYSICS, UNIVERSITY OF SÃO PAULO

The Director of the Institute Physics, University of São Paulo publicly announces, to all concerned, that, according to the decisions made at the 532nd Ordinary Session of the Committee, held on 9/21/2017, the examination enrollments of positions and examinations for the position of Professor with a Doctoral Degree, Reference MS-3, RDIDP (INTEGRAL SCHEME DEDICATION TO TEACHING AND RESEARCH), position No. 1234501, will be open for a period of 90 days, **from November 10th, 2017, at 12:01 a.m. to February 7th, 2018, at 11:59 p.m. (according to Brasilia time)**, for a salary of R\$ 10.670,76 per month at the **Nuclear Physics Department, in the area of "Instrumentation for Relativistic Heavy Ion Physics"**, under the Decree GR 6937, art. 125, paragraph 1, of USP's General Rules, and of their program, as follows:

4302311 - Quantum Physics:

1. Evidence for an atomic description of matter.
2. Experimental evidence for the quantization of electromagnetic radiation: the problem of black body, specific heat of solids, photoelectric effect, Compton effect, production and annihilation of electron-positron pair.
3. The Rutherford model and the problem of the stability of atoms, the Bohr model.
4. The wave-particle duality in the case of electromagnetic radiation. Diffraction of x-rays and electrons. The de Broglie hypothesis and the wave-particle duality.
5. Postulates of wave quantum mechanics.
6. Wave packets, group velocity and uncertainty relations.
7. The time-dependent one-dimensional Schroedinger equation. Discussion of some stationary solutions of Schroedinger equation with one dimension constant potentials.
8. The Schroedinger equation in three dimensions. Particle in cubic box. Degeneracy.
9. The Schroedinger equation for central potentials and the radial solution for hydrogen atom in quantum mechanics.

4300360 - Experimental Techniques in Elementary Particle Physics:

1. Analog and digital electronics for fast signal processing.
2. Systems of event triggers.
3. Basic techniques of radiation detection, gas detectors, scintillators and semi-conductors. Calorimetry in particle physics, ionizing-particle track measurements.
4. Measurements of cosmic rays.

The examination will be governed by the provisions of the Bylaws, the General Rules of the University of São Paulo, and by the Rules of the Institute Physics.

1. Registrations will be held exclusively via the link <https://uspdigital.usp.br/gr/admissao> during the period stated above. Applicants must submit the application addressed to the Director of the Institute Physics, containing their personal data and the department for which they are applying, accompanied by the following documents:

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I - detailed Curriculum Vitae in digital format, substantiating published papers, the activities pertaining to the application, and other information which enables the assessment of their merits;

II - research project, compatible with the program;

III - proof that the applicant carries the title of Doctor awarded by USP, by an institution recognized by USP, or with national validity;

IV - proof of discharge from military service, for male applicants;

V - voter identification card;

VI - proof of vote in the last election (both turns), proof of payment of the respective fine or proper justification.

First paragraph: Evidential elements of the Curriculum Vitae as described in item I, such as scale models, works of art or other materials that cannot be scanned must be submitted by the last business day before the examination's starting date.

Second paragraph: A professor in office at USP is exempted from the requirements mentioned in items IV, V and VI, provided that these requirements were met during the initial contract.

Third paragraph: Foreign applicants will be exempted from the requirements of items IV, V and VI. However, they must be able to prove their legal situation in Brazil.

Fourth paragraph: An approved foreign applicant who is nominated to fill the position may only take office upon submission of a temporary or permanent visa, which grants the holder permission to exercise remunerated activity in Brazil.

Fifth paragraph: Upon registration, applicants with special needs must submit a request for the necessary conditions to be provided for the examinations.

Sixth paragraph: Upon registration, the foreign applicants may submit a written request to take the tests in English, pursuant to paragraph 8 of art.135 of the USP's General Rules. The contents of the examinations conducted in English and Portuguese will be identical.

2. Registrations will be judged by the Committee of the Physics Institute, in its formal aspect, and its decisions will be published by public notice.

Sole paragraph. The examination will be held within thirty to one hundred and twenty days after the date of publication in the State Official Gazette of the acceptance of the registration, in accordance with art.134, sole paragraph, of the USP's General Rules.

3. Examinations will contain:

I - judgment of the Curriculum Vitae with public argumentation examination - weight 4;

II - didactic examination – weight 3;

III - presentation of the research project and its argumentation - weight 3.

First paragraph: The list of applicants who will take the examinations will be published in the State Official Gazette.

Second paragraph: Applicants who arrive late will not be allowed to take the examinations.

4. The judgment of the Curriculum Vitae, expressed via global grades, including argumentation and evaluation, must reflect the merit of the applicant.

Sole paragraph - During the judgment of the Curriculum Vitae, the Committee must consider: I - scientific, literary, philosophical, or artistic production; II - university teaching activity; III - activities related to the provision of services to the community; IV - professional or other activities, if applicable; V - degrees and university honors.

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5. The Didactic Examination will be public, with a minimum duration of forty minutes and a maximum duration of sixty minutes, and will focus on the program of the field of knowledge mentioned above, pursuant to art.137 of USP's General Rules.

I - Based on the examination's program, the Examining Committee will prepare a list of ten topics, of which the applicants will be made aware, immediately preceding the drawing of the topic.

II - Applicants may propose the replacement of the topics, immediately after becoming aware of them, if they understand that these points do not belong to the examination's program. The Examining Committee will then make the decision regarding the merits of the claim.

III - The drawing of the topic will be made twenty-four hours prior to the didactic examination, and the applicant will be forbidden to waive this deadline.

IV - Applicants will be allowed use the didactic material that they deem necessary.

V - Depending on the number of applicants, they may be divided into groups of up to three, according to the order of registration, for the drawing and for taking of the examination.

6. The presentation of the Research Project will be made in the form of dialogue, not to exceed sixty (60) minutes to all the examiners and sixty (60) minutes for the applicant.

I - During the evaluation of the Research Project, its suitability to the research lines of the Unit must be taken in consideration, as well as its framing in the area of operation of the department and its originality and viability in light of the existing infrastructure in the Unit.

7. At the end of the exam, each applicant will have a final grade given by each examiner, which will be the average of the grades given by the examiner, subject to the weights set out in item 3.

8. The examination grades may range from zero to ten, with an accuracy up to the first decimal place.

9. The result of the examination will be publicly announced by the Examination Committee, immediately after its completion, in a public session.

10. Applicants who achieve, from the majority of examiners, a minimum final grade of seven, will be considered qualified.

11. The nomination of the applicants will be made by the examiner, according to the grades given.

12. The applicant receiving the most nominations by the Examination Committee will be proposed for appointment.

13. The inauguration of the nominee shall be subject to approval after a medical examination conducted by the State's Department of Medical Skills (DPME), pursuant to article 47, VI, of Law No.10.261/68.

14. The nomination of the professor approved in the examination as well as the other arrangements will be ruled pursuant to the Resolution 7271 of 2016.

15. The joining of the faculty in the Full Dedication Scheme to Teaching and Research (RDIDP) implies an exclusive relationship with USP, under ARTICLE 197 of the USP's General Rules.

16. The examination will be effective immediately, and only the applicants appointed to the position under application will be nominated.

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17. The nominee will be summoned to inauguration by the State Official Gazette.

Further information, as well as the relevant rules for the examination are available to those interested at the Academic Assistance Department of Institute Physics, University of São Paulo, at the address above.

São Paulo, October 26th, 2017.