

UNIVERSITY OF SAO PAULO
FACULTY OF PHILOSOPHY, SCIENCES AND LETTERS OF RIBEIRÃO
PRETO

NOTICE OF THE SELECTION EXAMINATION OF THE GRADUATE PROGRAM
IN PHYSICS APPLIED TO MEDICINE AND BIOLOGY – MASTER AND
DOCTORATE FOR ENTRY IN THE FIRST HALF OF 2024

Registration for 20 vacancies for the course will be open at the Graduate Service of the Faculty of Philosophy, Sciences and Letters of Ribeirão Preto (FFCLRP), at Avenida Bandeirantes, 3900, (Rua Clóvis Vieira, Casa 37). Master's degree and 15 vacancies for the Doctorate course within the Graduate Program in **PHYSICS APPLIED TO MEDICINE AND BIOLOGY (FAMB)** for admission in continuous flow from **February to June 2024**. Registrations must be carried out from Jan/02/2024 to Feb/02/2024, for the exam to be carried out from Feb/19/2024 to Feb/23/2024 and registrations made until the day Apr/12/2024 to take the exam from 22 to Apr/26/2023 (calendar published on the page <https://sites.usp.br/famb/acontece/>).

The Program makes it clear that approval in the selection process and subsequent enrollment is not linked to the automatic granting of a scholarship of any kind. Candidates are requested to inform their advisor or Program secretary in advance about the availability of scholarships.

Enrollment in the Selection Process:

The candidate must send the documentation via the internet, with all documents in PDF (each document in a separate file) to (posgraduacao@listas.ffclrp.usp.br), with the title: "Enrollment (ME or FAMB course)"

Mandatory documentation required from the candidate in both modes (accepted languages: Portuguese, English and Spanish):

Master's degree:

- application for registration (**available on the website: www.ffclrp.usp.br** →**Postgraduate Registration** →**Forms** →**- Postgraduate**);

- copy of the Birth or Marriage Certificate;
copy of Identity Card - RG (driver's license is not accepted for academic purposes);
- copy of CPF;
- copy of the Voter Title;
- copy of the Reservist Certificate (male candidates);
- copy of passport for foreign applicants;
- front and back copy of the higher education diploma or statement from the institution that the candidate has already completed a higher education degree in Physics, Biology, Medicine, Engineering, Chemistry, Mathematics, Computer Science or similar courses for the Applied Physics Area to Medicine and Biology or, furthermore, statement from the higher education institution that the candidate is in the last semester of graduation;
- copy of academic record of higher education;
- letter addressed to CCP about the need or not for an institutional scholarship to carry out the course;
- "curriculum vitae" (preferably Lattes);

Doctorate degree:

- application for registration (**available on the website: www.ffclrp.usp.br** →**Postgraduate Registration** →**Forms** →**- Postgraduate**);

- copy of the Birth or Marriage Certificate;
- copy of Identity Card – RG (driver's license is not accepted for academic purposes);
- copy of CPF;
- copy of the Voter Title;

- copy of the Reservist Certificate (male candidates);
- copy of passport for foreign applicants;
- front and back copy of the higher education diploma in Physics, Biology, Medicine, Engineering, Chemistry, Mathematics, Computer Science or similar courses for the Area of Physics Applied to Medicine and Biology.
- copy of academic record of higher education;
- front and back copy of the master's diploma or Certificate of Completion, containing the date of approval, or statement from the institution where the master's course was taken stating that the defense of the dissertation is scheduled and containing the date on which this will occur (which must be prior to the registration date in case of approval in the selection process);
- copy of the Master's transcript;
- Advisor's Term of Commitment;
- letter addressed to CCP about the need or not for an institutional scholarship to carry out the course;
- "curriculum vitae" (preferably Lattes);
- a copy of the research project, developed together with the future advisor (duly accredited in the program);
- a copy of the master's thesis (can be hardcover, spiral bound or electronic).

Direct Doctorate : The candidate who does not have a Master's degree and who wants to directly enter the Doctorate level must register by means of a written request, to CCP, accompanied by a justification documented by the future advisor and also meet the requirements mentioned above for the doctorate , exception made to the diploma or certificate of completion of the master's degree.

Candidates who enroll with incomplete documentation, or who do not meet the Program's enrollment requirements, will have their enrollment rejected by the Program Coordinating Commission (CCP).

Vacancies will be conditioned to the acceptance of candidates by one of the duly accredited advisors, obeying the criteria established by the Program, regarding the maximum number of students per advisor.

Evidence: Candidates, whose applications were accepted by the CCP, will carry out the selection process in two phases. Each phase will be assigned a grade from 0 (zero) to 10 (ten). The first phase is eliminatory and will consist of a written test. The candidate who obtains a score lower than 6.0 (six) in the first phase will be eliminated from the selection process.

For the Masters, the second phase will consist of: analysis of the "curriculum vitae" and interview with the candidate. The grade for the second phase will be the arithmetic mean of the "curriculum vitae" analysis and the interview grade. The candidate who obtains a score lower than 6.0 (six) in the second phase will be eliminated from the selection process.

For the Doctorate and Direct Doctorate, the second phase will consist of: analysis of the "curriculum vitae", interview with the candidate and analysis of the project. The grade for the second phase will be the arithmetic mean of the three previous items. The candidate who obtains a score lower than 6.0 (six) in the second phase will be eliminated from the selection process.

The final grade obtained by the candidate is the arithmetic average of the grades from the first and second phase. The final grade will be used for classification and approval purposes, and the candidate with a final average of less than 6 (six) will be rejected.

Candidates who have already taken it in previous selection processes of the FAMB Program will be exempt from taking the written test, in a retroactive period corresponding to three years. If the candidate chooses to take the written test again, only the score of the last written test will be considered.

Alternatively, the candidate, before taking the written test, may choose to use his/her result in the EUF test – Unified Postgraduate Examination in Physics

(<http://www.ifsc.usp.br/~posgraduacao/inf>) as a written test score. /[/exameUnificado2.php](#)). In this case, the candidate's EUF test score will be linearly transformed considering 6 (six) points as the average score for that exam and 10 (ten) points as the maximum score ; this way we have $NotaFAMB = 6 + 4 \cdot (NotaEUF - MeanEUF) / (10 - MeanEUF)$.

FAMB Written Test: The FAMB Written Test will have 4 (four) hours long and will have a total of 12 questions distributed as follows: 4 questions of Physics, 4 questions of Biological Sciences/Biophysics and 4 questions of Mathematics/Computer. The candidate must solve 5 questions freely chosen from the set of 12 available questions. The content for preparing the candidate for the written test can be found in the bibliography suggested below:

Physics : Halliday, D. and Resnick, R., Fundamentals of Physics, 2nd ^{Edition}: Vol. 1 – Mechanics; Vol. 2 – Gravitation, Waves and Thermodynamics; Vol. 3 – Electromagnetism; Vol. 4 – Optics and Modern Physics (chaps. 38 to 41), Technical and Scientific Books Publisher, Rio de Janeiro, 1993. Tipler, P., Physics, 4th Edition: ^{Vol.} 1 – Mechanics, Oscillations and Waves, Thermodynamics; Vol. 2 – Electricity and Magnetism, Optics, Technical and Scientific Books Publisher, Rio de Janeiro, 1999. Keller, FJ, Gettys, WE and Skove, MJ, Physics: Vol. 1 and Vol. 2 (chaps. 20 to 37), Makron Books do Brasil Editora Ltda, São Paulo, 1999.

Biological Sciences/Biophysics : David L. Nelson, Michael M. Cox, Lehninger Principles of Biochemistry 4a. edition, São Paulo: Sarvier, 2006. Bruce Alberts [et al.], Molecular Biology of the Cell, 4th edition, Porto Alegre: Artmed, 2008. Harvey Lodish [et al.], Cellular and Molecular Biology, 5th edition, Porto Alegre : Artmed, 2005. Edminister, JA, Biophysics, Sarvier, 1998. Okuno, E., Caldas, IL and Chow, C., Physics for Biological and Biomedical Sciences, Harbra Publishers, São Paulo, 1986. JE Rodas Duran, Biophysics: Fundamentals and Applications, MAKRON Books, 2005, 2nd edition.

Mathematics/Computing : Shenk, A., Calculus and Analytical Geometry, Vols. 1 and 2, Editora Campus, Rio de Janeiro, 1984. Leithold, L. Calculus with Analytical Geometry, 2nd ^{Edition}, Vols. 1 and 2, Harper & Row do Brasil, São Paulo, 1982. Forbellone, Andre Luiz Villar and Eberspacher, Henri Frederico, Logic of programming, second edition. Makron Books.

The written test may be taken in Portuguese or English upon prior request by the candidate when registering for the selection process.

The candidate may request access to the correction of the written test and requests for revision of the correction will be accepted until midday of the business day following the publication of the result of the written test. Such review request must be submitted in the form of a letter sent to the Examining Committee of the Selection Process. The letter must clearly indicate which (or which) issue (or issues) should be reviewed by the committee and the arguments justifying the request for review. The analysis of the request for revision of the correction will be made by the Examining Committee of the Selection Process. If the review request is accepted and the candidate has achieved the minimum required score, the next stage of the selection process for this candidate will proceed on the same day of the publication of the result of the review request.

Research Project : The Research Project must be prepared by the candidate, with the adviser's knowledge, and delivered to the Program Coordination. The research project must be presented on A4 paper, with "Times New Roman" 12 pt font, with 1.5 cm spacing and 2.5 cm margins and a maximum of 10 pages. It should contain the following topics: Summary, Introduction (with theoretical framework) and Justification, Objectives, Methodology, Execution Schedule and Bibliography: The Examining Committee will evaluate the project by attributing up to 2.0 points to each of the following items: (a) the originality and relevance of the research topic, (b) the objectives and whether these are consistent with at least one of the Program's lines of research, (c) feasibility of carrying out the research within the period required by the Program, (d) whether the bibliography is

consistent and up-to-date and (and) set. The final project grade will be the sum of the points assigned to each item.

" **Curriculum Vitae** ": The analysis of "curriculum vitae" will take into account the following items: (a) Undergraduate training (up to 3.0 points); (b) Publication of scientific articles in journals (up to 1.5 points); (c) Scientific initiation (up to 1.0 point); (d) Participation in scientific events (up to 0.5 point); (e) Internships (up to 0.5 point); (f) Subject monitoring (up to 0.5 points) and (g) General student performance, at the committee's discretion (up to 3.0 points).

Interview : During the interview, the Examining Committee will analyze the data on the "curriculum vitae", with any necessary clarifications, and will also analyze details of the research project, in the case of a doctorate. It will be up to the Examining Committee to assign a score (from 0 to 10) to the interview.

Classification : The classification will take into account the final grade obtained by the candidate in the selection process.

Scholarships: The distribution of eventual scholarships will be carried out by CCP in internal analysis considering all the students of the program.

Selection Examination : The Selection Examination will be carried out according to the dates foreseen in this announcement and the demand of registered candidates . Applicants will be duly informed by the program about the date and time of the tests through their email addresses. This information will also always be available on the Faculty's website (www.ffclrp.usp.br → Postgraduate → Programs → Physics Applied to Medicine and Biology), on the Program notice board at the Department of Physics, Block 3 or via link [https:// sites.usp.br/famb/pb/ingresso/](https://sites.usp.br/famb/pb/ingresso/)

The documentation delivered upon registration will remain at the Unit's Postgraduate Service for 60 (sixty) days, counting from the final result. After the deadline above, and if there is no manifestation on the part of the candidates registered and not approved for withdrawal, the documentation will be discarded for recycling.

Non-face-to-face test: for candidates from outside the state of São Paulo, there is the possibility of taking a distance test. For this purpose, the candidate must take the written test in the presence of a professor with a doctorate from a recognized higher education institution, who will be responsible for administering the test. The professor must be indicated by the candidate when registering in the selection process and have an email address of the institution to which he/she is linked. The teacher will apply the written test and, within two hours after its end, must send a scanned copy of the written test to the Selection Process Commission by e-mail. In the case of a non-face-to-face test and having been approved in the first phase, the interview will be conducted remotely by the Examining Committee following the same schedule as the face-to-face case.

Enrollment: After publication of the result, enrollment must be carried out within the term of validity of this public notice, in person or by proxy at the Postgraduate Service at Rua Clóvis Vieira, house 37, USP Campus in Ribeirão Preto, de Monday to Friday, from 8:00 am to 11:30 am and from 1:30 pm to 4:30 pm.

Mandatory documentation required from the candidate in both modes (accepted languages: Portuguese, English and Spanish):

- 1) Form: "Master's Entrants or Doctorate Entrants" (available on the website: www.ffclrp.usp.br → Postgraduate → Forms);
- 2) A 3X4 photo.
- 3) The candidates what, at the act from the enrollment no there were concluded The graduation, should to present, at the act from the registration, copy of University Degree duly registered or certificate what pasted degree.
- 4) Candidates for the master's degree must also present a copy of the research project developed jointly with the supervisor at the Program Secretariat, within a maximum of 90 days after enrollment.

Proficiency:

In English: The accepted exams and the respective minimum grades are:

- (a) TEAP (Test of English for Academic Purposes) – minimum score of 65;
- (b) WAP (Writing for Academic Purposes) – minimum score of 65;
- (c) PEICE (Proficiency Exam for International Communication in English) – minimum score of 65;
- (d) TOEFL iBT (Test of English as a Foreign Language – Internet-based Test) – minimum score of 70;
- (e) IELTS (International English Language Testing System) – minimum score of 4.5;
- (f) MTELP (Michigan Test of English Language Proficiency) – minimum score of 7.0.

Foreign students from countries whose official language is English will be exempt from this exam as long as they demonstrate proof.

The student must present his/her certificate of proficiency in English within a maximum period of 6 (six) months after the start of the term, under penalty of dismissal from the program.

In Portuguese: Students from countries whose official language is not Portuguese must take a proficiency test in Portuguese, which will be prepared by the CCP itself and applied upon registration by the interested party at the program secretariat by the 10th of each month.