

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

NOTICE OF SELECTION EXAMINATION FOR THE GRADUATE PROGRAM IN
PHYSICS APPLIED TO MEDICINE AND BIOLOGY – MASTER'S AND
DOCTORATE – ENTRY IN THE FIRST HALF OF 2025

Registration for 20 vacancies in the Master's course and 15 vacancies in the Doctorate course within the Graduate Program in Physics Applied to Medicine and Biology (FAMB) will be open at the Graduate Service of the Faculty of Philosophy, Sciences and Letters of Ribeirão Preto (FFCLRP), located at Avenida Bandeirantes, 3900 (Rua Clóvis Vieira, Casa 37). Admissions will occur on a continuous flow basis from February to June 2025. Registrations must be completed between January 6, 2025, and January 26, 2025, for the exam to take place from February 3, 2025, to February 7, 2025. Additionally, registrations up to April 14, 2025, will be for the exam scheduled between April 22, 2025, and April 25, 2025 (calendar published on the program's website at <https://sites.usp.br/famb/acontece/>).

The Program emphasizes that approval in the selection process and subsequent enrollment do not guarantee the automatic granting of a scholarship of any kind. Candidates are strongly encouraged to consult their advisor or the Program secretary in advance regarding the availability of scholarships.

Enrollment in the Selection Process:

Candidates must submit their documentation online, with all documents in PDF format (each document saved as a separate file). The files should be sent to posgraduacao@listas.ffclrp.usp.br with the subject line: "Enrollment (Master's or Doctorate - FAMB Program)".

The following mandatory documentation is required for both modes of application (accepted languages: Portuguese, English, or 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 Registration Card;
- copy of the Military Reservist Certificate (male candidates);
- copy of passport for foreign applicants;
- front and back copy of the higher education diploma, or statement from the institution confirming that the candidate has completed a higher education degree in Physics, Biology, Medicine, Engineering, Chemistry, Mathematics, Computer Science, or similar courses relevant to the field of Physics Applied to Medicine and Biology; alternatively, a statement from the higher education institution confirming that the candidate is in the final semester of their undergraduate program.
- copy of the academic transcript 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 Registration Card;
- copy of the Military 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 the academic transcript of higher education;
- front and back copy of the higher education diploma, or statement from the institution confirming that the candidate has completed a higher education degree in Physics, Biology, Medicine, Engineering, Chemistry, Mathematics, Computer Science, or similar courses relevant to the to the field of Physics Applied to Medicine and Biology; alternatively, a statement from the higher education institution confirming that the candidate is in the final semester of their undergraduate program.
- 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);
- copy of the project proposal, developed in collaboration with the future advisor (who must be duly accredited in the program);
- copy of the master's thesis (can be hardcover, spiral bound, or electronic).

Direct Doctorate: Candidates without a Master's degree who wish to enter the Doctorate program directly must submit a written request to the CCP, accompanied by a justification from the future advisor. They must also meet the requirements for the Doctorate program, with the exception of the Master's degree diploma or certificate of completion. Candidates who submit incomplete documentation or do not meet the Program's enrollment requirements will have their application rejected by the Program Coordinating Commission (CCP). Vacancies are contingent upon the acceptance of candidates by one of the duly accredited advisors, subject to the Program's established criteria regarding the maximum number of students per advisor.

Selections Process: Candidates whose applications are accepted by the CCP will undergo the selection process in two phases. Each phase will be assigned a grade from 0 to 10. Phase 1 is eliminatory and will consist of a written exam. Candidates who score below 6.0 in this phase will be eliminated from the selection process.

For the Master's program, Phase 2 will consist of the analysis of the curriculum vitae and an interview with the candidate. The final grade for this phase will be the average of the curriculum vitae analysis and the interview score. Candidates who score below 6.0 in this phase will be eliminated from the selection process.

For the Doctorate and Direct Doctorate, Phase 2 will include the analysis of the curriculum vitae, an interview with the candidate, and an analysis of the project proposal. The final grade for this phase will be the average of the three items. Candidates who score below 6.0 in this phase will be eliminated from the selection process.

The final grade for each candidate will be the average of the scores from both the first and second phases. This final grade will be used for classification and approval purposes. A candidate with a final average score below 6.0 will be disqualified.

Candidates who have participated in previous selection processes for the FAMB Program will be exempt from taking the written test, provided the exemption falls within a retroactive period of three years. If a candidate chooses to retake the written test, only the score from the most recent test will be considered.

Alternatively, before taking the written exam, the candidate may choose to use their result from the EUF (Exame Unificado de Pós-Graduações em Física) as their written exam score. In this case, the candidate's EUF test score will be linearly transformed, with 6 (six) points as the average score for that exam and 10 (ten) points as the maximum score. The transformation formula is as follows: $Nota_{FAMB} = 6 + 4 \cdot (Nota_{EUF} - Mean_{EUF}) / (10 - Mean_{EUF})$.

FAMB Written Exam: The FAMB Written Exam will last for four hours and consist of a total of 12 questions, divided as follows: 4 questions in Physics, 4 questions in Biological Sciences/Biophysics, and 4 questions in Mathematics/Computer Science. The candidate must answer 5 questions, which can be freely selected from the 12 available questions. The content to prepare for the written exam is outlined in the suggested bibliography 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 exam can be taken in either Portuguese or English, depending on the candidate's preference, which must be indicated during registration for the selection process.

The candidate may request a review of the written test correction. Requests for review will be accepted until midday of the business day following the publication of the written exam results. The request must be submitted in the form of a letter to the Examining Committee of the Selection Process, clearly specifying the issue(s) to be reviewed and providing justification for the review. The Examining Committee will evaluate the request. If the review is granted and the candidate meets the minimum required score, the candidate will proceed to the next stage of the selection process on the same day the review result is published.

Research Project Proposal: The Research Project Proposal must be prepared by the candidate, with the advisor's approval, and submitted to the Program Coordination. The project should be presented on A4 paper, using "Times New Roman" 12 pt font, with 1.5 cm line spacing, 2.5 cm margins, and a maximum of 10 pages. It should include the following sections: Summary, Introduction (including the theoretical framework) and Justification, Objectives, Methodology, Execution Schedule, and Bibliography. The Examining Committee will evaluate the project by assigning up to 2.0 points for each of the following

criteria: the originality and relevance of the research topic, the clarity of the objectives and their alignment with at least one of the Program's research areas, the feasibility of carrying out the research within the timeframe required by the Program, and the consistency and recency and appropriateness of the bibliography. The final grade for the project will be the sum of the points awarded to each criterion.

Curriculum Vitae: The analysis of the 'curriculum vitae' will consider the following items: (a) Undergraduate education (up to 3.0 points); (b) Publication of scientific papers in journals (up to 1.5 points); (c) Scientific research experience (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 point); and (g) Overall student performance, at the committee's discretion (up to 3.0 points).

Interview: During the interview, the Examining Committee will review the candidate's "curriculum vitae," requesting any necessary clarifications. Additionally, for doctorate candidates, the committee will analyze the details of the research project proposal. The committee will assign a score (ranging from 0 to 10) based on the interview performance.

Classification: The classification will be based on the final grade obtained by the candidate in the selection process.

Scholarships: The distribution of any available scholarships will be determined by the CCP through an internal analysis, considering all students in the program.

Selection Examination: The Selection Examination will be conducted according to the dates outlined in this announcement and based on the number of registered candidates. Applicants will be notified by the program about the date and time of the tests via their email addresses. This information will also be continuously 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/>

The documentation submitted during registration will be kept at the Unit's Postgraduate Service for 60 (sixty) days, starting from the date of the final result. After this period, if there is no request for withdrawal by the candidates who were not approved, the documentation will be discarded for recycling.

Remote test: For candidates residing outside the state of São Paulo, there is the option to take the written exam remotely. In this case, the candidate must take the exam 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 nominated by the candidate when registering for the selection process and must have an institutional email address. The professor will administer the written exam and must send a scanned copy of the completed exam to the Selection Process Commission by email within two hours of its completion. In the case of a remote test, and if the candidate is approved in the first phase, the interview will be conducted remotely by the Examining Committee, following the same schedule as for candidates attending in person.

Enrollment: After the publication of the results, enrollment must be completed within the validity period of this public notice, either in person or by proxy, at the Postgraduate Service located at Rua Clóvis Vieira, house 37, USP Campus in Ribeirão Preto. Enrollment hours are 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) Candidates who have not completed their undergraduate degree at the time of registration must provide, at the time of enrollment, a copy of the officially registered diploma or a certificate confirming the award of the degree.

4) Master's degree candidates must also submit a copy of the project proposal developed in collaboration with their supervisor to the Program Secretariat within 90 days of 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.

Students from countries where Portuguese is not the official language are required to take a Portuguese proficiency test. This test will be prepared by the CCP and administered during registration at the program secretariat, no later than the 10th of each month.