NATIONAL OBSERVATORY
GRADUATE PROGRAM IN GEOPHYSICS
SELECTION NOTICE FOR ADMISSION TO MASTER'S AND DOCTORATE PROGRAMS
SECOND HALF OF 2025

The Graduate Program in Geophysics of the National Observatory (PPGG-ON) makes public the regulations and dates of the selection process for admission to the Master's and Doctorate courses in Geophysics in the **second** semester of 2025. **Visit the Program's page to learn about its structure, faculty, disciplines, regulations and other information**[1].

1. Registrations

- Registration for the selection process will be open from **15/Apr/2025 to 27/Jun/2025.**
- The selection process will be conducted by the Graduate Committee in Geophysics (CPGG).
- People holding a Master's degree in Geophysics, Geology, Physics, Mathematics or related areas, with a degree obtained in Brazil or abroad (official revalidation of the degree is not required) may apply for the **Doctorate selection process** (section 2) .
- ...
- Applications submitted without submitting documentation or which submit irregular documentation as per sections 2.1 or 3.1 will be rejected.

2. DOCTORATE

2.1. Registration for the selection process for a DOCTORATE

Registration for the selection process for the DOCTORATE at PPGG-ON requires registration with a valid email address, full name and password at:

https://sipos.on.br/modulos/geofisica/inscricaoonline/

[1] https://www.gov.br/observatorio/pt-br/assuntos/programas-academicos/pos-graduacao-em-geofisica

After registering, you must log in with your chosen email address and password. You must then read the information provided and fill out each of the groups of items on the registration form:

(**2.1a) Basic Data – Personal Data & Contact:** Intended course (PhD in this case), full name, date of birth, marital status, place of birth, nationality, passport (for foreigners), CPF (numbers only), RG (numbers only), issuing body, link (URL) to the curriculum vitae, e-mail (the e-mail provided cannot be changed later), telephone(s) (landline and cell phone, preferably) and residential address with complement, neighborhood, zip code, city, state and country;

(2.1b) Professional Data – Activities performed: If you have an employment relationship, provide professional data;

(2.1c) Academic Background – Courses & Institutions: Provide information on prior training;

(2.1d) Areas of Interest – Research Lines & Supervision: Indicate a PPGG-ON professor [2]who will act as the main research supervisor;

(2.1e) Scholarships – Funding & Time: Inform whether you are applying for a scholarship and whether you will be able to study without a scholarship if your final classification is higher than the number of scholarships available;

(2.1f) Attachments – Upload documents: Upload *your* master's degree diploma (or certificate of completion), master's degree transcript (see Note 2.1.1) , 3x4 photo (in *.jpeg format), curriculum vitae (preferably CV Lattes), identity card (RG or passport), CPF, English proficiency certificate (optional). With the exception of the photo, the files must be in PDF format. No file should exceed the size of 5MB. Foreigners must upload *their* passport;

(2.1g) In the registration form, Attachments – Upload documents: Upload a doctoral research project, developed in conjunction with a permanent professor of PPGG-ON [2] who will act as the main supervisor of the research, according to the indication made in item (*2.1* d);

(2.1h) Declaration (in free format) sent directly to the email secpgg@on.br by the professor indicated in item (2.1d) and who collaborated in the preparation of the research project mentioned in item (2.1g) stating that he/she accepts to act as the main guide of the research;

(2.1i) Letters of recommendation sent directly to the e-mail secpgg@on.br by two people who work as professors in undergraduate and/or graduate courses in Geophysics, Geology, Physics, Mathematics or related areas (see Note 2.1.2) . These letters must be duly signed, dated and follow the format available at:

https://www.gov.br/observatorio/pt-br/assuntos/programas-academicos/pos-graduacao-em-geofisica/documentos/selecao/carta_recomendacao_doutorado.pdf

[2]https://www.gov.br/observatorio/pt-br/assuntos/programas-academicos/pos-graduacao-em-geofisica/corpo-docente

CPGG will be responsible for evaluating all applications in accordance with current procedures. Applications submitted without submitting the documentation described in items 2.1ai or that present irregular documentation will be rejected. All other applications will be approved. Only individuals whose applications have been approved by CPGG will be eligible to participate in the oral presentation of the doctoral research project.

Note 2.1.1: The “declaration of completion” and “transcript” documents must clearly indicate that the candidate has been approved in his/her master’s defense. Candidates whose master’s defense has not been completed by the deadline for registration may apply for the selection process. In this case, the “declaration of completion” and “transcript” documents of the master’s degree must be replaced, respectively, by:

a) An official statement stating that the candidate has completed all academic activities necessary to complete the course and the date on which the master's degree defense will take place and
b) The partial master's degree history.

The documents described in items 2.1.1a and 2.1.1b will be evaluated by the PPGG-ON postgraduate committee, which will decide whether the application will be approved or not. Enrollment in the PPGG-ON will only be carried out after the submission of the diploma (or declaration of completion) and the final master's degree transcript.

Note 2.1.2: Letters of recommendation (item 2.1i) received after the application submission deadline will not be considered and may result in disqualification .

2.2. Selection process for the DOCTORATE

The selection process for the DOCTORATE at PPGG-ON is exclusive to people who have their applications approved in accordance with section 2.1 and will consist of two stages:

2.2.1. Stage 1 (eliminatory): Oral defense and argument of the research project

Individuals whose applications are approved by CPGG in accordance with section 2.1 may defend their research project (item 2.1g) and then be questioned by a panel of experts. CPGG will be responsible for defining the dates and panels for the defenses and questions of all research projects. This stage will be carried out in **person or remotely** , according to the instructions to be sent by email by CPGG. Approval at this stage of the selection process is a necessary condition for enrolling in the doctorate program.

2.2.2. Stage 2 (qualifying): Analysis of academic/professional activities and scientific production

Academic and professional activities

(2.2.2a) Monitoring – 0.5 points for each subject monitoring lasting one academic semester;
(2.2.2b) Scientific and/or technological initiation with scholarship – 1.0 point per year;
(2.2.2c) Scientific and/or technological initiation without a scholarship – 0.5 points per year;
(2.2.2d) Academic exchange abroad – 2.0 points per year;
(2.2.2e) Research or professional internship in geosciences or related areas – 0.5 points per year;
(2.2.2f) Employment in geosciences, teaching or technology areas – 1.0 point per year;

The scores for the activities indicated in items 2.2.2b-f are defined per year. Activities carried out for a period of less than or more than one year will be calculated proportionally. Only activities carried out for at least 4 months will be considered.

Scientific production

(2.2.2g) Abstracts published in proceedings of scientific events – 0.1 point per work;
(2.2.2h) Expanded abstracts published in scientific event proceedings – 0.3 points per paper;
(2.2.2i) Articles accepted for publication or published in indexed journals in the field of geosciences.

The score defined in item (2.2.2i) will be computed using the following expression :

P = NA + PA + AC + CP ,

in which

- NA = 1 / (total number of authors);
- PA = 1 (1st) or 0.8 (2nd) or 0.6 (3rd) or 0.4 (4th) or 0.2 (5th), where the numbers in parentheses indicate the position in the list of authors. PA = 0 for positions from the 6th onwards;
- AC = 1 if corresponding author and 0 otherwise ;
- CP = 1.00 (Q1) or 0.75 (Q2) or 0.50 (Q3) or 0.25 (Q4), where Q1 – Q4 represent the journal's most recent classification in the *Scimago database* , in the area of *Earth and Planetary Sciences* [3]. CP = 0 if the journal is not included in this classification.

Note 2.2.1: All documentation necessary to prove the academic/professional activities and scientific production indicated in items 2.2.2a-i must be included in the registration form, in the **Attachments – Document upload area** (mentioned in items 2.1f and 2.1g).

2.3. Enrollment in the DOCTORATE

[3] https://www.scimagojr.com/journalrank.php?type=j&area=1900

When registering at the secretariat of the Division of Postgraduate Programs (DIPPG) of the National Observatory, the approved person must present the originals of the following documents:

(2.3a) Personal documents (CPF, identity card, driver's license or passport);
(2.3b) Certificate and/or diploma of completion of undergraduate and master's courses;
(2.3c) Curriculum Vitae in the updated Lattes/CNPq format (except for foreigners who may submit their CV in free format).

3.2. On the selection process for the MASTER'S PROGRAM

The selection process for the MASTER'S PROGRAM at PPGG-ON will consist of three stages:

3.2.1. Stage 1 (eliminatory): Written exam

The written exam is mandatory, lasts four (4) hours, and will consist of:

- (3.2.1a) Written Physics exam (eliminatory);
- (3.2.1b) Written Mathematics exam (eliminatory);
- (3.2.1c) Written Geophysics exam (eliminatory);
- (3.2.1d) Written Geology exam (eliminatory);
- (3.2.1e) English reading comprehension and translation exam (qualifying).

All applicants whose registration has been approved according to section 3.1 will be eligible to take the written exam, which will be held on **July 23, 2025, at 2:00 PM (Brasília time)**. Applicants may take the exam at the National Observatory in Rio de Janeiro (RJ) or at another institution outside the city of Rio de Janeiro. In the latter case, the applicant must indicate a person from that institution (a faculty member or someone from the administrative office, for example) to be responsible for the exam. This person must contact the PPGG-ON office by email at **secpgg@on.br** by **June 30, 2025**, to receive instructions on how to receive, administer, and return the exam.

Note 3.2.1: Failure to score in any of the exams listed in items 3.2.1a–d results in disqualification.

Note 3.2.2: The recommended bibliography for the written exam is listed in Section 6 of this Notice.

Note 3.2.3: Applicants who do not obtain a score of 5.0 or higher in the English exam (item 3.2.1e) must pass one of the English proficiency tests offered at the National Observatory during the master's program.

3.2.2. Stage 2 (eliminatory): Interview

The interview will assess the candidate's alignment with the research lines of the program and understand how their background and career plans align with the course's goals.

During the interview, candidates will be asked about topics such as:

- **Motivation and research interests:** The candidate should be prepared to explain their main areas of interest and how these align with the program's research lines.
- **Academic and professional experience:** An opportunity for the candidate to highlight prior experiences that contribute to their development as a researcher.
- **Research project:** Although the candidate is not required to present a formal research project, their theoretical background and the relevance of the project they intend to develop during the program will be evaluated, including its feasibility and contribution to the field.
- **Availability and commitment:** Considering the course workload and structure, it is important to assess whether the candidate can dedicate the necessary time to the program's demands.

The interview will be conducted by faculty members of the program, who may also clarify doubts and provide more information about the course structure, development opportunities, and available activities. The interview will last approximately 20 to 30 minutes and will take place in person (or remotely, if needed), according to the instructions provided in the interview call.

3.2.3. Stage 3 (qualifying): Evaluation of academic/professional activities and scientific output

Academic and professional activities

- (3.2.2a) Teaching assistant – 0.5 point per course with a duration of one academic semester;
- (3.2.2b) Scientific and/or technological research with a scholarship – 1.0 point per year;
- (3.2.2c) Scientific and/or technological research without a scholarship – 0.5 point per year;
- (3.2.2d) Academic exchange abroad – 2.0 points per year;
- (3.2.2e) Research or professional internships in Geosciences or related fields – 0.5 point per year;
- (3.2.2f) Employment in Geosciences, education, or technology – 1.0 point per year.

Scores for items 3.2.2b–f are calculated annually. Activities of shorter or longer durations will be scored proportionally. Only activities lasting at least 4 months will be considered.

Scientific production

- (3.2.2g) Abstracts published in conference proceedings – 0.1 point per work;
- (3.2.2h) Extended abstracts in conference proceedings – 0.3 point per work;
- (3.2.2i) Articles accepted for publication or published in indexed journals in the field of geosciences.

The score for item (3.2.2i) will be calculated using the formula:

P = NA + PA + AC + CP, where:

- **NA** = 1 / (total number of authors);
- **PA** = 1 (1st author), 0.8 (2nd), 0.6 (3rd), 0.4 (4th), or 0.2 (5th); PA = 0 for positions from 6th onward;
- **AC** = 1 if the candidate is the corresponding author, 0 otherwise;
- **CP** = 1.00 (Q1), 0.75 (Q2), 0.50 (Q3), or 0.25 (Q4), where Q1–Q4 correspond to the most recent classification of the journal in the **Scimago** database under the category *Earth and Planetary Sciences*. CP = 0 if the journal is not listed in this ranking.

Note 3.2.2: All documents needed to verify the academic/professional activities and scientific production listed in items 3.2.2a–i must be included in the application form under the section **Attachments – Document upload** (mentioned in item 3.1f).

3.3. Selection results

Based on the selection process, the CPGG may require that certain approved candidates take one or more leveling courses offered by PPGG-ON. Poor performance in these leveling courses may result in dismissal from the program, at the discretion of the CPGG. These leveling courses will not count toward the total credit requirements for completing the master's program.

3.4. Enrollment in the MASTER'S PROGRAM

When enrolling at the Graduate Program Division Office (DIPPG) of the National Observatory, the approved candidate must present the originals of the following documents:

- (3.4a) Personal documents (CPF, ID, driver's license, or passport);
- (3.4b) Certificate and/or diploma of undergraduate degree completion;
- (3.4c) Updated Curriculum Vitae in the **Lattes/CNPq** format (except for international applicants, who may submit a CV in any format).

4. SCHEDULE

ACTIVITY	PERIOD
Registration period	**15/Apr/2025 to 27/Jun/2025**
Notification of the list of approved registrations by the CPGG	**Until 04/Jul/2025**
Written exam (Master's degree)	**23/Jul/2025**
Interview (Master's), defense and questioning of research projects (Doctorate)	**04/Aug/2025 to 08/Aug/2025**
Announcement of final results (PhD, Master's, and Direct Doctorate)	**Until 01/Sep/2025**
Enrollment in PPGG-ON	**Until 15/Sep/2025**

5. Recommended Bibliography and Content for the Written Exam (Master's)

5.1. Physics Exam

- **Mechanics**
- **Gravitation, Waves, and Thermodynamics**
- **Electromagnetism**

Recommended Bibliography:

Halliday, D., Resnick, R., Walker, J. Fundamentos de Física 1 – Mecânica. 10ª ed. LTC, 2016.
Halliday, D., Resnick, R., Walker, J. Fundamentos de Física 2 – Gravitação, Ondas e Termodinâmica. 10ª ed. LTC, 2016.
Halliday, D., Resnick, R., Walker, J. Fundamentos de Física 3 – Eletromagnetismo. 10a ed. LTC, 2016.
Nussenzveig, H.M. Curso de Física Básica 1: Mecânica. 5a ed. Edgard Blücher, 2013.
Nussenzveig, H.M. Curso de Física Básica 2: Fluidos, Oscilações e Ondas, Calor. 5a ed. Edgard Blücher, 2014.
Nussenzveig, H.M. Curso de Física Básica 3 – Eletromagnetismo. 2a ed. Edgard Blücher, 2015.

5.2. Mathematics Exam

- **Differential and Integral Calculus**
- **Linear Algebra**
- **Differential Equations**
- **Series**

Recommended Bibliography:

Guidorizzi, H. L., Um Curso de Cálculo, Vols. 1, 2, 3, 4. 6ª edição, LTC Editora, Rio de Janeiro, 2018.
Stewart, J., Clegg, D., Watson, S., Cálculo, Vols. 1, 2. 9ª edição, Cengage Learning Edições Ltda, 2022.
Strang, G. Linear algebra and its applications. 4a ed. Cengage Learning, 2005.

5.3. Geophysics Exam

- **Physical properties of rocks**
- **Internal structure of the Earth**
- **Plate Tectonics**
- **General Geophysics**

Recommended Bibliography:

Grotzinger, J., Jordan, T. Para Entender a Terra. 6ª ed. Bookman, 2013.
Kearey, Philip, Michael Brooks, e Ian Hill. An Introduction to Geophysical Exploration. 3o ed. Blackwell Science, 2002.
Lowrie, William. Fundamentals of Geophysics. 2a ed. Cambridge University Press, 2007.
Fowler, C. M. R. The solid Earth: An introduction to global geophysics, 2nd ed. Cambridge University Press, 2005.

5.4. Geology Exam

- **Physical properties of rocks**
- **Internal structure of the Earth**
- **Plate Tectonics**
- **General Geology**

Recommended Bibliography:

GROTZINGER, J. & JORDAN, T. H. 2013. Para Entender a Terra. Tradução Rualdo Menegat, 6 ed, Porto Alegre: Bookman, 738p.
WILANDER, R.; Monroe, J.S. 2009. Fundamentos de Geologia. Cencage Learning, 508p.
PLUMMER, C.; CARLSON, D.; HAMMERSLEY, L. 2013. Physical Geology (14th Edition). McGraw-Hill Publishing Company.