

CALL 01/PGMAT/2023-2

SELECTION OF CANDIDATES FOR THE POSITIONS IN THE GRADUATE PROGRAM IN MATERIALS SCIENCE AND ENGINEERING AT UFSC FOR THE MASTER'S COURSE REFERRING TO THE SECOND ACADEMIC TRIMESTER OF 2023

1. INTRODUCTION

The Coordination of PGMAT/UFSC, in the use of its legal attributions, makes public the Call of the Selection Process to fill the vacancies of the second academic quarter of the year 2023 (2023-2) of the Doctorate course in the Concentration Areas of Ceramic Materials, Metallic Materials, and Polymeric Materials, according to the schedule specified in Table 1:

Table 1: Calendar of events related to this Call.

EVENT	PERIOD
Call Release	24/04/2023
Registrations	24/04/2023 to 14/05/2023
Publication of Approved Registrations	17/05/2023
Deadline for Appeals Regarding Approvals	18/05/2023
Admission Test for the Master's Course	19/05/2023
Disclosure of Score Obtained	23/05/2023
Deadline for Appeals related to Scores Obtained	23/05/2023
Homologation by the Delegate Collegiate	24/05/2023
Disclosure of the Final Result	25/05/2023
Enrollment for the Period 2023-2	25/05/2023 to 29/05/2023
Start of Classes	29/05/2023

2. REGISTRATION IN THE SELECTION PROCESS

To enroll in the selection process, the candidate must submit the following documents to the PGMAT:

- Application form, duly completed and printed, available at <http://capg.sistemas.ufsc.br/inscricao/index.xhtml?cdCurso=41000315>.
- Study Plan of 2 (two) pages, containing the indication of the topic of interest (selected among the topics proposed by the advisors by area of concentration, according to Item 3 of this Public Call). The Study Plan aims to contribute to the selection of candidates and may be changed when defining the theme of the thesis. In case of approval in the Selection Process, students will be distributed by subject/available professor, respecting the priorities of each concentration area;

- c) Certified copy of the diploma (front and back) or proof of completion of the Undergraduate and Master's courses. If it is not possible to have them, a document proving that the candidate is in a position to complete the Master's course by the start date of the postgraduate classes will be accepted, such registration being conditioned to proof of completion of the Master's degree;
- d) Academic Transcript of Undergraduate and Master's Courses;
- e) Lattes Curriculum (CNPq model);
- f) A 3x4 size photo;
- g) A notarized copy of the Birth or Marriage Certificate;
- h) Certified copy of the RG and CPF;
- i) In the case of a foreign candidate, it is necessary to present a certified copy of the candidate's identification page in the passport and the entry visa page in Brazil;
- j) Two Reference Letters (own form, completed and delivered together with the documentation or separately by the informant). The reference letter can be obtained at the address: <http://ppgmat.posgrad.ufsc.br/carta-de-referencia/>.
- k) The candidate who competes for the vacancy provided for in this Call for self-declared blacks (afrodescendant) must submit, at the time of registration, a declaration in which he/she declares himself to be black). The self-declaration of black candidates will be confirmed by the program's selection committee or Commission for Heteroidentification of Phenotype, with the assistance of SAAD at UFSC.
- l) The candidate who competes for the vacancy provided for in this Call for indigenous people must present, upon registration, manifestations of belonging to the ethnic group, among the following: Declaration of indigenous representation bodies; or Declaration of belonging to an indigenous group. Signing an indigenous self-declaration term is mandatory for enrollment. The self-declaration of indigenous students will be confirmed by the program's selection committee, which may have the assistance of SAAD at UFSC.
- m) The candidate who competes for the vacancy provided for in this Call for people with disabilities, upon registration, must inform the disability he/she presents, if he/she needs it and what adaptations will be necessary to carry out the tests, which will be met according to feasibility and reasonableness criteria analyzed by a multidisciplinary team, with the help of SAAD. Only people with disabilities will be considered those who fall into the categories indicated in article 4 of Decree nº 3.298/99 and its amendments, as well as in paragraph 2 of article 1 of Law nº 12.764/2012 and in article 2 of Law nº 13.146/2015. The candidate must also present, upon registration, the following documents: I - medical certificate issued in the last 12 (twelve) months, signed by a specialist doctor in the area of the alleged disability by the candidate, containing the degree or level of disability, the code corresponding to the International Classification of Disease (ICD) and a medical opinion containing the specific needs, considering the peculiarities of the disability; II – for candidates with hearing impairment, audiometry (tonal and vocal) and imitanciometry, carried out in the 12 (twelve) months prior to enrollment in the selection process; III – for visually impaired candidates, an ophthalmological examination that includes visual acuity, carried out in the last 12 (twelve) months, and a medical report. Certificates, exams and medical reports must present CID, legible name, stamp and signature of the professional and CRM.

Applications will be approved by the PGMAT Selection and Scholarship Committee only for candidates who submit the complete documentation required within the period provided for in Item 2 of this Public Call. After the deadline for registration, the delivery of any document with the purpose of complementing, modifying and/or replacing any voucher, form and/or information

present in the material already sent will not be accepted. The candidate, when presenting the required documentation, is responsible for the veracity of all the information provided and for the authenticity of the documents delivered.

3. NUMBER OF VACANCIES AND TOPICS OFFERED

PGMAT offers vacancies for the Master's Course, for admission in the second quarter of 2023 (2023-2), according to the distribution by Area of Concentration below:

3.1. Ceramic Materials

Supervisor: Prof. Antonio Pedro Novaes de Oliveira

Subject of study:

Additive manufacturing (3D printing of ceramic materials)

Vacancies:
03

Supervisor: Prof. Carlos Renato Rambo

Subject of study:

High surface area nanostructured hybrid materials for energy generation and storage devices and printed electronics

Vacancies:
01

Supervisor: Prof. Dachamir Hotza

Subject of study:

Sustainable ceramic products and processes

Vacancies:
01

Supervisor: Prof. Hazim Ali Al-Qureshi

Subject of study:

Analysis of heavy truck lorry composite springs
Plastic instability of anisotropic sheet metal subjected to biaxial stresses

Vacancies: 02

Supervisor: Prof. Luciana Maccarini Schabbach

Subject of study:

Optical properties of materials and their applications (translucency, opacity, reflectance, color, light absorption, solar reflectance).

Development of cool materials

Materials and the Circular Economy (Circular Design, Valuing waste, impact analysis, carbon footprint).

Vacancies:
01

02

02

Supervisor: Prof. Luciano Senff

Subject of study:

Multifunctional materials for civil construction.

Valuation of waste and the development of materials with low environmental impact.

Application of 3D printing technology in cement-based or geopolymeric materials.

Vacancies:
01

Vacancies:
01

Vacancies:
01

Supervisor: Prof. Márcio Celso Fredel

Subject of study:

Ceramic and Composite Materials: Structure, Properties and Processing

Vacancies:

02

Total Vacancies Ceramic Materials Area

Vacancies:

17

Total Vacancies Ceramic Materials Area: blacks and indigenous people

Vacancies:

04

Total Vacancies Ceramic Materials Area: people with disabilities

Vacancies:

02

3.2. Metallic Materials

Supervisor: Prof. Aloisio Nelmo Klein

Subject of study:

Powder Metallurgy and Sintered Materials (processes and products)

Vacancies:

02

Supervisor: Prof. André Avelino Pasa

Subject of study:

Calculation of crystalline interfaces with niobium oxide

Vacancies:

01

Supervisor: Prof. Claudio Michel Poffo

Subject of study:

Production and characterization of nanostructured High Entropy alloys

Vacancies:

01

Supervisor: Prof. Cristiano Binder

Subject of study:

Surface engineering and sintered materials

Vacancies:

02

Supervisor: Prof. Cristiani Campos Plá Cid

Subject of study:

New materials applied to energy generation and storage: inorganic perovskite solar cells, batteries and supercapacitors

Vacancies:

02

Supervisor: Prof. Fábio Antonio Xavier

Subject of study:

Bonding by diffusion of metallic and ceramic alloys

Vacancies:

02

Machining of sintered materials

Vacancies:

01

Supervisor: Prof. José Daniel Biasoli de Mello

Subject of study:

Tribology and Tribomaterials

Vacancies:

02

Supervisor: Prof. Milton Pereira

Vacancies:
03

Subject of study:

Laser processing of materials by welding processes, hybrid welding, heat treatment coating deposition and additive manufacturing by directed energy deposition.

Supervisor: Prof. Orestes Estevam Alarcon

Vacancies:
01

Subject of study:

Degradation of polymeric materials in the marine environment: systematic literature review, meta analysis of the main models proposed in the literature

Supervisor: Prof. Paulo Antônio Pereira Wendhausen

Vacancies:

Subject of study:

Development of Rare Earth Magnets by Powder Metallurgy and Additive Manufacturing techniques

01

Development of Materials for Magnetic Refrigeration

01

Supervisor: Prof. Rodrigo Perito Cardoso

Subject of study:

Additive manufacturing of metallic materials

Vacancies:
01

Plasma treatment of powders

Vacancies:
01

Total Vacancies Metallic Materials Area

**Vacancies:
23**

Total Vacancies Metallic Materials Area: blacks and indigenous people

**Vacancies:
05**

Total Vacancies Metallic Materials Area: people with disabilities

**Vacancies:
02**

3.3. Polymeric Materials

Supervisor: Prof. Claudia Merlini

Vacancies:
02

Subject of study:

Nanofibers and functional polymeric nanocomposites

Supervisor: Prof. Gean Vitor Salmoria

Vacancies:
04

Subject of study:

Development of polymeric products by injection molding and 3D printing

Supervisor: Prof. Guilherme Mariz de Oliveira Barra

Vacancies:
02

Subject of study:

Synthesis, Characterization and Application of Conducting Polymers.

Development of Fiber Reinforced Polymeric Composites.

Additive Manufacturing of Conducting Polymeric Composites.

Supervisor: Prof. Johnny De Nardi Martins

Subject of study:

Development of anticorrosive coatings for magnesium alloys

Vacancies:

01

Vacancies:

01

Supervisor: Prof. Thiago Ferreira da Conceição

Subject of study:

Development of anticorrosive coatings for magnesium alloys

Total Vacancies Polymeric Materials Area

Vacancies:

10

Total Vacancies Polymeric Materials Area: blacks and indigenous people

Vacancies:

02

Total Vacancies Polymeric Materials Area: people with disabilities

Vacancies:

01

In line with Normative Resolution N° 145/2020/CUN, of October 27, 2020, which regulates the affirmative action policy in *lato sensu* and *stricto sensu* postgraduate courses at the Federal University of Santa Catarina (UFSC), with the aim of promoting the entry and permanence of blacks (afrodescendants), indigenous people, people with disabilities and other categories of social vulnerability in the *lato sensu* and *stricto sensu* postgraduate courses at UFSC, the PGMAT will allocate a minimum of 20% (twenty percent) of the aforementioned vacancies for black (afrodescendant) and indigenous candidates and 8% (eight percent) of them for people with disabilities. Whenever the previously defined vacancy percentages result in a fractional number, the number of vacancies will be rounded upwards.

As this Call has vacancies grouped by areas of concentration of the Program (Ceramic Materials, Metallic Materials and Polymeric Materials), the principles of proportionality (percentages) previously defined, will guarantee that the final percentage of vacancies reserved for black candidates, indigenous, people with disabilities is equally affected for candidates from each area of concentration.

In case of withdrawal, until the registration date, of a candidate approved by the quota system for blacks (afrodescendants), indigenous peoples and people with disabilities, the Program will call a candidate in line of waiting, later classified, of the same category of quotas.

In the event that there is not a sufficient number of approved candidates to occupy the reserved places, these will be passed on to the broad competition.

4. SELECTION AND SCHOLARSHIP COMMITTEE

The examining board, responsible for selecting the Ph.D. candidates, is made up of a committee composed of the chairman of the committee (PGMAT/UFSC Coordinator), 3 (three) professors, representing each of the areas of concentration (Ceramic Materials, Metallic Materials and Polymeric Materials) from PGMAT/UFSC and 2 (two) student representatives from PGMAT/UFSC, appointed by the Program Coordination.

With regard to the selection for entry of self-declared black (afrodescendants), indigenous and people with disabilities, the PGMAT Selection and Scholarship Committee will have the authoritative support of the Secretariat for Affirmative Actions and Diversities (SAAD) from UFSC for documentation and phenotype validation issues.

5. SELECTION CRITERIA

The items to be evaluated, with their respective weights, are shown in Table 2:

Table 2: Evaluation items

Evaluation Item	Weight for PhD
1. Admission Test*	50%
2. Study Plan (PE)*	10%
3. Education, Academic/Professional Experience	40%

*Blind evaluation.

5.1. Admission Test (50% of the total grade)

The candidate for the Master's must take a written test in person, under the supervision of a person previously designated by the Program Coordinator. The test will be with consultation of any type of bibliography or notes, on general topics of Science and Materials Engineering, prepared based on the following bibliographical references:

- ASKELAND, D.R., PHULE, P.P. Materials Science and Engineering. São Paulo: Cengage, 2008.
- CALLISTER JR., W. D. Materials Science and Engineering: an Introduction. New York: Wiley, 2003.
- CANEVAROLO Jr., S. V. Science of polymers. São Paulo, Artliber, 2007.
- REED, J. S. Principles of Ceramics Processing. 2nd ed. New York: Wiley; 1995.
- SMITH, W. Structure and Properties of Engineering Alloys. New York: McGraw-Hill, 1992.

The admission test will be held on May 19, 2023, at 2:00 pm, lasting two hours. The procedures regarding the admission test, as well as the information regarding the place where it will be held, will be published on the PGMAT page (<http://www.pgmat.ufsc.br>) until May 18, 2023. This information will be also forwarded via email sent to the email address registered by the candidate at the time of registration.

To be selected and approved for the Master's course, it is necessary for the candidate to obtain:

- In the written test (elimination) a grade equal to or greater than 6.0 (six point zero);
- Final grade (calculated according to the score described in the following section) equal to or greater than 5.0 (five point zero).



The classification of the candidate will be by area of concentration defined in the application, respecting the number of vacancies per professor in each area.

5.2. Study Plan (PE) (10% of the total grade)

The Study Plan (PE) presented by the candidate must contain:

- Cover: A cover identifying the candidate, only by his registration number, including the subject of study and preferred Supervisor teacher and concentration area, according to Item 3 of this Call.
- Candidate's history: (1 page): It should contain relevant facts about the candidate's background and experience in the chosen subject of study that are not included in the Lattes curriculum.
- Introduction, justification and objectives (1 page): This topic must contain a clear identification of the problem to be addressed in the thesis. List the general and specific objectives. Narrow down the problem approach and scope of your plan. Present the impact and innovative character generated by the thesis.

The quantification of the item referring to the Study Plan (1 point maximum = 10% of the final grade) must be carried out using the following criteria and scores:

- Candidate's background (information regarding the experience in the area of activity of the Study Plan proposed by the candidate and the professor's subject of study that are not included in the CV Lattes): 0.5 points;
- Adequacy of the Study Plan to the program's area of concentration and the Supervisor's topic: 0.2 points;
- Originality of the project (doctoral projects must originate unpublished theses and publications in the international literature): 0.2 points;
- Other relevant aspects: 0.1 points.

The evaluation of the Study Plan (PE) will be carried out, initially, by two representatives of areas of concentration other than the candidate's preferred one, members of the Selection and Scholarship Committee, to guarantee the impartiality of the process. If there is a material discrepancy between the evaluations of these two area representatives, a third evaluation will be made by the representative of the candidate's preferred area.

5.2. Education, Academic and Professional Experience

The evaluation of the Education and Professional Experience items, present in the respective Lattes CV of the candidate, will be carried out according to the score, with a weighting of 50% of the final grade), according to the following criteria:

5.2.a School Education (DE) (1.0 point maximum = 10% of the final grade)

When quantifying the Education/History item (FE), the following formula will be used:

$$FE = (CG \times IG)/50$$

where:

CG = Graduation course concept (from 1 to 5);

IG = Candidate's overall performance index in the undergraduate course, including any failures (from 0.0 to 10.0);

5.2.b Intellectual Production (IP) (1 point maximum = 10% of the final grade)

- Organization or authorship of a book, OL (complete work): 1.0 point/book;
- Book chapter, CL: 0.5 points/book chapter;
- Journal article, APA, A1 and A2: 1.0 point/article;
- Journal article, APB12, B1 and B2: 0.7 points/article;
- Journal article, APB35, B3 to B5: 0.5 points/article;
- Complete article published in congress annals and/or in journals not classified in the previous items, AC: 0.1 points/publication/article;
- Patent, DP (with patent number): 1.0 point/patent.

In quantifying the Intellectual Production (PI) item, the following formula will be used:

$$PI = (OL + CL + APA + APB12 + APB35 + AC + DP)$$

5.2.c Academic and professional activities in the area of concentration (AP) (1 point maximum = 10% of the final grade):

- Scientific initiation and/or extracurricular internship in the training area: 0.2 point/semester;
- Course Completion Work Guidelines (TCC): 0.1 point/guidance;
- Participation in boards for the completion of graduation course work: 0.1 point/bank;
- Teaching and work in Industry (0.5/semester).

5.2.d Courses accomplished and approved at PGMAT (DC) (maximum 1.0 point = 10% of the final grade)

- Subject studied in the PGMAT with a grade greater than or equal to 7.0 points): 0.15 point/subject.

The final grade (NF) of the candidate will be defined by the sum of the five evaluation items (scores):

$$NF = PE + FE + PI + AP + DC$$

Note: The candidates' Intellectual Production (IP) scores will be based on the parameters defined by CAPES Qualis in the Materials area.

6. DISCLOSURE OF RESULTS

The disclosure of both the approval of the applications, the results of the scores obtained by the candidates and the final result of the classification of those approved will be carried out by the PGMAT Secretariat on the Program page (<http://www.pgmat.ufsc.br>). The classification of the approved candidates will be made in descending order of their final grades, by area of concentration (Ceramic Materials, Metallic Materials and Polymeric Materials). In the same way, those candidates who, in descending order of classification, fill the number of vacancies offered by area of concentration, under the terms set forth in Item 3 of this Call, will be selected. The best-ranked candidate will have preference in filling the vacancy(s) offered by the Supervisor professor of each concentration area.

The appeals, with the justifications that motivate them, duly substantiated, must be delivered to the Secretariat of PGMAT/UFSC, by e-mail to the following e-mail address: ppgmat@contato.ufsc.br. The deadlines for appeals can be found in Item 1 of this Call.

If selected candidates withdraw, other approved candidates may be asked to occupy the remaining vacancies, respecting the order of classification by subject of study.

IT IS INFORMED THAT THE APPROVAL OF THE CANDIDATE IN THIS SELECTION PROCESS DOES NOT GUARANTEE THE AWARD OF THE SCHOLARSHIP PROVIDED BY FOMENT AGENCIES (CAPES, CNPq and FAPESC). THE DISTRIBUTION OF SCHOLARSHIPS WILL BE CARRIED OUT AS AVAILABILITY OF QUOTES FOR THE PROGRAM ARISES.

The distribution of scholarships will be carried out by the PGMAT Selection and Scholarships Commission, by concentration area and by ranking order. In accordance with Normative Resolution Nº 145/2020/CUN, of October 27, 2020, 28% (twenty-eight percent) of the scholarships available for the second academic quarter of 2023 will be reserved for self-declared black candidates (afrodescendant), indigenous people and people with disabilities classified in the contest. In the event that a sufficient number of candidates are not approved to occupy the reserved places, the scholarships available for these types of quotas will be passed on to the broad competition.

The Program reserves the right not to fill all vacancies.

Under no circumstances will information be provided regarding the results of the selection process dealt with in this Public Call by telephone or by e-mail.

7. REGISTRATION

The candidates approved and classified in the selection process referred to in this Call must confirm to the PGMAT Secretariat, by means of an electronic message to the address ppgmat.contato@ufsc.br, their interest in enroll and become regular students of the program within the enrollment period defined in Item 1 of this Call. The Program Secretariat will thus carry out the registration of the candidate in a non-person manner.

During the enrollment period, the candidate approved in the selection process must send, via email to the address ppgmat.contato@ufsc.br, proof of proficiency in English, proof of the second proficiency must be sent within 12 months after admission in the course. The proficiency test can be scheduled at: www.proficienciadlle.com/.

Foreign candidates must submit to the Program Secretariat, within ninety days after registration, the RNE or passport with a valid Permanent Visa or Temporary Student Visa, a document proving affiliation and other documents to be informed by the Program Secretariat.

The qualified candidate who does not enroll within the period established in Item 1 of this Announcement or who does not present any of the requested documents will automatically lose the right to the vacancy and will be considered formally withdrawn.

8. FINAL PROVISIONS

Will be disqualified and automatically excluded from the selection process, the candidate who:

- failure to submit all required documentation within the terms and conditions stipulated in this Public Call;
- provide declarations or present false documents at the selection stage;
- not registering on the date defined in this Call, in case of being selected.

The results of this Call are valid until the release/closing of the next Call of selection and admission within the scope of PGMAT/UFSC.

Omissions will be resolved by the Selection and Scholarship Committee or by the PGMAT/UFSC Collegiate Delegate, according to their competencies.

Florianópolis (SC), April 24, 2023
Coordination PGMAT/UFSC