

INSTITUTE OF GEOSCIENCES, UNIVERSITY OF SÃO PAULO (IGc-USP)**Official Public IGc-USP Notice N° 06/2024**Date: June 18th, 2024

APPLICATIONS ARE NOW OPEN FOR THE SELECTION PROCESS FOR A PROFESSOR DOCTOR POSITION AT THE DEPARTMENT OF MINERALOGY AND GEOTECTONICS OF THE INSTITUTE OF GEOSCIENCES OF THE UNIVERSITY OF SÃO PAULO.

The Directorate of the Institute of Geosciences of the University of São Paulo (IGc-USP) hereby informs all interested persons that, per the decision reached at the Regular Meeting of the Congregation held on June 12th, 2024, applications are open for 60 (sixty) days, beginning at 8:00 AM (Brasília time, BRT) on June 24th, 2024 and ending at 5:00 PM (Brasília time, BRT) on August 22nd, 2024, for the selection process of titles and examinations to fill one (1) position of Professor Ph.D., in Full-Time Dedication to Teaching and Research (RDIDP in the Portuguese acronym), position N° 1262130, with a salary of R\$ 15,498.97 (fifteen thousand, four hundred and ninety-eight reais and ninety-seven cents), within the subject area of Structural Geology at the Department of Mineralogy and Geotectonics, under the terms of article 125, § 1 of the General Regulations of USP and the following programmatic themes:

GMG0337 – Structural Geology I: Brittle Regimes and Deformation

1. Definition and methods in structural geology. 2. Stress and deformation. 3. Rupture and Mohr's Circle and Mohr-Coulomb Rupture Criterion. 4. Fractures, faults and joints. 5. Deformation and Mohr's Circle. 6. Deformation and failure mechanisms. 7. Rheology. Practice: 1. Layer and notation of planes and lines. 2. 3 points problem. 3. Reflection of plans. 4. Real and apparent dip of layers. 5. Thickness and depth of layers. 6. Orthographic and stereographic projection.

GMG0338 – Structural Geology II: Ductile Regimes

1. Description of folds; 2. Folding mechanisms; 3. Linear structures and superposition of folds; 4. Shear zones - geometry and kinematics; 5. Shear zones - cataclastic and mylonitic rocks; 6. Reading and structural analysis of geological maps; 7. Geological sections; 8. Balancing and restoration of geological sections; 9. Structures associated with extensional regimes: extensional faults and fault systems, low-angle extensional faults, grabens, hemigrabens and accommodation zones; 10. Structures associated with contractional regimes; Thrust faults – nappes, imbrication zones, thrusts in sequence, duplexes. Thin and thick skin structural styles, lateral ramps, fault-related folds; 11. Structures associated with transpressive and transtractional regimes: strike-slip faults,

transfer faults, transform faults, restriction and release curves, positive and negative flower structures.

GMG0405 – Rock Mechanics

1. Understanding of force, stress and strain in 2D and 3D. 2. Main equations for determining stresses and deformations in space. 3. use of Mohr's circle for stresses and deformations. 4. Physical properties of rocks in the laboratory. 5. Rheological behavior of rocks. 6. Discontinuities in the rock mass and their influence on the main geomechanical parameters. 7. Crustal stresses and methods for their determination. Sensitive cylinders. STT. Hydraulic fracturing and flat jacks. Focal mechanisms of earthquakes and paleotensions. 8. Field methods for determining geomechanical parameters. Dynamic and static tests. 9. Main rupture criteria. Mohr and Navier - Coulomb criteria. Hoek & Bray criterion. 10. Geomechanical classifications of rock masses. Main current types. RMR, Q, SMR classification and correlations. 11. Slope Stability (planar, wedge and tipping). 12. Tunnels. 13. Exercises relating to the items above and visits to construction sites and laboratories.

GMG0488 – Applied Structural Geology

1. Characterization of the main structural aspects of practical importance and their representation to other professionals. 2. Attitudes and representations of structural data. 3. Structural data statistics. 4. Structural fracture survey techniques. 5. Tension: basic principles. 6. Fracturing of rocks. 7. Matrix stress analysis. 8. Methods for determining voltages. 9. Seismic risk. 10. Structural analysis linked to open pit excavation. 11. Structural analysis linked to underground excavations. 12. Hydrogeology in fractured environments. 13. Structural Geology of oil fields.

The selection process will be governed by constitutional principles, notably that of impersonality, as well as the provisions of the Statute and the General Rules of the University of São Paulo and the Rules of the Institute of Geosciences of the University of São Paulo.

1. The selection process will be carried out according to objective criteria, in two stages, through the attribution of scores in exams, divided as follows:

1st stage (eliminary) – written exam (weight 2)

2nd stage:

- I) evaluation of the Curriculum Vitae with public proof of argumentation (weight 4)
- II) didactic exam (weight 4)

§ 1º - The call for applicants to take the exams will be published in the Official State Gazette.

§ 2º - Candidates who present themselves after the established time will not be able to take the exams.

§ 3º - The exams mentioned above will be obligatorily carried out in Portuguese.

2. Further information, as well as the full notice, are available in the link <https://uspdigital.usp.br/gr/admissao>, or in the website of the Institute of Geosciences of the University of São Paulo: <https://igc.usp.br/institucional/concursos-publicos/>.