SOCIETY OF ECONOMIC GEOLOGISTS, INC.
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Student Chapter Annual Report Cover Page

Submission Deadline: September 30th **Submit to: studentprograms@segweb.org**

Month/Year Reported: From 10/2022 (mm/yyyy) – To 10/2023 (mm/yyyy)

STUDENT CHAPTER: Check if update needed at segweb.org

Name: UFMG SEG Student Chapter ☐
University Affiliation: Universidade Federal de Minas Gerais (UFMG) ☐
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LinkedIn: https://br.linkedin.com/company/segufmg ☐
YouTube: https://www.youtube.com/channel/UC7JKvKq5LHs0W-jyTKQeK0A ☐

Chapter Executive Committee *(in office during the time frame captured on this report) (type "Vacant" if position not filled)*: The new committee is reported on the Student Chapter Membership Information form (SCMIF).

	Name	E-mail
President:	Nathália Regina Diniz Bueno	nathaliabuenoufmg@gmail.com
VicePresident:	Cássio Eustáquio de Moura Lopes	cassioedml@gmail.com
Secretary:	Izamara Martins Verteiro	izamaramartinsverteiro@gmail.com
Treasurer:	Vitória Gomes Macêdo	vitoriagomesmacedo3@gmail.com

Chapter Academic Sponsor: ☐ *Check if SEG Fellowship in good standing*

Name	E-mail	Phone
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Chapter Industry Sponsor (*not affiliated with the student chapter's institution)*: ☐ *Check if SEG Fellowship in good standing*

Name	E-mail	Phone
Francisco R. de Abreu	f_deabreu@yahoo.com	+5531996959029

Address: Rua Teresa Mota Valadares, 503/502 - Belo Horizonte, MG Fax:

Sponsoring Institution or Company(name): Sustain Geologia

Annual Report
UFMG SEG Student Chapter

09.30.2023

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Committee

Nathália Regina Diniz Bueno, *President*
Cássio Eustáquio de Moura Lopes, *Vice-President*
Izamara Martins Verteiro, *Secretary*
Vitória Gomes Macêdo, *Treasurer*

Other Members 2023:

Daniel Silveira Balzani Guimarães
Davi Luiz Costa Souto
Gustavo Martins Ribeiro Lima
Gustavo Dantas Waughan
Hugo Guilherme de Oliveira
Igor Mendes de Oliveira
Ingrid Luise Grube Pereira de Matos
Lucca Samuel Alves Coelho Dutra
Maria Luiza Cândido de Oliveira
Millena Menezes Marques
Mira Coeli Ribeiro Gomes
Mírian de Cássia Alves Niso
Natália Lulli Milani
Nathan Carlo Soares Martins
Pedro Feldmann Tonelli

Academic Sponsor:

Lydia Maria Lobato

Industry Sponsor:

Francisco Ribeiro de Abreu

September 2023

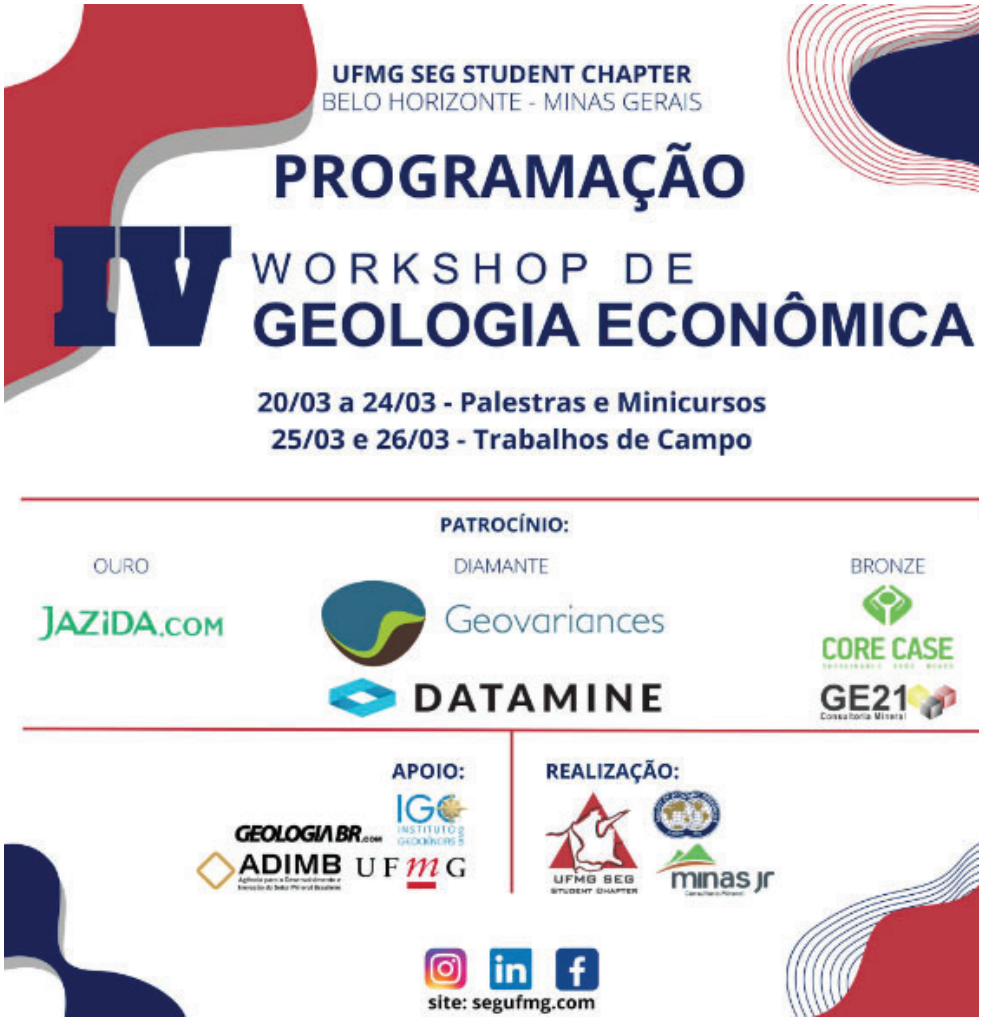
Activities - UFMG SEG Student Chapter 2022 – 2023

Regular meetings

The chapter holds meetings once a month. The group discusses ideas and organizes activities such as webinars, workshops and/or other events, working along other student chapters in Brazil on some projects.

Events

- **IV Economic Geology Workshop - Lectures**
  On March 20-26th, our student chapter held the 4th edition of the UFMG Economic Geology Workshop, in-person at UFMG, coordinated by Izamara Verteiro and Cássio Lopes, involving members and the junior company at UFMG for geology and mining engineering.



We promoted 9 short courses, 10 lectures, a round-table discussion and two field trips. Among the speakers were our professor of Economic Geology, Rosaline Figueiredo e Silva, presenting “Main Mineral Deposits in Amapá, With Emphasis on the Tucano Orogenic Gold Deposit” along with her MSc student, Gabriel Soares.

The Workshop had a great amount of distinct themes, such as **choice of geological tools according to the type of mining enterprise; hydrothermal events and mineral prospection of iron deposits; machine learning and geostatics applied to mineral resources modeling and prospection; geometallurgy and REE in Brazil.**

The **round table** focused on discussing the challenges and benefits of gender inclusion in the Brazilian mineral sector. The guests developed a conversation about women in mining, using research data and the incessant search for a more diverse and inclusive work environment.

Our **short courses** were focused on providing our participants with knowledge on softwares that had become an indispensable tool in the job market. Some of them were ioGas (geochemical, geostatistical, and structural analysis); Jazida.com (the largest platform for automating mining processes in the country); Isatis.neo (geostatistics for resource estimation); ArcGIS (spatial analysis, geographic data management, and thematic map creation), and Studio RM Datamine (explicit modeling).

The Studio RM Datamine short course was conducted by four Geology students at UFMG: Cassio Lopes, Gabriel Tosi, Suzana França, and Thais Vianna.

Other topics approached were: Mining and Environmental Legislation (overview of the Mining Code and environmental legislation related to mining activities, including an examination of the key systems of the National Mining Agency); heavy minerals applied to mineral prospecting (key sampling and sample preparation techniques in the laboratory); and fluid inclusions (importance for metallogeny understanding and analytical techniques).

Participants were introduced to the key concepts related to this subject by professor Lucilia Oliveira, thereby expanding their understanding.

PROGRAMAÇÃO

IV WORKSHOP DE GEOLOGIA ECONÔMICA

20 DE MARÇO	MINICURSO	07h30 - 8h00	Credenciamento
		08h00 - 12h00	**Inclusões Fluidas** - Modalidade: Presencial (Teoria) - Local: Cad 2- Sala: B415
		17h00 - 21h00	**Studio RM** - Modalidade: Presencial - Local: Bloco 2 - Escola de Engenharia, Departamento de Engenharia de Minas
21 DE MARÇO	MINICURSO	07h30 - 8h30	Credenciamento
		08h00 - 12h00	**Inclusões Fluidas** - Modalidade: Presencial (Teoria) - Local: Cad 2- Sala: B415
		17h00 - 21h00	**Studio RM** - Modalidade: Presencial - Local: Bloco 2 - Escola de Engenharia, Departamento de Engenharia de Minas
		18h00 - 22h00	**Introdução do geoprocessamento na plataforma arcGIS** - Local: Instituto de Geociências (IGC) - Sala 3063
22 DE MARÇO	MINICURSO	07h30 - 8h00	Credenciamento
		08h00 - 12h00	**Inclusões Fluidas** - Modalidade: Presencial (Prática) - Local: Cad 2- Sala: B415
		08h00 - 12h00	**Introdução à Geoestatística com o Isatis.neo** - Modalidade: Online - Plataforma: Google meet
		08h00 - 12h00	**Minerais pesados aplicados à Prospecção Mineral** - Modalidade: Presencial - (Teoria) - Sala: Auditório - Local: Instituto de Geociências (IGC)
		09h00 - 12h00	**Leapfrog Geo (Seequent)** - Modalidade: Online - Plataforma: Microsoft Teams
		17h00 - 21h00	**Studio RM** - Modalidade: Presencial - Local: Bloco 2 - Escola de Engenharia, Departamento de Engenharia de Minas
	PALESTRAS na FACE - Auditório 1	14h00 - 14h45	**I - "Geologia de Terras Raras no Brasil: Desafios Históricos, Atuais e Futuros"** - Dr. Francisco Javier
		14h45 - 15h30	**II - "Principais depósitos minerais no Amapá, com ênfase no depósito de ouro orogênico Tucano"** - Rosaline Figueiredo & Gabriel Soares
		15h30	Coffee Break
		16h00 - 16h45	**III - "Modelos de aprendizagem de máquina aplicados à prospecção mineral: da lâmina ao mapa"** - Guilherme Ferreira

23 DE MARÇO

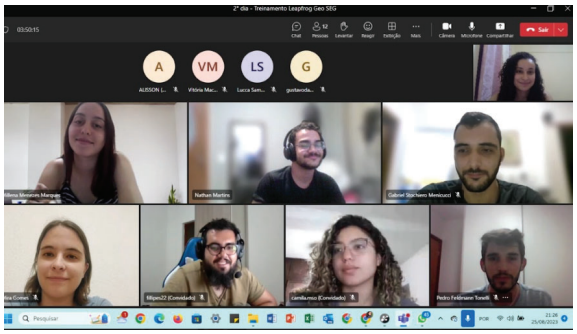
MINICURSO	07h30 - 8h00	Credenciamento
	08h00 - 10h00	**Jazida aplicada à geologia econômica** - Modalidade: Online - Plataforma: Google meet
	08h00 - 11h00	**ioGAS – Primeiros Passos** - Modalidade: Online -Plataforma: Microsoft Teams
	08h00 - 12h00	**Introdução à Geoestatística com o Isatis.neo** - Modalidade: Online - Plataforma: Google meet
	17h00 - 21h00	**Studio RM** - Modalidade: Presencial - Local: Bloco 2 - Escola de Engenharia, Departamento de Engenharia de Minas
	18h00 - 22h00	**Introdução do geoprocessamento na plataforma arcGIS** - Modalidade: Presencial - Local: Instituto de Geociências (IGC) - Sala 3063
	19h00 - 21h00	**Legislação Minerária e Ambiental** - Modalidade: Online -Plataforma: Microsoft Teams
PALESTRAS na FACE - Auditório 1	14h00 - 14h45	**IV - "Machine Learning e Geoestatística aplicados à modelagem de recursos minerais"** - M.e. Gabriel Moreira
	14h45 - 15h30	**V - "Extraindo Dados ... De um Banco de Dados! - O Bom, o Mau e o Feio da Geometalurgia"** - M.e. Fernando Villanova
	15h30	Coffee Break
	16h00 - 16h45	**VI - "Prospecção Mineral de Pequenos Depósitos de Ferro - Técnicas e Aplicações Práticas"** - Prof. Dr. Casagrande
	16h45 - 17h30	**VII - "Mulheres na mineração"** - Mesa redonda

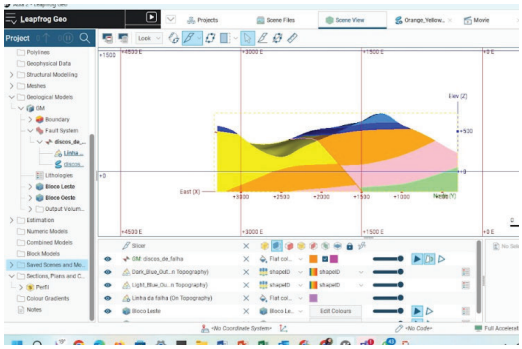
24 DE MARÇO

MINICURSO	07h30 - 8h30	Credenciamento
	08h00 - 12h00	**Introdução à Geoestatística com o Isatis.neo** - Modalidade: Online - Plataforma: Google meet
	08h00 - 12h00	**Minerais pesados aplicados à Prospecção Mineral** - Modalidade: Presencial - (Teoria) - Sala: Auditório - Local: Instituto de Geociências (IGC)
	09h00 - 11h00	**Leapfrog Geo (Seequent)** - Modalidade: Online - Plataforma: Microsoft Teams
	17h00 - 21h00	**Studio RM** - Modalidade: Presencial - Local: Bloco 2 - Escola de Engenharia, Departamento de Engenharia de Minas
	19h00 - 21h00	**Legislação Minerária e Ambiental** - Modalidade: Online -Plataforma: Microsoft Teams
PALESTRAS na FACE - Auditório 1	14h00 - 14h45	**VIII - "Eventos hidrotermais associados aos depósitos de Ferro do Sudeste do Cráton São Francisco e Oeste da Faixa Araçuaí"** - Dr. Flávia Flávia Cristina Silveira Braga
	14h45 - 15h30	**IX - "Escolha de ferramentas geológicas em função do tipo de empreendimento de mineração"** - M.e. Luiz Cadaxa
	15h30	Coffee Break
	16h00 - 16h45	**X - "Os desafios para se alavancar uma nova (velha) Província Mineral - O caso da Província Mineral de Alta Floresta, norte do Mato Grosso"** - M.e. José Matos
	17h00	Encerramento

- **Leapfrog Geo Seequent**

  This short course was conducted by Amanda Mendes, a Geology intern at Seequent who is actively involved in the Society of Economic Geologists (SEG) chapter at UFRJ. During the course, an introduction to Leapfrog Geo was provided, allowing participants to learn the basic workflow for generating geological models. Participants became familiar with the fundamentals of implicit modeling and the use of tools for surface editing.





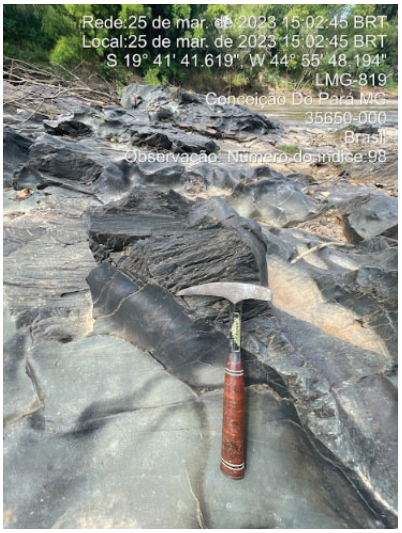
Field Trips

- **Serra da Moeda and Mina do Pico (QF)**

  On March 25-26th, Issamu Endo, professor and director of the Ouro Preto mining school, guided us in a field at the Quadrilátero Ferrífero (QF). On the first day, a technical visit was carried out to outcrops on the western edge of the Moeda Syncline and components of the Nappe Curral, through measurements, a geological section was created. On the second day, a technical visit took place at the Pico Mine and the Cata Branca Mine focused on the processing of Gold, a historical heritage of the region, ending with a technical visit to the Rio das Velhas unconformity.

- **<u>Gold and Diamond Prospecting (Pitangui - MG)</u>**

  On March 25-26th, Cassiano Castro, researcher and member of CPRM since 2007, conducted the field trip in Pitangui and Pará de Minas (MG). On the first day, heavy mineral sampling was carried out through gold concentration and soil sampling using an auger. On the second day we continued with the sampling of heavy minerals through battery concentrates for diamond in drainage and kimberlite, in addition, we finished with sampling of water and rock for geochemical and geochronological purposes.



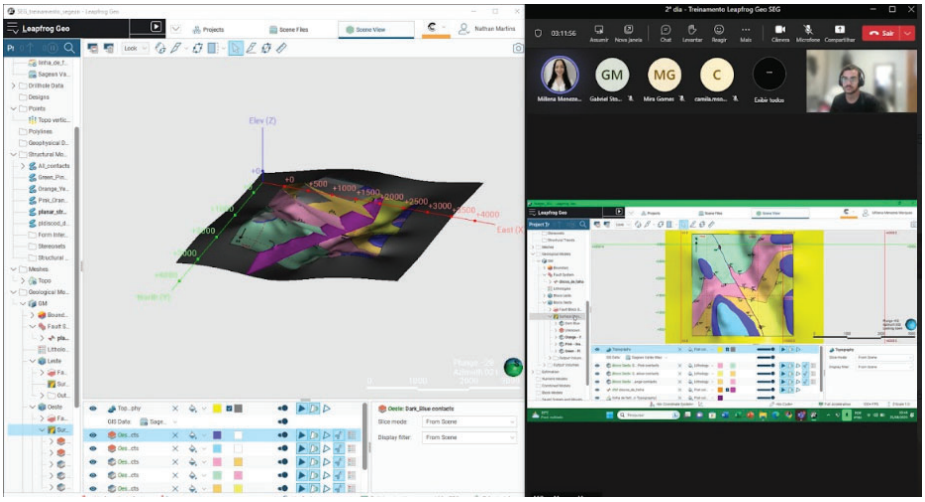
Projects

- **Virtual Library**

  Aiming for a better understanding of Economic Geology, we returned with the virtual library, new fun and dynamic posts were created for the public beginning in Geology explaining the elements and their connection in exploration, such as Iron, Gold, Zinc, among others. All posts were scheduled to be posted biweekly, starting in October.

- **Student Associates Program**

  In association with Seequent, each SC selected two members to learn more about the software Leapfrog – Geo and Edge – and promote a studies group at the chapter. The program is an initiative to capacitate undergraduate students in a software that has become essential to the job market. Our members Millena Marques and Nathan Carlo took courses during April and May with the Seequent specialists and promoted a short course to undergraduate students in geology.



Future activities

Some of the following activities listed are already confirmed to occur in late 2023. Meanwhile, others are still pending confirmation and are described here as a sketch to the following year schedule.

- **V Brazilian Symposium on Metallogeny**

  The SEG UFMG chapter together with professor Rosaline submitted a summary, presented in the form of a poster, to participate in the V Brazilian Metallogeny Symposium that will take place in Gramado, from the 1st to the 4th of October. In 2023, the Geology course at UFMG will turn fifty, celebrating together with the university, the theme of the summary was "50 years of the Geology course at UFMG: Importance of Insertion in the areas of Metallogeny and Mineral Exploration". We count on the collaboration of several former students who occupy important positions in important companies in Brazil, such as Vale and Petrobras.

V SIMPÓSIO BRASILEIRO DE METALOGENIA

Academia e Indústria Mineral: Parceria para o Desenvolvimento da Sociedade

01 a 04 de outubro 2023 Gramado - RS

OS 50 ANOS DO CURSO DE GEOLOGIA DA UFMG: IMPORTÂNCIA DA INSERÇÃO NAS ÁREAS DE METALOGENIA E EXPLORAÇÃO MINERAL.

Ribeiro, G. M. L.; Verteiro, I.M.; Macêdo, V.G; Figueiredo e Silva, R. C. / Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brasil.

Introdução

O curso de Geologia do Instituto de Geociências-IGC da Universidade Federal de Minas Gerais-UFMG celebra seu cinquentenário em 2023, marcando cinco décadas de formação e contribuições para o desenvolvimento da ciência geológica e da indústria mineral no Brasil. Durante esse período, aproximadamente mil geólogos foram graduados, desempenhando papéis fundamentais no mercado de trabalho, especialmente nas áreas de Metalogenia e Exploração Mineral.

Figura 1: Fachada e interior do Instituto de Geociências - IGC - da Universidade Federal de Minas Gerais. **Fonte:** Site da UFMG.

Proximidade com o Quadrilátero Ferrífero

O Instituto de Geociências-IGC localiza-se em Belo Horizonte, Minas Gerais, Brasil. O destaque da influente presença dos graduados no mercado de trabalho nas áreas de Metalogenia e Exploração Mineral, reflete sua proximidade com o Quadrilátero Ferrífero (Figura 2), que é uma das principais regiões minerais e em produção de minério de ferro do país.

Figura 2: Mapa geológico simplificado do Quadrilátero Ferrífero, porção sul do cráton São Francisco (extraído e modificado de Endo et al. 2020).

Número de ex-alunos na graduação em Geologia

Gráfico 1: Crescimento no número de graduados ao longo dos anos, destacando o marco de 50 anos.

Os graduados em geologia da UFMG têm desempenhado um papel fundamental na produção científica, contribuindo para o avanço da geologia e a formação de novos geólogos, perpetuando a excelência do curso. Além disso, esses profissionais têm ocupado cargos estratégicos em órgãos governamentais, como o Serviço Geológico do Brasil (CPRM) e empresas multinacionais de mineração e metalurgia, desempenhando um papel crucial na gestão de recursos naturais e na tomada de decisões para promover o desenvolvimento sustentável.

Ex-alunas e ex-alunos que são destaques na área da Metalogenia

Conclusão

O geólogo, com sua sólida formação proporcionada pelo curso da UFMG, desempenha um papel multifacetado e imprescindível na indústria mineral, seja a nível nacional quanto internacional. Os profissionais contribuem para a identificação de novos depósitos minerais, otimização de processos de extração e adoção de práticas sustentáveis. O trabalho dos geólogos da área da metalogenia envolve a coleta, a interpretação de dados geológicos, a elaboração de modelos e recomendação de áreas promissoras para prospecção de acordo com o potencial econômico dos depósitos minerais. Além disso, os geólogos têm um papel relevante ao considerar aspectos ambientais e sociais, contribuindo para práticas de mineração mais responsáveis. O contínuo avanço nessas áreas é fundamental para a compreensão dos recursos minerais do planeta e para buscar soluções que permitam o uso racional e sustentável desses valiosos recursos.

Referênolas:

Instituto Geociências UFMG – Instituto Geociências UFMG. (n.d.). Ufmg.br. Retrieved September 23, 2023, from https://www.igc.ufmg.br/

ENDO, Issamu et al. Estratigrafia e evolução estrutural do Quadrilátero Ferrífero, Minas Gerais. Quadrilátero Ferrífero: avanços do conhecimento nos últimos 50 anos. Tradução . Belo Horizonte,MG: 3i Editora, 2020. p. 70-113.

Apoio:

- **Prospection and Field Sampling Techniques**

  The Prospection and Field Sampling Techniques activity involves hands-on training in various techniques used for geological prospecting and field sampling. Participants will gain practical experience in collecting geological data in the field. Fields will be accompanied by professors and professionals in the field of metallogeny, structural geology, and geophysics. The idea of this activity is to take active members of the student chapter to gain practical experience in geological prospecting and field sampling techniques.

- **Exploratory Data Analysis - Iogas**

  The Exploratory Data Analysis - Iogas activity will provide participants with insights into the process of analyzing geological data using Iogas software. It will cover techniques for exploring and visualizing geological datasets effectively. This session will be accompanied by professionals in the field of metallogeny and geophysics. The idea of this activity is to take active members of the student chapter to explore and analyze geological data effectively using Iogas software.

- **Geostatistics - Isatis.Neo**

  In the Geostatistics - Isatis.Neo activity, participants will delve into geostatistical methods and their applications using Isatis.Neo software. This session will focus on understanding and applying geostatistical concepts to geological datasets. This will be accompanied by professionals from the company Geovariances. The idea of this activity is to enable active members of the student chapter to understand and apply geostatistical concepts using Isatis.Neo software.

- **ArcGIS and QGIS Geoprocessing**

  The ArcGIS and QGIS Geoprocessing activity will equip participants with essential skills for geospatial data processing and analysis using ArcGIS and QGIS software. Participants will learn about geoprocessing tools and techniques. This will be developed by members of our chapter, accompanied by professors in the fields of metallogeny and geoprocessing. The idea of this activity is to enable active members of the student chapter to acquire essential skills for geospatial data processing and analysis using ArcGIS and QGIS software.

- **Leapfrog Geo Modeling, Micromine**

  The Leapfrog Geo Modeling and Micromine activity will introduce participants to geological modeling using Leapfrog Geo and Micromine software. This hands-on session will cover the creation of geological models from geological data. Participants will be accompanied by professors and professionals in the fields of metallogeny and structural geology. The idea behind this activity is to secure licenses Seequent in order to enable active members of the student chapter to create geological models from geological data using Leapfrog Geo and Micromine software.

- **Visit to the Lithium Mine in Araçuaí**

  The Visit to the Lithium Mine in Araçuaí offers participants a unique opportunity to visit an operational lithium mine. This field trip will provide insights into mining operations, geological features, and environmental considerations associated with lithium mining. Participants will be accompanied by professors and professionals in the fields of metallogeny and structural geology. The idea behind this activity is to enable active members of the student chapter to visit an operational lithium mine and gain insights into mining operations, geological features, and environmental considerations.

New committee

The new committee for administration during the period of October 2023 – September 2024 has already been chosen, and the members are the following:

President: Natália Lulli Milani
Vice-president: Vitória Gomes Macêdo
Secretary: Gustavo Dantas Waughan
Treasurer: Izamara Martins Verteiro

Financial Report
UFMG SEG Student Chapter

09.30.2023

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Committee

President: Natália Lulli Milani
Vice-president: Vitória Gomes Macêdo
Secretary: Gustavo Dantas Waughan
Treasurer: Izamara Martins Verteiro

Last Committee

President: Nathália Regina Diniz Bueno
Vice-president: Cássio Eustáquio de Moura Lopes
Secretary: Izamara Martins Verteiro
Treasurer: Vitória Gomes Macêdo

In March 2023, the IV UFMG Economic Geology Workshop took place with several activities. The event featured excellent professionals who gave lectures, courses, and fields. All members participated and collaborated in the activities.

Another investment was the financing of new members so that they could pay the taxes related to SEG membership. We believe it is a great way to show our community that we support students pursuing a path in Economic Geology.

In the month of December, the chapter will promote a get-together to celebrate the 15th anniversary, in order to connect the chapter's past and present, strengthening ties between associates and former members.

Another use of the chapter's money was the registration and transport of three students to the V

Brazilian Metallogeny Symposium where a submitted work was accepted in poster form and will be presented in Gramado-RS.

The field trips carried out were explained in a separate report.

Description	Value (BRL)
2023 Checking Account (September)	4,666.13
IV UFMG Economic Geology Workshop (2023)	+ 8,400.54
Stewart R. Wallace Funding Round II (2022)	+ 6,206.21
Leapfrog Geo course	+ 405.00
SEG taxes for new members	- 450.00
Chapter confraternization	- 400.00
V Brazilian Metallogeny Symposium	- 3,500.00
Total expenses with field trips	- 6,214.00
Current Checking Account + Savings Income Taxes	**9,113.88**