



# ANNUAL REPORT

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🏠 Mining team

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📘 SME UNA - PUNO

# 2019

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## **EXCECUTIVE SUMMARY**

the summary of the activities of the period 2019 - 2020, was based on two very fundamental values as "Commitment and Work", exceeding the objectives of the previous year, is a very constant work and commitment of the student chapter of the SME UNAP, was a great work for the members of the student chapter to carry out the activities planned during the year and the activities that were included during the requirement, which we will mention briefly in this summary.

The opening ceremony marked the beginning of our activities throughout the year and also had the objective of generating a link in the mining sector, achieving a greater number of new members in the student chapter and thus being able to focus on the human talent of other schools that contributed to our development, This was possible thanks to the information campaign provided by different media, which gave us not only the attention and assistance of the students from other schools but also the presence of the Peruvian section Office, manager and representatives of Improvement Mining Consultant and dean of our university and the authorities of our own school of mining engineering.

After settling with new members and the support of our University, we participated in the clean-up campaign "United for Titicaca", a campaign that was organized by CLIP in conjunction with us to preserve Lake Titicaca in our Puno Region. Also to develop our knowledge we organized courses and trainings with the student chapter SME UNA Puno, among them were the most prominent speakers in the industry and the topics that we made were; Geomechanics in open pit mining, Mining Planning in Open pit, optimization of final Pit NPV, Drilling and Blasting,

Underground Mine Design, Short term planning in open pit mining and Geostatistics in Mining, these courses each lasted more than 20 hours, which was considered the best courses for the student chapter.

Also during the year we did a great job to get technical visits to different mining units in Peru, this was done with the competitions and assigned to the most active members with good attitudes that they had in the student chapter and also with the support of some engineers graduated from our school, we visited the mines like Cuajone, Toquepala, Tacaza, Constancia, Yanacocha and Shahuindo. This was done with the objective of motivating our members and making several students part of the chapter.

We also had the honor of participating in the underground planning competition with our planning team organized by the Society for Mining, Metallurgy and Exploration (SME) at the mining convention, who were in constant training and education throughout the year. On the other hand, we also participated in the "MOVEMINING" project with new mining trends for the future. In Mining Education Coalition (MEC) team, we carried out trainings for primary educational institutions with the objective of educating about modern mining and we were very grateful to the directors of the institution.

At the end of the year we organized a fellowship lunch and we are very grateful for the great effort we made during the year, and to continue motivating the new generation of the student chapter.

## **1.1.Reports**

### **1.1.1. Faculty Advisor**

Jr. Tarapaca #238

Puno, Peru, So. Am.

31st May 2020

Mona Vandervoort

Education Coordinator

Mining, Metallurgy and Exploration Society, Inc.

12999 E. Adam Aircraft Circle

Englewood, CO 80112

Dear Mrs. Vandervoort:



It is a great privilege for me to present to you the annual report 2019 - 2020 of the Student Chapter of the National University of the Altiplano - Puno. I have been the chapter's advisor since August 2014 and I am very proud of the achievements and professional development of our students. Under the leadership of President Elmer Ccahuana Yucra and his board of directors. The student chapter has shown great challenges and performance and has definitely made outstanding achievements during the year.

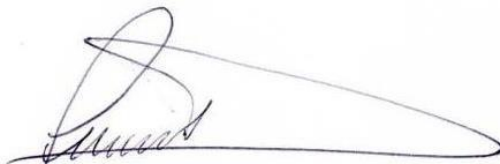
According to the report of the Student Chapter UNA Puno, of the Mining, Metallurgy and Exploration Society and I believe that the information presented in this document is accurate and true.

The chapter organized and supported the important events mentioned in this document during the year, and in the same way the chapter did a great job organizing training courses, technical visits to 6 open pit mining units and managing to commit several students to participate in each of the events. They also participated in the competition projects such as "Movemining", Mining Education Coalition and the Underground Planning competition at the mining convention.

Our chapter grew significantly, adding 43 new members selected and meeting the objectives and goals.

Please accept this annual report from the student chapter of UNA Puno, which details the outstanding performance of our students and young professionals. This report provides clear evidence that our students are the future leaders of our industry.

Very sincerely,

A handwritten signature in dark ink, appearing to read 'George Durant', with a long, sweeping horizontal stroke extending to the right.

George Durant  
Faculty Sponsor,  
UNAP Student Chapter



### 1.1.2. Local Section Counselor

Lima, Perú, June 2020.

Last year I got a proposal of being SME UNAP student chapter's local section which I accepted right away as part of my motivation to cooperate on the students educational shaping. It was a great experience working with them in order to get connections with some distinguished professionals as well as getting sites visiting.



I was asked to attach some words to their annual report and I'm happy to do it. I met them personally at the campus on Puno City and had a wonderful talk time where I shared my experience as mining engineer in different countries and operations. They were so motivated and looking forward to jump into the industry. Some of the activities we worked on were online conferences, visiting Shahuindo mine, short courses on plenty topics such as mine planning, rock mechanics, cost estimation, management, software usage, community affairs, strategical planning, developing soft skills and so on.

I worked directly with Elmer Ccahuana Yucra who was the president and had no issue to get goals on time. Also, I saw an enormous progress in their hard and soft capabilities in such relatively short period of time and have no doubts that SME Student Chapter Puno is making a remarkable help on its members. I'm so thankful for giving me an enriching opportunity.

Sincerely,



Filiberto Mamani Calsina

SME UNAP Student Chapter's Local Section

## **1.2. Officer Reports**

### **1.2.1. President's Report**

Puno, Peru June 2020

During my studies at the University I was part of the SME UNA Puno from the beginning, in 2016. I started as an active member and then as the 2018 Treasurer. Last year, I had the honor of being elected as the president of the student chapter SME UNA in 2019, I had a very rewarding experience because we had several well-defined goals and objectives to accomplish in the period 2019 - 2020.



First of all, our goal was to have as many members as possible, so we held the opening ceremony at my university, we had the presence of professionals who supported us as Peru Section Officer and all the support of our appreciated teachers.

Secondly, during the year we carried out training courses oriented to mining, with the objective of improving and developing our soft skills and for the benefit of each of the members, for which we had very well-known professionals of the industry whom we thank for their contribution and professional experience.

During the year we did a great job with the support of our Local Section Counselor, Faculty advisor and professionals who work in the mine, thanks to this we got 6 technical visits to the biggest mines in Peru and among others that were denied, but apparently they were visits for all the members, there was no member that was left without a technical visit.

We also participated with all our chapter in the Underground Planning Contest organized by the Society for Mining Metallurgy and Exploration, for them we prepared a lot and we managed to send 2 students of the chapter to the university of Chile in the summer school, we participated jointly in events like in the convention Minera PERUMIN, we were participants of the project of MOVEMINING, developing a project "ILLARY CODE", also in the MEC we developed an arduous work to enable the students of primary with the only objective to generate new perspectives on modern mining.

I am very happy and grateful to SME, since it helped me to improve as a person and make me a leader in my student life, sharing experiences with industry professionals.



Elmer Ccahuana Yucra  
2019 SME UNA Student Chapter President

### 1.2.2. Vice President's Report

We have had many challenges in the past year and in turn have been developing skills to be able to overcome each challenge presented. We were all committed to leading this great team by learning more about leadership and effective communication. The team is proud to meet all the goals set and to interact with other engineering schools such as Geology, Metallurgy, Systems and social specialty areas.



Technical visits, courses and training were carried out taking into account the current needs of the mining industry and to effectively train us as professionals who provide solutions to every problem in society and the mining industry. I would recommend to all the university community and professionals in the mining industry to be part of the EMS, because it presents unique opportunities in life of deep change in your whole being, I have had the joy of seeing how colleagues began a working stage as soon as they finished their career, see friends fulfilling their dreams, travel to other countries to train and be a professional according to the current needs. Elmer the president and leader of this team showed leadership and innovation by attending the planning trainings organized by DELPHOS in Chile. Such is the case where I had the opportunity to attend the MINEXCHANGE, an annual EMS conference that took place in Phoenix, Az. An opportunity to change my way of seeing the industry by interacting with great characters, giving me the chance to broaden my horizon and replicate everything I learned to all my friends and fellow EMS UNAP members.

Sincerely,

A handwritten signature in black ink, appearing to read 'Machaca' with a stylized flourish at the end.

Franklin Machaca Apaza  
2019 SME UNA Student Chapter Vicepresident

### **1.2.3. Treasurer's Report**

It was a difficult job specially to maintain a positive balance from the beginning of the year because the year before in order to have a cash flow, we had to do courses with certain costs that would add up for the student chapter. I also knew that it was going to be a wonderful challenge for me because of the activities we had in mind both on campus and off. Our main goal was to compete with international colleagues by managing: conferences, short courses, social events, visits to different mining units in Peru and. All this with one thing in mind to provide the best opportunities to the Student Chapter members of the UNAP SME.



Next, I detail with all veracity the cash flow that has been generated in the year 2019, also verifying that there was no delivery of balance of the year 2018, the expenses made are in order to support the members in the expenses of trips to mine, dinner of fraternization, important days and holidays and among others that are detailed.

Also for each new member was charged USD 34 , this because many of the students find it difficult to pay an amount greater than USD 35, is the reason that the same cost was charged that is sent to the SME.

Sincerely,

A handwritten signature in black ink, consisting of a stylized 'L' and 'M' followed by a horizontal line.

**Lizeth Sonis Medina**  
**2019 SME UNA Student Chapter President**

Dates	Revenues from activities	Quantity	Unit	Net profit per unit	Total Income
May-16	2016 Membership Challenge Price				\$ 0.00
May-16	Membership Day	-	new member	\$ -	\$ -
May-16	Engineering Days(Anniversary of the School of Mines)	-	member	\$ -	\$ -
12-Jun	Unidos por el Titicaca Event	-	member	\$ -	\$ -
<b>Conference and Courses</b>					
30-Mar	Geomechanics in Open Pit Mining	20	attendee/member	\$ 110.00	\$ 2200.00
11-May	Drilling and Blasting with JK Simblast	12	attendee/member	\$ 40.00	\$ 480.00
21-Apr	Final Pit Optimization with NPV SCHEDULER	5	member	\$ 100.00	\$ 500.00
7-Jul	Mine Planning Open pit	18	member	\$ 150.00	\$ 2700.00
23-Aug	Short Term Planning in Open Pit	30	member	\$ Free	\$ -
19-Oct	Geostatistics in Mining	30	member	\$ Free	\$ -
<b>Technical Mine Visits</b>					
23-May	Cuajone Mine	28		\$ 20.00	\$ 240.00
5-Jul	Constancia Mine	22		\$ 2.12	\$ 50.88
6-Aug	Toquepala Mine	20		\$ 1.00	\$ 100.00
15-Jul	Tacaza Mine	7			
22-Nov	Yanacocha Mine	17			
23-Nov	Shahuindo Mine	17			
<b>Fundraising Donations</b>					
16-Sep	Monetary Contribution (Christian Mollinedo)	-	-	\$ 600.00	\$ 600.00
<b>Total revenue</b>					<b>\$ 6870.88</b>

Dates	Expenditures from activities	Quantity	Unit	Cost	Total Expenditure
Apr-16	2016 Membership Challenge Price				\$ -
May-16	Membership Day Publicity	500	Flyers	\$ 0.30	\$ 150.00
May-16	Enginerring Days(aniversary of the School of Mines)	6.00	Soda	\$ 8.00	\$ 48.00
6-May	Opening Ceremony( engineering lunch)	10	fish	\$ 40.00	\$ 400.00
6-May	Impromining Consultant	3	accommodation	\$ 70.00	\$ 210.00
7-May	Interview Job	22	Printed sheets	\$ 0.50	\$ 11.00
8-Sep	Sikuris Dance	5	Lunch	\$ 10.00	\$ 50.00
8-Jul	Welcome dinner SME UNA	24	dinner	\$ 5.00	\$ 120.00
18-Sep	Mining Convention PERUMIN	10	Lunch	\$ 10.00	\$ 100.00
12-Jun	Titikaca Lake Clean up	-	materials	20.00	20.00
<b>Conference and Courses</b>					\$ -
30-Mar	Geomechanics in Open Pit Mining	20	engineer Payment	\$ 100.00	\$ 100.00
11-May	Drilling and Blasting with JK Simblast	12	engineer Payment	\$ 40.00	\$ 480.00
21-Apr	Final Pit Optimization with NPV SCHEDULER	5	engineer Payment	\$ 80.00	\$ 400.00
7-Jul	Mine Planning Open pit	18	engineer Payment	\$ 150.00	\$ 2700.00
23-Aug	Short Term Planning in Open Pit	-	Transportation	\$ 150.00	\$ 150.00
19-Oct	Geostatistics in Mining	-	engineer Payment	\$ -	\$ -
<b>Technical Mine Visits</b>					\$ -
	Management	-	documents	-	\$ 50.00
23-May	Cuajone Mine	28	Medical Examination	\$ 5.00	\$ 140.00
5-Jul	Constancia Mine	22	life assurance	\$ 30.00	\$ 660.00
6-Aug	Toquepala Mine	-	-	\$ -	\$ -
15-Jul	Tacaza Mine	-	-	\$ -	\$ -
22-Nov	Yanacocha Mine	17.00	Medical Examination	\$ 25.00	\$ 425.00
23-Nov	Shahuindo Mine	-	-	\$ -	\$ -
<b>Fundraising Donations</b>					\$ -
16-Sep	Monetary Contribution (Christian Mollinedo)	12.00	shirts	\$ 50.00	\$ 600.00
<b>Total expenditure</b>					<b>\$ 6814.00</b>

#### **1.2.4. Secretary's Report**

It has been an honor to have been part of this team and to be a member of the SME UNAP Student Chapter. which helped me a lot in developing my soft skills, leadership and teamwork. During this management together with Elmer and some management members. We have worked in the best way on our objectives, purpose, and some projects which we have been improving every day. When I was elected secretary, my main responsibilities were to write all the documents such as offices, letters, requests for each and every event, plus we carry a detailed minutes book of all the meetings we have

We know that organization, planning and communication is vital to develop management in the best way. In this year various courses were held (geomechanics, planning and others), technical visits (hubbay constancy, southern copper), a forum together with other student chapters.

These activities gave us a lot of experience as a teamwork, which I am going to thank my President Elmer Ccahuana Yucra for the trust he has placed in me and for all the motivation I had during his administration. I also want to thank Ing. Jorge Durant for all the unconditional support that I gave during this management, and my total thanks to all the members who with their support motivated us to be better.



Luis Fernando Asqui Ticona  
2019 SME UNA Student Chapter Secretary



**NEW MEMBER 2019**

N°	Name	School
1	ALEX BELLIDO LICHUGA	Mining Engineering
2	ALEXANDER HUAYTA VILCAZAN	<b>Geology Engineering</b>
3	ALEXANDER QUISPE GUTIERREZ	<b>Geology Engineering</b>
4	BERTRAND MURGA VALERIANO	Mining Engineering
5	BRAYAN HUANCCO QUISPE	Mining Engineering
6	BRIGIDA SANDRA MAMANI ARRATIA	Mining Engineering
7	CRISTIAN IVAN LAURA FERNANDEZ	Mining Engineering
8	DAVID RONAL GUTIERREZ QUISPE	<b>Geology Engineering</b>
9	DAYRON TORRES SANCHEZ	<b>Geology Engineering</b>
10	DIEGO ALEXIS LA ROSA ASQUI	Mining Engineering
11	DILBERT COAQUIRA CASTRO	Mining Engineering
12	EDISON ROMARIO GUTIERREZ CUTIPA	Mining Engineering
13	EFRAIN WILBER CCALLE CCALLO	Mining Engineering
14	ELVIS WILLIAM HUALLPA FLORES	Mining Engineering
15	ERVIS RONY QUISPE ARAPA	Mining Engineering
16	EVERTH ELIAZAR COYLA CCOPA	Mining Engineering
17	JAIR ALDEIR CRUZ VILAVILA	Mining Engineering
18	JHON RICHARD CHATA SUCACAHUA	Mining Engineering
19	JOEL EDSON MAMANI HUANCA	Mining Engineering
20	JOSE LUIS SOLORZANO JARA	Mining Engineering
21	LAURA ROSY PACOMPIA QUISPE	<b>Geology Engineering</b>
22	LEYDI PILAR YANA YANA	<b>Geology Engineering</b>
23	LIZETH FIORELA QUISPE AYQUE	Mining Engineering
24	LIZETH SONIS MEDINA CONDORI	<b>Geology Engineering</b>
25	LUCERO TORRES SALAS	<b>Geology Engineering</b>
26	LUIS ANGEL CCALLO HUARAHUARA	<b>Geology Engineering</b>
27	LUIS FERNANDO ASQUI TICONA	Mining Engineering
28	LUIS FERNANDO COLORADO VELA	Mining Engineering
29	LUIS RICARDO YUCRA YUCRA	Mining Engineering
30	MARIA YULISA CANAZA PARISUAÑA	<b>Geology Engineering</b>
31	MAX VLADIMIR CHAMBI ACERO	Mining Engineering
32	NILTON WILY QUISPE APAZA	Mining Engineering
33	RAPHAEL CCALLO CERVANTES	<b>Metallurgy Engineering</b>
34	RONAL SAUL CALANCHO QUISPE	Mining Engineering
35	RONALD JUAN CONDORI LAQUITA	Mining Engineering
36	RONY CONDORI CONDORI	<b>Geology Engineering</b>
37	ROY SANTOS SANTOS	Mining Engineering

<b>38</b>	SAUL ALEX GALINDO SALAS	<b>Geology Engineering</b>
<b>39</b>	WALTER ALEJANDRO CRUZ ORDOÑEZ	Mining Engineering
<b>40</b>	RONALD INCA QUECANO	Mining Engineering
<b>41</b>	ROY HAROLD YUPANQUI BAILON	Mining Engineering
<b>42</b>	LUIS FERNANDO MAMANI RAMOS	Mining Engineering
<b>43</b>	FRANKLIN YOSHINO GALARZA VENTURA	Mining Engineering

#### **Renew Membership 2019**

<b>N°</b>	<b>Name</b>	<b>School</b>
<b>1</b>	FREMY FLORES CHAMBILLA	Mining Engineering
<b>2</b>	ELMER CCAHUANA YUCRA	Mining Engineering
<b>3</b>	UBERMAIN LUPACA HUANACUNI	Mining Engineering
<b>4</b>	ALEXANDRA ROSA CCAMAN RAMOS	Chemistry Engineering
<b>5</b>	ROYER LUIS INCA QUECAÑO	Mining Engineering
<b>6</b>	KEBYN BAYLON JIMENEZ PILCO	Mining Engineering

### **1.3. Estudent Chapter`s Activities on Campus**

#### **1.3.1. Opening Ceremony SME UNA PUNO**

Date: 06 May – 2019

The opening ceremony took place at the Universidad Nacional del Altiplano, especially at the School of Mining Engineering. It is an important event for the chapter, because it gives a start to the activities of the year and also many students have the opportunity to be part of the chapter with the aim of making known the expectations and the work plan that was developed during the academic year, an event with good attendance of students from different universities of Puno and Juliaca.



For the event we made several advertisements in the university in the city through communication stations such as radio, television and others. We also visited different schools such as Geological Engineering, Civil Engineering, Metallurgical and Chemical Engineering to make

the invitation to attend the ceremony and be part of the chapter. The reception was very well received in the school's auditorium, managing to have students and teachers, thus the beginning of the ceremony of the year. University authorities and the representative of Peru Section Office, of SME Peru - South, who gave their presence and support to meet the goals of the chapter.

- Kemper Alberto Portocarrero Ramos, SME Peru Section Officer
- Oscar Eloy Llanque Maquera, Dean of the School of Mining Engineering
- Jorge Duran Broden, Faculty Sponsor SME UNA
- All teachers in our school



The results of the event were very successful because we had new members, in addition to strengthening the chapter, which was thanks to all the teamwork we did.

### **1.3.2. IMPROMINING Consultant in SME UNA PUNO**

Date: 06 May – 2019

One of the challenges that the mining students should know is the technology and the new tools for the future, developing and implementing the skills for their best performance in the industry, is the reason why we had as a guest by the board of directors of the SME UNA Puno Student Chapter to the representatives of Improvement Mining Consultant - (IMPROMINING), It is a consulting firm with headquarters in Chile, Australia and Peru who support university education in mining with technology, training all members in general of your chapter and other attendees after the Call with the theme "Technology and Innovation unlocking opportunities" and "New opportunity for Peruvians students" for this were made in two presentations with topics focused on reality.



The trainings provided allowed the chapter members to develop new skills and a different view on mining technology and be in line with the new updates that are focused on the day of new mining, students were very satisfied at the end.



### **1.3.3. Job Interview Simulation SME UNA PUNO**

Date: 07 May – 2019

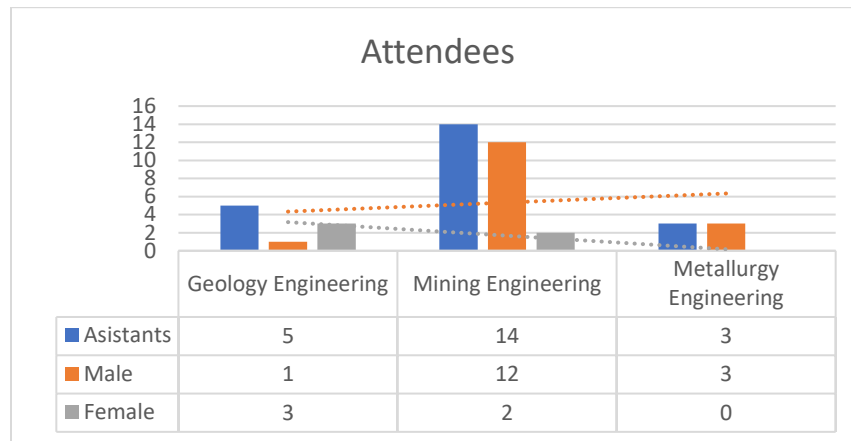
The chapter organized a simulation of job interviews with the support of the professionals of Improvement Mining Consultant (IMPROMINING), with the objective of evaluating and strengthening the skills and knowledge of the members, also to strengthen during the year the weaknesses that were obtained in different aspects, as one of the main weaknesses English, and others that correspond to topics of leadership with principle, and fundamental values that will make the success of the members, so that each member participates in the interview they had to attach their Curriculum Vitae 24 hours before the interview.

Interviewers:

- Kemper Portocarrero - Development Manager of IMPROMINING
- Victor Lisarraga - Manager of IMPROMINING
- Lester Mamani - Assistant IMPROMINING.



### 1.3.3.1. Interviewee Report SME UNA PUNO



### 1.3.4. Local Section Counselor Visit to SME UNA PUNO

Date:

The meeting with our Local Section Counselor in the school of mines of our university, was one of the most important meetings of the year, we had exchange of experiences, also we talked about the activities, plans and events that we were carrying out during the year of the chapter, also we had some suggestions on the activities and mainly the improvements of we should do inside the chapter and this way to promote the team in different aspects.



## **1.4. Estudent Chapter`s Courses on Campus**

### **1.4.1. Geomechanics in Open Pit Mining.**

Date: 28,29,30 March – 2019

We started the year with the first training, basically with the study of geomechanics in open pit mining, one of the most important topics, we focused on knowing the basic parameters, rock properties, study of Rock Mass Rating (RMR) and Raiting Quality Designation (RQD).



To complement the course after learning about the theory, we decided to do a field practice, specifically in a rock quarry in the city of Juliaca. It was a very responsible job for the organizers because we had to request the equipment to be used and move to the quarry site to do a geomechanic mapping, and apply what we learned in class.





To finish the course in the third day, we made a complementation from the data obtained in the quarry, (Course, Diving, Topography, RMR, RQD and Hardness), with the objective of modeling and evaluating the characterization of the rock mass in the DIPS software, such as types of failure and the quality of the rock mass for the control of the slopes.

#### **1.4.2. Drilling and Blasting with JK Simblast**

Date: 10, 11 May – 2019

The importance of knowledge in our days is the basis of the world trend and drilling and blasting are not unaware of it, that is why the student chapter SME UNA organized the course to strengthen and enhance our knowledge for a better professional performance of the members. The main topics that have been developed are rock fragmentation, innovations and development of new explosives, prediction of rock fragmentation, control, vibration and structural damage. On the second day of the training, the application of real cases of drilling and blasting mesh design and blasting safety protocols, seismic wave control simulation was complemented with the use of Jk Simblast software.



### 1.4.3. Final Pit Optimization with NPV SCHEDULER.

Date: 20 21 April – 2019

Alliance: ISEE UNA Student Chapter



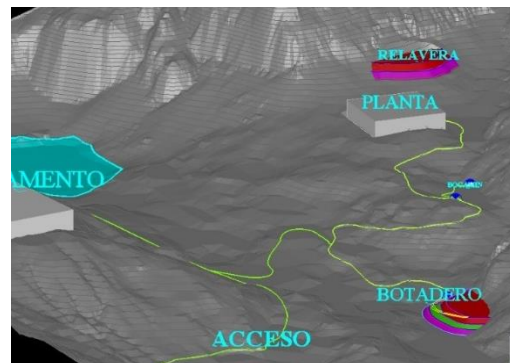
To continue motivating the student chapter of the SME UNA, the optimization of the block model is very important in the industry, besides using the NPV SCHEDULER software, our speaker taught us the cost analysis, block valuation, nested pit generation, optimal pit and report management.



#### 1.4.4. Open pit Mining Planning

Date: 06,07 July – 2019

Learning planning is one of the biggest challenges in the student chapter and in the world of mining, that is why we had to know more about basic principles of planning, block evaluation, design focused on mining, truck cycle, design of a waste deposit and to finish the training make a review of a mining plan.





#### **1.4.5. Underground Mine Planning.**

Date: 26 July – 2019

After having done some open pit mining training, we also had the great challenge of learning about underground mining, our instructor gave us his experience and knowledge, which was very helpful for us and we learned the basics of reserve evaluation, and basically selection of the mining method, design of ramps, galleries, chimneys, shafts and other topics that require a student to know.



#### **1.4.6. Short Term Planning in Open Pit**

Date: 23 August – 2019

We had the great opportunity and voluntary visit of an expert planning engineer and past president of the SME UMSM during his time as a student, currently working at Mine Las Bambas. We shared some experiences and he encouraged us to continue growing as a student chapter of SME UNA. On the other hand, he also trained us on a topic that focuses specifically on monthly and annual mining plans.



In addition, the engineer, in his capacity as Young Leader, shared with us his expectations, experiences he lived in the Society for Mining, Metallurgy and Exploration (SME), he told us about the opportunities that exist in the SME, which we could participate in, such as events, competitions and others that are definitely of our interest.



#### **1.4.7. Geostatistics in Mining**

Date: 19 October – 2019

This course was also developed to emphasize the knowledge mainly to our student chapter members who study geological engineering, so we learned the processes of ore grade estimation, Gaussian conditional simulation processes, more specific topics such as probabilistic models, experimental variogram and among others, was one of the courses that motivated us to continue learning at the end of the semester of the academic year.



## **1.5. Estudent Chapte`s Activities of Campus**

### **1.5.1. Lake Titicaca Clean up 2019**

Responsible: SME UNA Student Chapter

Date: 05 June

Competence: Initiative, Leadership, Organization.

Alliance with: CLIP LATIN AMERICA, LOCAL GOVERNMENTS, VOLUNTEERS.

To commemorate the Environment Day, CLIP LATINOAMERICA organized the cleaning of Lake Titicaca between the countries of Peru and Bolivia, the symbolic cleaning of the largest navigable lake in the world was carried out; event in which also participated 10 Educational Institutions and 8 organizations, with a participation of more than 2,000 people.

The SME UNA PUNO Student Chapter participated as co-organizer of this event called "Unidos por el Titicaca" (United for Titicaca) in which it is worth mentioning the active participation of more than 20 SME members





### **1.5.1.1. Lake Titicaca Cleanup Awareness Conference**

CLIP LATINOAMERICA organized a conference with several speakers with the aim of reducing the pollution of Lake Titicaca by engaging the entire population in action, among them Franklin Machaca Apaza, vice president SME UNA Puno Student Chapter, was presented with a space dedicated to all attendees. He gave a speech about the immediate action to decontaminate it, inviting more people to become aware of the need to care for Lake Titicaca.



### **1.5.2. Welcome dinner SME UNA PUNO.**

Competition: Confraternity.

Date: 08 July

To strengthen the bonds of trust, friendship and teamwork, the old members and the board of directors organized a welcome dinner for the new members, a space created to know more about our members and to present all the achievements of SME UNA PUNO.





### 1.5.3. Civic parade.

Competition: Conscience and Identity.

Date: Sunday, August 28, 2019

For the Anniversary of our university, our chapter participated in the Corsican with a message of conscience for the care of the environment, there was a representative brigade that carried the flag in front of our school and another cleaning brigade in which they were located at the top collecting the garbage in the parade track.



#### 1.5.4. Sikuris Dance

Competence: Identity.

Date: 08 September 2019

The Sikuris represents all the cosmovision of the Andes and the people, its execution is an art that includes much more than the melodies produced by the cane instruments; as the culture of Puno the National University of the Altiplano, our chapter participated with several members forming a folkloric group demonstrating identity with our culture.



#### 1.5.5. Soft Skills Workshop TECSUP, PERUMIN 34 MINING CONVENTION

Personnel Responsible: TECSUP Competence: Ability. Date: 16 September.

PERUMIN is the largest mining event worldwide, which has positioned our country as the meeting point of the mining industry. It has been consolidated as the one with the highest

attendance, expectation and organization throughout its editions, in which our chapter received invitations to attend the Soft Skills workshop at TECSUP 2019.

An event where created to strengthen leadership in the team, a great opportunity to strengthen soft skills in the mining sector

#### **1.5.6. PERUMIN MINING CONVENTION 34**

Responsible: SME UNA PUNO Exhibitionists    Competition: Attitude.

Date: 16 to 20 September.

Every two years the PERUMIN MINING CONVENTION is held, an event developed in Arequipa to show all the news and advances in the mining world. Several members of our chapter participated as volunteers to attend in several of the Stands, as well as there were 20 people who attended as exhibitionists throughout the week



### **1.5.7. SME PERUMIN Gala Dinner.**

Responsible: Elmer Ccahuana Yucra    Competition: Attitude.    Date: 19 September.

the gala dinner is organized by the SME, in which the presidents of each student chapter participate, with the objective of strengthening with the members representing different universities of Peru, also it is a meeting with the managers of different mining companies and the awarding of the contest of underground planning



### **1.5.8. International Congress of Mining Engineering Students. CIEMIN.**

Responsible: Invited CIEMIN    Competence: Knowledge.    Date: 18 to 20 September.

In the X CIEMIN, our team had the opportunity to participate as guests and get the maximum benefit from this congress; we are very grateful to SME, for the invitation and consideration to participate in this congress where our participating members had an excellent learning experience.





### **1.5.9. Certificate ceremony.**

Persons in charge: Board of Directors

Competence: Recognition.

Date: 23 December .

At the end of the academic year a ceremony was prepared for the awarding of certificates and recognition for all their support to the growth of the chapter, we all celebrated a unique moment of trust, friendship, a ceremony led by Elmer Ccahuana Yucra and the board of directors. a special program was prepared in fellowship among its members in Mining Engineering, Geology and Metallurgy.



### 1.5.10. Christmas.

Persons in charge: Board of Directors    Competition: Attitude.

Date: 27 December

To finish the academic year the board of directors called all its members to celebrate this last activity among all the members. Proposals were also made to move the student chapter forward to a better path in the coming years. The board of directors organized a chocolate party for this event, in which a chocolate party was prepared with panetones and Christmas music.

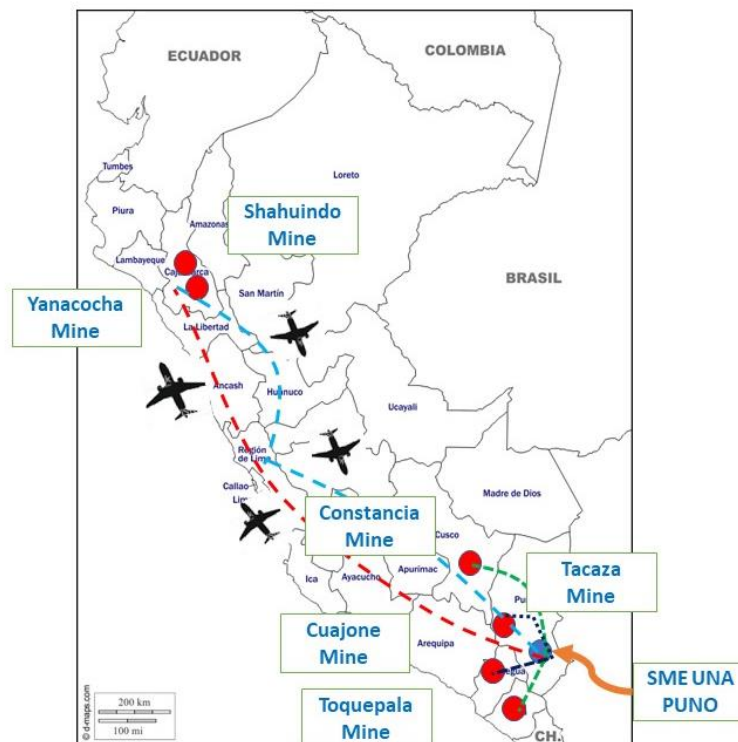
We had a conversation in which we shared all the anecdotes throughout the academic year.



## 1.6. Technical Visits to Mines in PERU

The technical visits is one of the most important activities in our student chapter, and very fundamental to motivate all our team and to establish an alliance of contact between our school and the mines that exist in Peru, as much as we managed to demonstrate our capacity to the professionals and to obtain opportunities in the industry, fortunately we managed to obtain several technical visits with the support of the team because our objective is to know closely and the reality, where we also manage to check your knowledge acquired from the trainings that we jointly carry out in the school and in the chapter students SME UNA PUNO.

we achieved our objectives by making the visits with the support of some professionals from our school, but it was also a year of a lot of work because we had mishaps, because we did not manage to visit an underground mine due to the social conflict that took place in some mines.



### 1.6.1. Cuacone Mine – SOUTHERN PERU

#### *Description*

Cuacone is an open pit copper mine located in the district of Torata, province of Mariscal Nieto, department of Moquegua, Peru. The deposit is located on the western fringe of the Western Cordillera in the southern part of the Peruvian Andes.

Competency: Attitude

Date: 23 May – 2019

#### *Visit*

To go to the place where the mine is located approximately 6 hours, where on arrival we receive a safety induction presentation on the mine to avoid any incident during the tour of the mine. We visited the Long Term Mine Planning office, where we were briefed on the mine's production plans and mining methods and drilling and blasting issues. Then we visit the truck dispatch area, where we visualize the whole mine operation on screen and how it is controlled from there in the execution of the work in real time to have the best productivity.



Later, we entered the southern viewpoint of the open pit, where we saw huge Caterpillar and Komatsu trucks in constant work, we had some explanations by the head of operations about hydraulic shovels, trucks, electricity, auxiliary equipment required by the mine operation.





### **1.6.2. Constancia Mine – HUDBAY PERU**

#### ***Description***

Constancia mine exploits copper as its main product and molybdenum as a secondary product. It has an open-pit operation and is located in Velille, Chumbivilcas, Cusco. And it is formed by the Constancia deposits.

Competency: Attitude

Date: 05 July – 2019

#### ***Visit***

To visit Constancia mine, we traveled for about 7 hours, due to the route that is not very accessible. When we arrived at the mine we had a safety induction and social and environmental policy of the company, we knew that the company of the mine is very committed to the community and around it with other communities, we were very fortunate to visit this mine for the great impact in different aspects. To start the visit, the mine manager and operations superintendent welcomed all the members of the chapter, in which we learned about the expectations and opportunities at the mine, as well as the professionals shared their experiences with you and some recommendations for our quality and competitive training in the mining sector.



We started by visiting the dispatch area, where we saw the innovation and technology of the mine, fleet system of trucks controlled in real time, we understood the operational parameters, hydraulic shovels and destination of trucks in real time for each mining front.

We visited directly the open pit together with the engineers in charge of the areas of drilling and blasting, mine operations, hydrology, rock mechanics and mine planning, fortunately we knew many aspects of the mine, we had very good explanation from the guides. We visited the ore crushing area directly with the engineer in charge, after that we went to the ore processing area, including the conveyors, mills and concentrate processing.



At the end of the afternoon, we had a meeting with the mine manager and the people in charge of each area, in order to talk about the visit and the aspects of the mine, absolve some doubts from the chapter members, and a presentation of the mine planning area where we managed to understand the general aspects of the subject.



### 1.6.3. Tacaza Mine – CIEMSA

#### *Description*

Competency: Attitude

Date: 15 July – 2019

Tacaza mine is located in the district of Santa Lucia, province of Lampa, department of Puno.

#### *Visit*

the visit was made by the student chapter and a group of students from the 7th cycle of the school of mines, the visit was managed by the president of the student chapter SME UNA.



when we arrived at the mine, we had a safety induction training, it was very necessary for us to know why we had planned to visit the blasting area. after that, we knew the phases of mining and the production plan of the mine.

It is a small mine, so we could see conventional equipment such as drills, small trucks and mainly the visit was to go to appreciate the blasting at noon





#### **1.6.4. Toquepala Mine – SOUTHERN PERU**

##### ***Description***

Toquepala is an open pit mine in a deposit located in the district of Toquepala, Tacna, southern Peru

Competency: Attitude

Date: 06 August – 2019

##### ***Visit***

To arrive at the mine, we traveled for approximately 5 hours, on arrival we had a brief training on safety induction, environmental talk and social commitment of the mining company, and the delivery of personal protection equipment to tour the mine during the day.



We visited the open pit of the mine, where we were explained about mining planning and joint operations of the other areas such as rock mechanics, drilling and blasting, we could also appreciate the primary crusher from the mine viewpoint, the drilling meshes and the system for carrying minerals in trucks, hydraulic shovels and parameters on the slopes. Then we visited the truck maintenance shop, toured the area with the guidance of an engineer in charge of maintenance shop, had brief explanations about mining trucks, failures, maintenance and repair of equipment, after that we visited the metallurgy area, where they explained to us how they obtain the copper cathodes from solutions and flotation of the oxides and sulfides, from the copper cathode control system we could observe the work system.



#### **1.6.5. Yanacocha Mine – NEWMONT**

##### ***Description***

Yanacocha is the largest open pit gold mine in South America, located in northern Peru in the province and department of Cajamarca approximately 45 km north of the region.

Competency: Attitude

Date: 22 November – 2019



### *Visit*

To visit the mine, we had to travel in two sections by air because the distance from our region is approximately 2156.6 km, in which we were transferred from the city to the mine and also added 6 students from another civil engineering university to consolidate the visit.

At the beginning of the visit we had a small safety induction to avoid incidents on the road, and we knew the social impacts and environments, which perform work with good commitment to society and the community.



We traveled in the area of control and treatment of wastewater, from the treatment process of the Ore, we had the opportunity to know the areas of reforestation, water control, after that we visited the open pit Quinual. where we observed the different fronts, the slopes of the mine, ramps, operations, trucks and hydraulic shovels, in the final part we returned to the city of Cajamarca.



#### **1.6.6. Shahuindo Mine – PAN AMERICAN SILVER**

##### ***Description***

Shahuindo is an open pit mine, it exploits gold as its main product using conventional operations, it is located in the north of Peru, Cajabamba, Cajamarca.

##### ***Visit***

We were very lucky that the mine manager supported us with the mobility from Cajamarca to the Shahuindo mine and vice versa, because from our region Puno to Cajamarca we traveled by plane without any other particular mobility.

To start the visit, we had a safety induction to avoid accidents during the mine tour, and the corresponding delivery of personal protection equipment we also learned about their commitment to high social and environmental impact with society and the community. After that we had a presentation of the mine planning and operations area. Then we arrived at the open pit lookout, where we observed conventional drilling, hauling and loading equipment, and were given a briefing on the geology of the mine, rock mechanic aspects and the work system in the operations area.

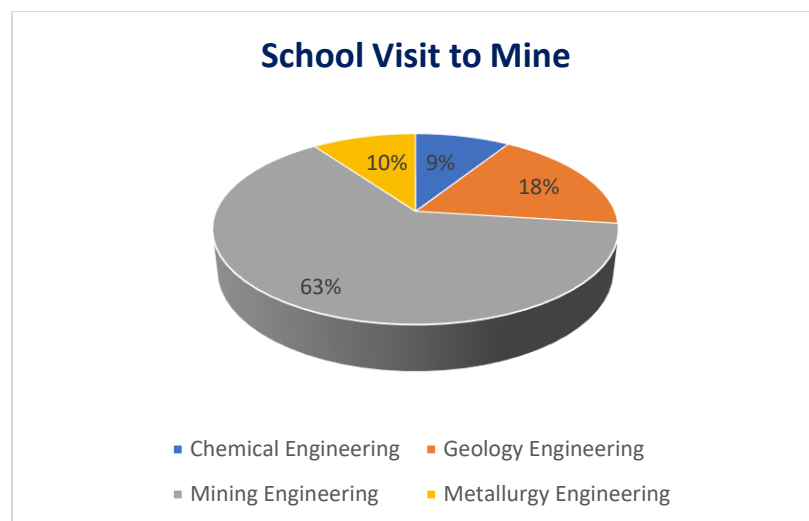
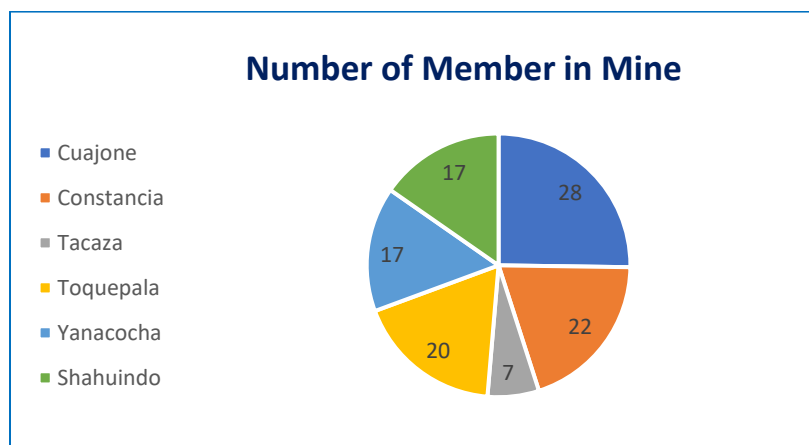


Finally, we visited the water treatment and sulfide leaching area, where we learned about metallurgy, waste water in the process of treatment for reuse.



### 1.6.7. Technical Visit Report to Mines

To carry out the visit the most active members of the chapter were sent, also considering that each member should have a minimum visit, we observed in the graph that in some mines visits were carried out with the minimum number of members, this due to the distances in which the mines are located.



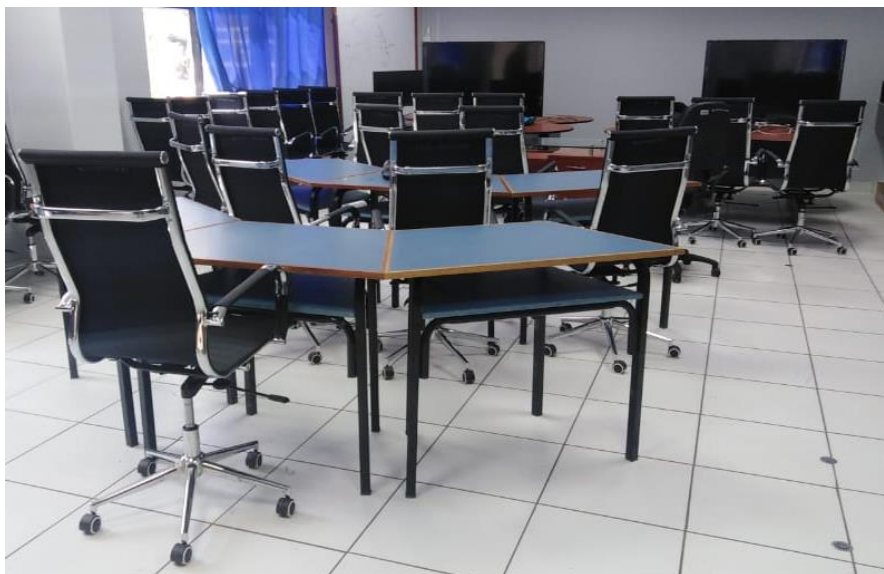


## **1.7. TEAM Mine Planning SME UNA**

The TEAM MINE PLANNING is a group of students where they develop their skills in mine planning, where they understand topics with the mining industry focused on open pit and underground mining, such as mine design, mining geomechanics, underground ventilation, cost estimation, mine planning, mining methods. In this group, members are classified in two categories, JUNIOR and SENIOR, which are trained very constantly for the planning competitions at the Peruvian level and also competition organized by the SME, in the mining convention 34 PERUMIN.

### **1.9.1. Mine Planning Laboratory**

we managed to access the mining planning laboratory of our school, thanks to the support of our teachers we were assigned the appropriate place for the development for the competition of the project Underground Planning, organized by the SME.



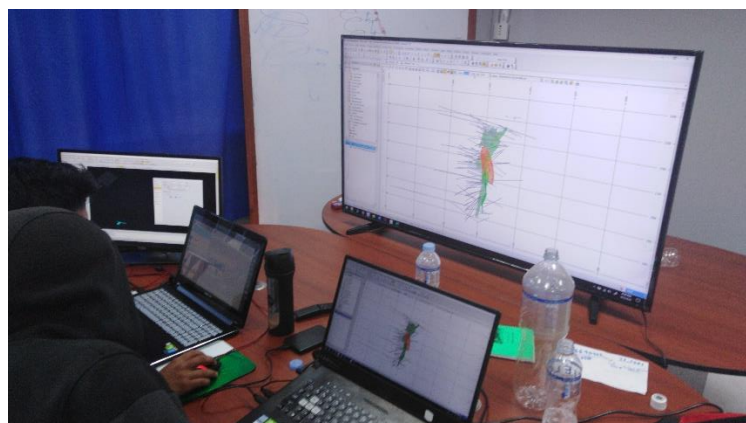
### 1.9.2. Competition Training Courses

In order to achieve good results in the planning competition, the Team Mine Planning organized numerous training courses on topics that increased the knowledge about mine planning for all members available for the competition, as well as for the members of the SME UNA-PUNO.



#### 1.9.2.1. *Estimated Reserves in Veins*

To start our project we started to know the reserves and according to that we made an adequate evaluation, according to the characteristics, form and deposits of the ore, we were very lucky to train the planning team of the student chapter SME UNA.





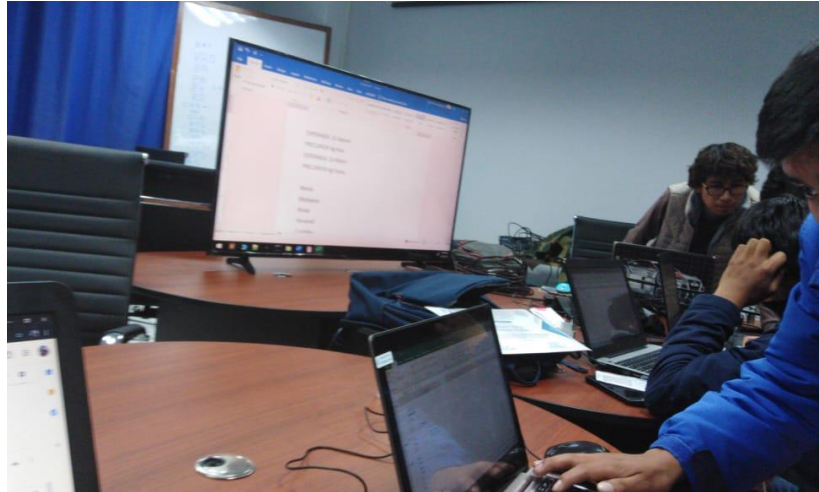
### **1.9.2.2.      *Underground Mine Design:***

A very important part of the planning is to know all type of design of mines, the methods of exploitation and in this occasion the subject of design of underground mine was developed with much care, for which a training called course of planning of mining oriented to underground was had.



### **1.9.2.3.      *Underground geomechanics***

The geomechanics is very important in a mine since it allows us to control the stability of slopes, study the types of support and among others, to develop this topic we had a training called geomechanics in mining, which helped us develop our project



#### **1.9.2.4. Cost Estimates**

In a very changing world that depends on the international market for metals, the need to have full knowledge of the control of our processes through cost arises, which allows us to take corrective measures during the process, to obtain positive results and/or minimize the impacts of external factors, and to strengthen our capabilities in this area, a course called cost estimation in underground mining was conducted



### 1.9.3. Development of the Competition Project

After being prepared and trained, it was time for the underground mine planning contest. Team Mine Planning was involved in the contest with great care to achieve the goal and represent our university.



## **2.0. Conclusion**

In summary, the student chapter of the SME UNAP had a successful year in achieving the main objectives established at the beginning of the year. One of the main goals was to make technical visits to different mining units, since in previous years there were no mine visits.

The second main objective was to contribute to the SME members with their professional growth during the year of university studies. As we have had a lot of training in hard skills and training for competitions and training in soft skills, we are confident that our members were formed with new values for the mining sector

The final objective was to increase the number of opportunities for students to interact and relate to industry professionals. The international events were paramount to its development, and the satisfactory increase of new members in the student chapter SME UNA