Department of

PETROLEUM ENGINEERING

NEWSLETTER

COLORADO SCHOOL OF MINES
EARTH • ENERGY • ENVIRONMENT

September 2022

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2021-2022 PE Dept. Faculty/Staff

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Research Administrator — Denise Winn-Bower

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Message from the Department Head

Welcome to the 100th year of Petroleum Engineering (PE) at the Colorado School of Mines! We have been planning this celebration for quite some time now and are so excited to be able to finally celebrate it with you all!

Dr. Miskimins and Dr. Ermila with a portion of the graduating class after the spring 2022 Commencement.

This past year has been one of changes and challenges, as we returned to 100% in-person classes in the fall except for those classes actually developed to be online. Such didn't come without a few bumps in the road, but in true Mines' spirit, both the students and faculty powered through. In March of this year, we even got to take our masks off on campus and remember what each other actually looked like! Some research was delayed due to the pandemic and associated deferred work in laboratories, but we've seen that back-log clear for the most part. Overall, things are basically back to "normal" in all areas on campus, and we sure hope that they stay that way.

As the saying goes, the only thing that stays the same is change, and we are seeing that once again in our department personnel. After 18 and 16 years, respectively with the department, Denise Winn-Bower and Terri Snyder will be retiring this year. It's the end of an era with them both leaving us (Terri in September and Denise in October). They have impacted so many students over the years, and we will miss them so very much! Maybe drop them a note if you have a chance before they ride off into the sunset. There will also be some changes in the faculty ranks this coming year, as we have hired three new faculty members that will be starting in August 2022 (two) and January 2023 (one). Dr. Parisa Bazazi, Dr. Serveh Kamrava and Dr. Pejman Tahmasebi will be joining us to strengthen our areas in machine learning, data analytics, geomechanics, CCUS and hydrogen applications, among others. There is some additional information on them later in this newsletter, and I hope you have the chance to meet them in person soon.

Our 100th anniversary celebrations have been ongoing all year long, starting with kickoff events for both students and alumni in January 2022. We've had monthly events of some type since then to honor our alumni, students, graduates and partners and give everybody a chance to engage in the celebrations. We even planned to have a Massadona reunion in June, but just didn't have enough folks sign up. Apparently once in Massadona really is enough for most people!! If you're interested in what events have occurred so far and what is still planned, please check out the website at **petroleum.mines.edu/100/**. We also have the department's timeline and some historical documents posted on the site that you might enjoy looking over.

There are two remaining 100th anniversary events that I'd like to especially draw your attention to coming up in October and November. First is our reception at the SPE Annual Technical Conference and Exhibition (ATCE), which is taking place October 3-5, 2022, in Houston, TX. We can't think of a more perfect storm with a fully in-person conference, our 100th anniversary, and the Houston location to have one big birthday celebration! Please plan on joining us if you're attending the conference or just in the neighborhood. Details are on the back page of this newsletter and on the ATCE website.

The second event is a new one that we're very proud to announce – in honor of the 100th anniversary, we will be kicking off a Colorado School of Mines Petroleum Engineering Hall of Fame. We have amazing alumni and supporters that have contributed so much to the technical aspects of the petroleum industry and have had other far-reaching impacts on our world. With that in mind, we wanted to find a way to honor them, and future such contributors, thus the Hall of Fame is born. The inaugural class (listed in this newsletter) was selected by a highly qualified and dedicated committee of alumni and business innovators and will be inducted during a ceremony held on campus on November 4th. The plan is then to have a new induction class every two years from here. This will be a special event, and we hope that whether you know the inductees or not, you will join us to celebrate them, their accomplishments and the Mines' PE department!

I am honored to be the 12th PE Department Head serving at this special time and hope that you can join us however you can in celebrating and planning for the next 100 years. I hope that you and your families are doing well and that this coming year of 2022-2023 brings health and happiness. As always, we love hearing from you and what you've been up to, so please drop us a note and let us know how you're doing. Hope to see you on campus, at a conference, or somewhere around the world soon!

Go Orediggers!

Jennifer

Department Statistics

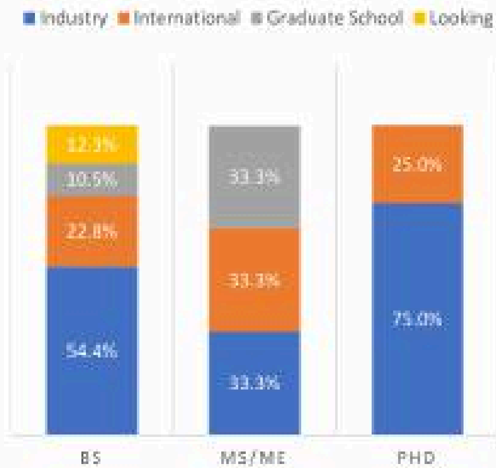
Student Data

PE Student Enrollment

	2017-18	2018-19	2019-20	2020-21	2021-22
Undergraduate Program					
Freshman	43	73	78	38	33
Sophomores	67	54	92	78	34
Juniors	89	73	69	77	52
Seniors	261	178	105	94	94
Total Undergraduates	**460**	**378**	**344**	**287**	**213**
Spring Graduating Class	132	90	71	49	80
Graduate Program					
ME	21	16	11	6	13
MS	36	31	36	28	12
PhD	51	49	49	33	27
Total Graduate Students	**108**	**96**	**96**	**67**	**52**
Spring Graduating Class	36	12	14	15	12

PE Placement Rates

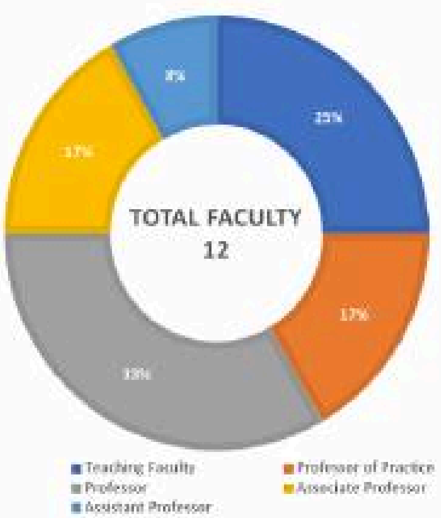
2020-21021



Department Data

PE Faculty by Title

SUMMER 2022



PE Research Expenditures by Center

PAB Members

Thanks to the PAB members for their support and advocacy! They work as a whole and on subcommittees to support the department with curriculum development, mentorship opportunities, the alumni survey and developing partnerships and data sharing with industry.

Our members in 2021-2022 were: Kevin Chambers, Chevron; Bob Chase, Emeritus Professor Marietta College; Patrick Disher, Apache; Pat Hogelin, W&T Offshore; Susan Howes, Subsurface Consultants & Associates, LLC; Wendy King, ConocoPhillips; Basak Kurtoglu, Quantum Energy; Fersheed Mody, E&P Technology Consultant; Vicky Jackson Nielsen, Hess; James Page, Oxy: Amanda Rebol, Civitas Resources; Adam Sayers, Axia Energy; Mark Sonnenfeld, Coterra Energy; Barry Thomas, ConocoPhillips; Leen Weijers, Liberty Oilfield Services; Andrea Westcott Passman, Caerus Oil and Gas LLC.

Pictured below are our PAB members in alphabetical order.

PAB Survey Results

The Program Advisory Board (PAB) for the Petroleum Engineering (PE) Department at Mines sent their annual survey to 2537 Mines PE alumni for whom the department has contact information in 2022. About 12% responded, with representation from each decade back to the 1950s. A presentation **comparing the 2022 Alumni survey results with the 2021 survey results** was reviewed by the PAB at their April 2022 meeting.

The survey asks the same questions each year so that the PAB can use the trends in the results to better advise the PE Department. The results are presented in three groups, by years of fulltime experience: 0-4 years, 5-9 years and > 10 years. Responses from the most recent graduates are necessary to confirm achievement of Program Educational Objectives, important for Accreditation Board for Engineering and Technology (ABET) accreditation.

The presentation reviewed by the PAB included responses from the survey addressing the importance of several key themes for which alumni provided comments:

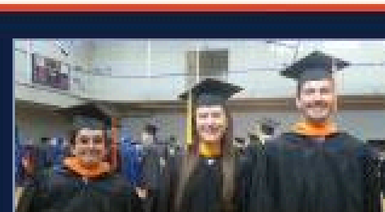
- Environmental, Social and corporate Governance (ESG)
- Coding
- Data Analytics
- Problem Solving
- Business
- Work Ethic
- Soft Skills

In most cases, the alumni either attributed their career success to the inclusion on these topics in the Mines curriculum when they were a student, or they advocated for greater emphasis to be placed on these areas in the PE curriculum. The challenge for the faculty is to incorporate these important themes into the curriculum. The PAB curriculum committee also provides input into the curriculum strategy, including a review of the Program Educational Objectives, which are broad statements that describe what Mines graduates are expected to attain within three to five years of completing their degree.

ALUMNI SURVEY

We want to continue to strengthen the department, and this requires a few minutes of our alumni's time. Please follow the below link to a short survey. Your participation is greatly appreciated!

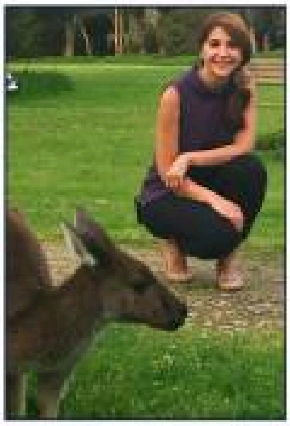
https://forms.office.com/r/vLr5qfx02s



New Faculty

We are thrilled to welcome three new faculty members for this academic year! Drs. Kamra and Tehmasebi started in August and Dr. Bazazi will start in January.

Serveh Kamrava



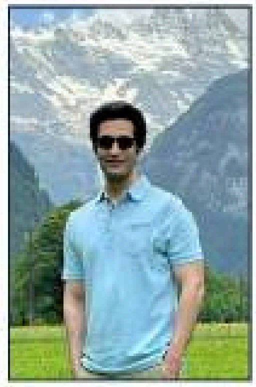
Greetings,

I am very excited about the new chapter of my life at the Colorado School of Mines. I will have the chance to work on the most exciting research topics with talented students surrounded by supportive colleagues in one of the most prestigious Universities in colorful Colorado!

My educational background is in Chemical Engineering. However, in my opinion, I have always worked on multidisciplinary research topics. After highschool I left home for my B.Sc. in Chemical Engineering in a city 90 miles away, and then after graduating, I started my first M.Sc. in a city that was 470 miles away. For my second master's I moved to Texas A&M University - 7,700 miles further. At Texas A&M University my research was on managing abnormal operations such as flare minimization for reducing greenhouse gas emissions. At TAMU I had the chance to collaborate with different groups inside the U.S. as well as a research group at Qatar University. In Texas, although I missed snow and mountains a lot, however, I found amazing friends and advisors whom I am still in close contact with. That was the time I was sure that the U.S. will be home.

After graduating, I worked in the Avery Dennison Company research center in Los Angeles for a while. Although again I very much liked my research project and my colleagues there, that was the time I realized I want to stay in academia. Long story short, I started my Ph.D. at the University of Southern California. My research for my Ph.D. was related to developing and applying machine learning algorithms for studying static and dynamic properties inside porous media. After joining the University of Wyoming, in my research lab, we continued the research and applied it to energy storage systems and other complex systems. For addressing the complex phenomena in subsurface systems, we need better methods that are accurate and time- and cost-efficient. My group at Mines will address this issue by applying physics-guided machine learning to such multiscale and multiphysics problems. In addition, we will also work on energy storage systems on both small and large scales focusing on the porous characteristics of the system. The mentioned research areas are multidisciplinary and ideally we would collaborate with faculty from different departments. My group will be open to collaboration with companies and individuals interested. I look forward to teaching and doing research at the Colorado School of Mines.

Pejman Tehmasebi



Being around beautiful mountains and nature is one of the most relaxing and exciting things ever and there is nowhere better than Colorado, in particular when you work in one of the leading institutions around the world. I am very delighted to write this brief letter in the Mines PE Newsletter as a new faculty. The faculty members here are truly like a family, very supportive, and care a lot about doing fundamental research. It is sincerely my honor to be part of this amazing university.

Let me first introduce myself. My name is Pejman Tahmasebi, and I am a subsurface engineer who works on problems from micro- to continuum-scale. Before joining Mines, I was an associate professor at the University of Wyoming. I have conducted research in several institutions such as the Amirkabir University of Technology, University of Southern California, Stanford University, The University of Texas at Austin, and California Institute of Technology on problems related to fluid flow in porous media, subsurface systems, machine learning & data analytics, geomechanics, and granular materials. Currently, I am on the editorial board of three leading journals, *Computers & Geosciences*, *Fluids*, and *Water Resources Research*, handling papers around the above topics.

Going through all the topics that I cover in my research group may not be possible in this brief note, but we are developing geomechanical models that can translate the grain-scale models into usable information that can be used in large-scale problems. In particular, we take the morphology of particles, fluid flow, and many other important physics into account and plan to understand the mechanical complexities better such that we will have more accurate and well-informed continuum-scale modeling. To make these computations efficient, and in some cases more accurate, we are also developing advanced machine learning techniques that are designed for the problems we have in geo-systems and porous media. Due to the fundamental nature of this research, my expertise lies between different fields and departments, such as energy, water resources, materials, and also computational science.

Aside from the computational modeling, we also plan to reopen the geomechanics lab and add new equipment through which we will be able to study and also observe the mechanical interactions between particles at a grain scale. We hope the above research topics can help us to shed a light on all the unknowns and challenges we have in geo-systems and subsurface problems. The above research topics, for sure, need the great support and interest of the Mines' alumni and we are always open to further discussions and communications.

Parisa Bazazi

Hello, hello, hello. Hope you are doing great and enjoying your post-pandemic life! I am thrilled and excited to join the Petroleum Engineering Department at Mines to establish my professional career in a well-established department and the beautiful Golden city!

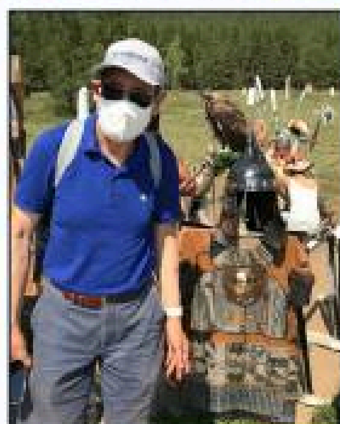
I grew up in a hot and humid city on the southern coast of Iran. Later, I moved to the capital of Iran, Tehran, to do my undergraduate study, where I received my B.Sc. in Petroleum Engineering at the University of Tehran in 2015. I arrived in Calgary, Canada, in January 2016 (middle of the winter!), where I did my M.Sc. and Ph.D. in Chemical Engineering at the University of Calgary. Recently, I moved to New Jersey and started a postdoctoral research position at Princeton University.

My research is interdisciplinary, linking interfacial sciences, materials, and fluid dynamics. I conduct experimental and theoretical research on transport phenomena in porous media, generation of novel interfacial materials, and soft matter. My interest in interfaces started as an undergraduate student while doing some basic interfacial tension experiments. Given my petroleum engineering background, I was amazed to learn how tiny liquid-liquid and liquid-solid interfaces can control a massive oil production process. I thought as interfaces are everywhere, why wouldn't we tune them in a way to get the desired outcome in a process? This question was the beginning of my exciting journey into the world of colloid and surface science. I started with the stability of nanoparticle-stabilized emulsions in my undergraduate and moved to the dynamic liquid-liquid-solid interfaces in my graduate studies. Experimenting and learning the key features of interfaces in static and dynamic conditions, while I was always looking for the fascinating interfacial phenomenon, led to my long-term research on manipulating the interfaces toward specific applications.

My research goal is to develop an integrated platform to formulate engineered interfacial materials and tailor interfaces toward energy, environment, and health applications. During my graduate studies, I studied the role of interfacial materials and interfacial viscoelasticity on the evolution of liquid-fluid-solid interfaces, including dynamics of three-phase contact lines, droplet formation, and liquid threads. In particular, I developed a technique to deposit an aqueous phase into an oil medium and consequently turning the printed phase into a structured network of emulsion droplets in-situ, which opened new possibilities for all-in-liquid printing materials, nanodroplet deposition, and the fabrication of synthetic 3D porous mediums. At Princeton, I am working on the design of blood analogous fluids to understand the heterogeneity and flow of sickle cell disease in microcirculation. Aside from research, I am incredibly passionate about teaching and looking forward to designing a course on surface science-related topics at Mines! I enjoy discussion and collaboration, so please feel free to contact me (pbazazi@mines.edu). Let's continue to explore, innovate, and grow!

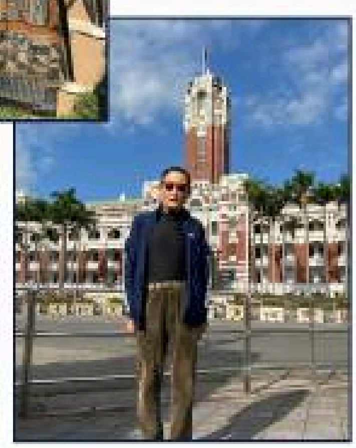
Sabbatical Year for Dr. Wu

Dr. Yu-Shu Wu spent last year on sabbatical. In summer of 2021, he spent 2 months at Nazarbayev University (NU) of Kazakhstan to work on a couple of joint research projects. Next he spent 3 months with the Center for Integrative Petroleum Research (CIPR) of the College of Petroleum Engineering and Geosciences (CPG) at King Fahd University of Petroleum and Minerals (KFUPM)) of Saudi Arabia, participating in CCUS research projects as well as giving several seminars at KFUPM, Saudi Aramco, KAUST, and KACST. In spring of 2022, he spent 3 months at National Taiwan University of Taiwan, teaching two geothermal and TOUGH2 training courses for graduate students as well as for professionals from industry and other institutions.



Above: Dr. Wu in Saudi Arabia.

Left: Dr. Wu with some traditional gear in Kazakhstan.



Right: Dr. Wu at National Taiwan University.

Awards and Recognition

- Dr. Luis Zerpa received the 2022 Mines Petroleum Engineering Department Faculty Award. Professor Zerpa was selected for this award by the 2022 senior class for his dedication to quality teaching, his genuine care for his students, and for his commitment to enhancing the campus community.
- Dr. Jennifer Miskimins is being recognized with the 2022 Distinguished Achievement Award for Petroleum Engineering Faculty from SPE International. We are so proud of her and look forward to seeing her honored at the ATCE awards banquet in October.

Above: Prof. Sorensen receiving the fall Enger award from Steve Enger.

Left: Dr. Zerpa receiving the Mines Petroleum Department Faculty Award during the campus award ceremony.

Right: Dr. Miskimins receiving the spring Enger award from Dr. Eustes. Co-winner Dr. Zerpa was not able to attend the graduation reception.

- The department was well represented among the Rocky Mountain SPE Region awards as Dr. Luis Zerpa received the Regional Distinguished Achievement Award for Petroleum Engineering Faculty and Dr. Pejman Tahmasebi received the Regional Data Science and Engineering Analytics Award.
- We had great nominations from the students for this year's Enger award. Professor Sorensen started off their first semester teaching by being the fall recipient. The choice was too hard in the spring, so Drs. Miskimins and Zerpa split it.

Research Tidbits

- Drs. Eustes, Fleckenstein, Kazemi and Miskimmins completed the final contract for $5.34 million over three years for the FORGE Geothermal project. They have already completed the first 6 months of work.
- Dr. Yu-Shu Wu has a new 3-year research project. He'll be working with Project PI Baojun Bai and Co-PI's Thomas Schuman (MST), and Sujit S. Datta (Princeton University) on "Innovative Particle Gels for Controlling Preferential Fluid Flow in Geothermal Reservoirs to Enhance Heat Recovery". It's funded by DOE, $500,000 for CSM, 2022-2024.
- Prof. Sorensen oversaw the move of the Apache Sandvik DE130 rig to its new permanent custom-built home in the Bodin drift of the Edgar Mine.

Classroom

- We had several volunteers put in a lot of time to as industry advisors to the PEGN 439, Petroleum Design, course. Bill O'Brien trained the students in gas-lift design via Schlumberger's PIPESIM software and trained students on building and running the black-oil simulator, IMEX, of the Computer Modeling Group. These students have been working in teams to prepare field development plans for the Niakuk field on the North Slope of Alaska. Additional volunteers included Chet Paris, Geologist; Mike Erwin, Production Engineer; Curt Golike, Reservoir Engineer; Mike Cook, Drilling Engineer; and John Barber, Project/Facility Engineer.
- Our data analytics minor continues to grow with the largest class in our four years of program history. Prof. Crompton continues to refine the Petroleum Data Analytics minor program to ensure students are as prepared as possible for entering the workforce.
- Drs. Xiaolong Yin, Luis Zerpa, Linda Battalora and Yu-shu Wu developed two modules for two new online courses on CCUS: Physics and Calculation of CO2 Storage in SYGN598BA Geological CCUS, and Overview of CO2 Sources and Capture Methods in SYGN 598C Non-Geological CCUS. These two courses are part of a new four-course online graduate certificate program on CCUS, the first of its kind offered by an academic institution in the US! **https://online.mines.edu/carbon-capture-utilization-and-storage-online/**
- Prof. Sorensen had the PEGN 311 Drilling class perform the first subsea well control exercise in the fall. That exercise and safety analysis and considerations will be a permanent addition to the curriculum.
- PEGN 361 Completions now has a Procedure Writing project as part of the course.

Staff Retirement

Denise Winn-Bower

What a ride it has been at Colorado School of Mines, 18 years in the Petroleum Engineering Dept. I didn't even know what PE was when I was hired by Dr. Craig Van Kirk in 2004. My BS is in education, I taught high school in IL, moved to CO, and had no desire to teach. Being in the PE Dept filled a void I had for working with youth. I've had so much fun learning along with the students, driving for field sessions in CO, KS, SD, NY, PA, TX, LA, WY, ID, UT, NM and AK. Plus, Massadona! What an experience camping, hiking, strikes and dips, weathering snow and heat all in the same week! Additional highlights include chaperoning ATCE in Texas, Rome, Amsterdam, Florence, and Dubai. As program manager, I supported a variety of academic professor's research and research groups: FAST, EMG, UREP, UNGI, training of oil and gas regulators - TOPCORP.

Interacting with students from around the world and being able to visit them in their own country has enriched my time in PE. What has touched my heart the most is working with the PE graduate students, mentoring them through the program, learning who they are, about their country and culture, bugging them to stay on track, and being proud of their success in school and life. A bittersweet time, for I will not miss the work but I will miss the students and my colleagues. I plan to be at ATCE in Houston in October, I hope to see you there. Keep in touch dwinnbow80@gmail.com.

Terri Snyder

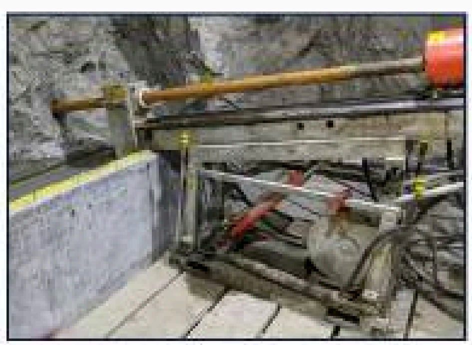
What an unexpected journey I have had over the last 16 years in this department! I have made friends from all corners of the world, traveled to places I would have never dreamed of, been on offshore rigs and even set foot on the Arctic Circle. I started this job thinking I would be sitting at a desk in the PE office, but there was so much more! I had the opportunity to be a part of the PE's field sessions, which from an outsider's perspective are incredible! It was a wonderful way to get to know our students and learn how the oil and gas industry works! I have even experienced the famous Massadona field session. Over the years, I have enjoyed being in the front office and getting to know all of our students who have passed through the department, oh and faculty too! I then became the first Undergraduate Program Manager for the PE department, fancy title for advisor to the Undergrads. It has been a privilege to work with you, whether it was signing the plethora of forms needed, scheduling issues or just being there for you through the hard times and really great times at Mines. That was the best part of my job! What an amazing group of people you all are! I have seen over 1,700 of you graduate and proud of all of you!

Terri at the spring 2017 graduation with Ahmed Al Shubbar, James DeBartolomeis, and David Choi.

I will be moving on to a new chapter of my life on September 10 to spend time with my family (two new grandsons), traveling, hiking, camping and volunteering. I am excited, but also a little sad to be leaving an environment full of intelligence, possibilities and young minds. I will miss you all, but intend to visit the many countries you call home. Who knows when you will get an email from me wondering if we can get together and catch up! You don't have to wait and can email me first at terrisnyder4@gmail.com.

Other News

- Prof. Sorensen became SPE Production & Facilities Advisory Committee member
- Dr. Fleckenstein made a Patent Application: "System and Method for Harvesting Geothermal Energy from a Subterranean Formation" (Serial No. 63/237,425)
- Dr. Fleckenstein was awarded a patent: "A Downhole Tractor for Use in a Wellbore" (U.S. 10,927,625) US10927625B2 - Downhole tractor for use in a wellbore - Google Patents



The Apache drill set up in its new home for use during one of the PEGN 311 drilling labs.

Papers & Presentations

These are just some of the papers and presentations from the last year. Names highlighted in red are our students, faculty, research associates and post-docs.

Presentations

Balnur Mindygaliyeva presenting at the 56th US Rock Mechanics/Geomechanics Symposium.

- Prof. Jim Crompton participated in five podcasts for data standards group (PPDM) Three Data Wise Guys Dr. Fleckenstein made a presentation of the FORGE Project at the Energy Venture Investment Summit (**theenergyventuresummit.com**).
- Dr. Fleckenstein presented a paper written with Drs. Miskimins, Kazemi and Eustes at the GRC conference - "Development of Multi-Stage Fracturing System and Wellbore Tractor to Enable Zonal Isolation During Stimulation and EGS Operations in Horizontal Wellbores". The paper is available in the **GRC Geothermal Library.**
- Prof. Crompton spoke at the SPE Permian Basin Data Analytics conference – Midland and the SPE Petroleum Data Driven Analytics (PD2A) conference – Houston.
- Balnur Mindygaliyeva, presented a paper co-authored by Nurbol Bekbossinov, and Dr. Hossein Kazemi at the 56th US Rock Mechanics/Geomechanics Symposium. Their paper was "Application of Fracture Injection Test, Rate Transient Analysis, and Pearson Correlation in Niobrara and Codell Formations to Evaluate Reservoir Performance in a Northern DJ Basin".
- Arkhat Kalbekob presented "Limitations of the Gassmann fluid substitution model: a machine learning based investigation, Toward Gigatonnes CO2 Storage" at the Grand Geophysical Challenge Workshop in Stanford, California, 26-30 June 2022.
- Dr. Erdal Ozkan was session chair for "Development Potential of Conventional Tight-Oil Resources" at ATCE in Dubai.
- Alumni Murat Syzdykov presented a paper he and Dr. Miskimins co-authored at ATCE in Dubai. The presentation, "Improving The Local Research Capacity Through The Industry-academia Collaboration In Kazakhstan" (paper SPE-205977), talked about the collaboration between Mines and Satbayev University.
- Etaf Alghunaim, "Cost-Effective Chemical EOR For Heterogeneous Carbonate Reservoirs Using A Ketone-Surfactant System" 205910 ATCE
- Kanat Karatayev, "Modeling Maximum Droplet Size In Gas-liquid Annular Flow And Liquid-liquid Dispersed Flow" 206081 ATCE **https://doi.org/10.2118/206081-MS**
- Denghong Zhou and Kanat Karatayev presented "Temporal and Spatial Evolution of Oil and Water Emulsion at Static Conditions" at the Offshore Technology Conference in summer 2022. OTC-32130-MS

Publications

- Wang, Shihao., Zhang, Yanbin, and Yu-Shu Wu, Deep Learning Accelerated Hydraulic-Mechanical Simulation with Prior Smoothness Constraints for Heterogeneous Petroleum Reservoirs. PE J.(): 1-14. **https://doi.org/10.2118/201430-PA.**
- Kalbekov, Arkhart, "Anisotropy Template for Transversely Isotropic Rocks", SEG-AAPG IMAGE 2022
- Wu, Dawei, Di, Yuan, and Yu-Shu Wu, 2022. A New Projection-Based Integrally Embedded Discrete Fracture Model and Its Application in Coupled Flow and Geomechanical Simulation for Fractured Reservoirs. Geofluids 2022: 1-22. **http://dx.doi.org/10.1155/2022/7531948.**
- Tian Ye, Zhang, C., Lei, Z, Yin Xiaolong, Kazemi Hossein, Wu Yu-Shu 2021. An Improved Multicomponent Diffusion Model for Compositional Simulation of Fractured Unconventional Reservoirs. SPE J.26 (05): 3316-3341. **https://doi.org/10.2118/204010-PA.**
- Elsayed, M., Al-Abdrabalnabi, R., Zhou, X., and Yu-Shu Wu 2022. Influence of long-term stored oil on wettability and its recovery in depleted petroleum reservoirs. Energy Reports: 2085-2099. **http://dx.doi.org/10.1016/j.egyr.2022.01.099.**

- **Fleckenstein, William, Miskimins, Jennifer, Eustes, Alfred, Kazemi, Hossein,** Hill, T. and King, G. 2021. Development of Multi-Stage Fracturing System and Wellbore Tractor to Enable Zonal Isolation During Stimulation and EGS Operations in Horizontal Wellbores. GRC Transactions, Vol. 45, 2021.
- Wang, Shihao, **Yu-Shu Wu**, and Xian-Huan Wen, 2022. Theoretical analysis and semi-analytical formulation for capturing the coupled thermal-hydraulic-mechanical process using the stress formulation. <i>Journal of Petroleum Science and Engineering: 109752. **http://dx.doi.org/10.1016/j.petrol.2021.109752.**
- **Fu, Jing**, **Bowen Yao**, Zhengdong Lei, Tian Ye, and **Yu-Shu Wu**, "Enhanced Oil Recovery of Ultra-low Permeability Tight Reservoirs in North America," Journal of Southwest Petroleum University (Science & Technology Edition), Vol. 43 No. 5, pp.166-183, 2021, **http://journal15.magtechjournal.com/Jwk_xnzk/EN/Y2021/V43/I5/166**
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Kanat Karatayev, Prof. Xiin Fan and Denghong Zhou at OTC.

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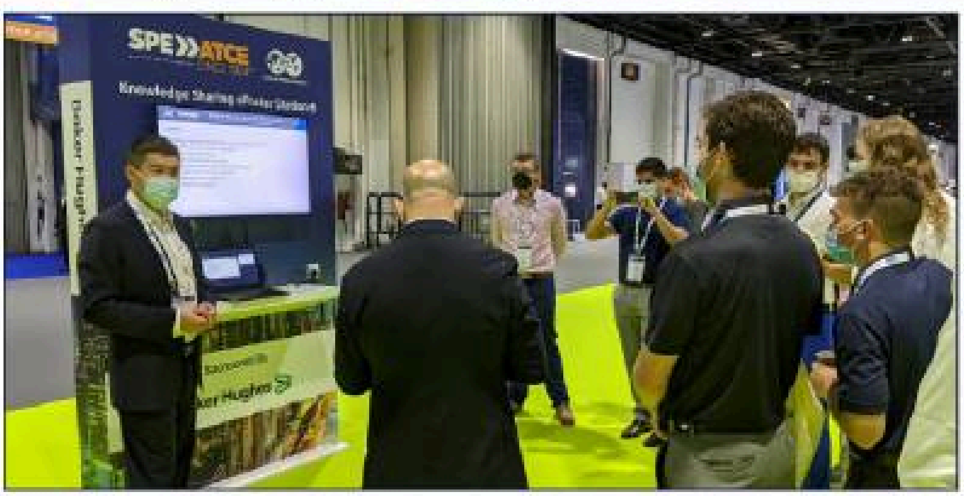


Kanat Karatayev presenting at ATCE. Fellow Mines students were in full support and the undergrads enjoyed seeing a new perspective of one of their teaching assistants.

The winning intramural soccer team of predominately PE students.

Kagan Kutun shaking hands with Secretary of the Interior Haaland.

Achievements & Competitions

- Congrats to our Petrobowl team (William Benson '22; Johnathon Henke, senior; Nicholas Bryan, senior; Hailee Hellstrom '22; Ethan Anderson '22; Matt Beckendorf '22) for winning the North American Regional Qualifiers with the record of 7-0! **Follow us on Facebook** to get an update on when to catch them competing at ATCE.
- The Mines men's intramural champion soccer team was led by PE students! We had a mix of grad students - Arkhat Kalbekov, Berk Yakup Coskuner, Dias Abdimaulen – and undergrads - Andrew Menzies, Ryan Arlow, Philip Bobby Dennar, Muktar Said, John Sass, Jimmi Zhang, Andre Karrs, Nik Kadirisani. The remaining team members were Zanskar Stohler (CE), Ethan Jay (CS), Hunter Adams (CS), Brennan Schroeder, Ethan Saarenas (ME), Caleb McGrath (QBE), Daniel Villalobos (CE), and Benny Yu.
- Students Nick Bryan, Nik Kadrisani and Will Benson were nominated and chosen to attend the International Petroleum Technology Conference (IPTC) in Saudi Arabia. Aramco sponsored the trip and brought them over to the country. During the week they got to explore the largest formation in Saudi, the exhibition hall where companies were showcasing new technologies and developments and participate in a Schlumberger sponsored competition. The teams had to start from scratch and create an entire field development plan for a hypothetical field in Saudi Arabia. Nik Kadrisani's team placed third overall (out of around 18 teams). His team was recognized on the final night in front of all professional and student attendees.
- The **visit by the Secretary of the Interior** regarding the new USGS building on campus was made even more exciting for us as PhD candidate Kagan Kutun was one of the students selected to meet with Secretary Haaland before the press conference.
- PhD candidate Balnur Mindygaliyeva and her partner were able to get third place in the PIVOT 2022 SPE Geo Datathon. Participants used real field data from the Utah FORGE Project to create models and generate solutions to design problems.
- Graduate students Gizem Yildirim, Meruyert Makhatova, and Arkhat Kalbekov won the first place in the National Chevron Sponsored Engineering Week Competition on "Solutions on Making Low Carbon Operations" with "Innovative Design for CO2-EOR Storage to Reduce Carbon Footprint in Petroleum Industry".

Left: Will Benson, Nik Kadrisani and Nick Bryan at IPTC.

Right: The winning Engineering Week team of Arkhat Kalbekov, Gizem Yildirim and Meruyert Makhatova with their certificates.

Nik Kadrisani received an award "In Recognition of Outstanding Academic Achievement and Dedicated Service to SPE" at the same time Dr. Miskimins received the "Rocky Mountain Region Distinguished Achievement Award for Petroleum Engineering Faculty".

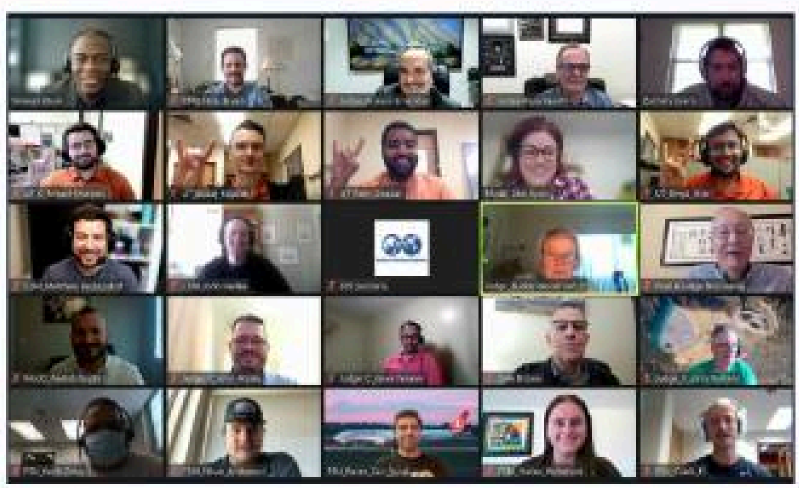
PhD candidate Gama Firdaus with his wife and daughters Aurum and Autumn doing some sightseeing while at his internship with Chevron.

Personal Student News

- Graduate student Daniel Rathmaier had quite the exciting year. He graduated with a Master's Degree from MUL and CSM, published his thesis, interviewed with NASA concerning solar powered CO2 conversion, started as a PhD student at CSM and got married!
- Arkhat Kalbekov, MS student, submitted two expanded abstracts to SEG & AAPG workshop and conference. One is accepted and the other one is under review. He also got admitted to PhD in Geophysics program at CSM starting Fall 2022.
- PhD candidate Gama Firdaus got an internship for Summer 2022 with Chevron in the Rock Physics Subsurface team, in Richmond, California.

We sent about 20 students to ATCE in Dubai in the fall. In addition to presenting at the conference and attending session, the students also made sure to experience many of the things Dubai had to offer, including an overnight desert safari, visiting mosques, going to the top of the Burj Kahlifa, checking out the Gold and Spice Souks, skiing at the mall and much more.

One of the undergraduate students is originally from Ethiopia, so a large group decided to go try Ethiopian food.



The Petrobowl team won regionals virtually, but hopefully we'll be able to see them compete in person at ATCE.

Graduation Awards

December 2021

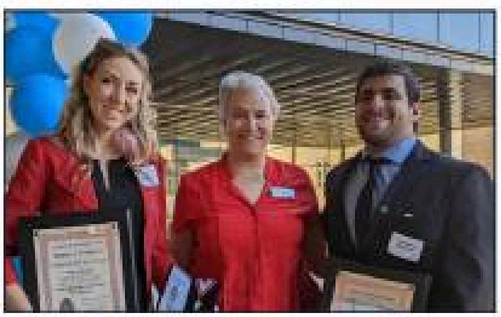
- Outstanding Graduating Senior: **Carson Horak**
- Outstanding Graduating Master's: **Balnur Mindygaliyeva**
- Outstanding Graduating PhD: **Bowen Yao and Ahmed Mansour**

May 2022

- Outstanding Graduating Senior: **John Sass**
- Outstanding Graduating Master's: **Similoluwa Oduwole**
- Outstanding Graduating PhD: **Ola Akrad**
- Wright Ethics Award: **Mohammed Alghamdi**
- Doug Tippie Award: **Randall Fox**

Outstanding Graduating Seniors: Left, Carson Horak Right, John Sass

Outstanding Graduating Master's Students
Above: Balnur Mindygaliyeva
Similoluwa Odule was not able to attend the spring graduation reception.



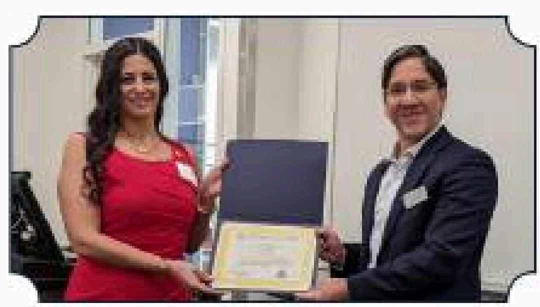
Morgan Whitelock and Abdulaziz Alsheraim received awards from the Colorado Engineering Council. Both students were awarded the Certificate of Merit and Morgan was also awarded a silver medal.

John Wright was on hand to hand out the award named after him and helped us present the Tipple Award.

Left: Mohammed Alghamdi receiving the Wright Ethics Award

Outstanding PhD Students
Above: Ahmed Mansour and Bowen Yao with Dr. Miskimins
Below: Ola Akrad with Dr. Zerpa

Left: Randall Fox receiving the Doug Tippie Award



IN MEMORIAM - DAVID VASSERMAN

This spring we lost a student in a skiing accident. David Vasserman was on track to graduate in May. The Mines Board of Trustees has awarded David a posthumous degree and his father walked for David in the Commencement ceremony. David was a strong member of the Mines community, both within and without the PE department, and his friends Cheyney Clopton and Morgan Whitelock honored him in the Commencement Convocation.

This morning, we would like to honor our fellow classmate David Vasserman, who passed away on February 9th, 2022. He was a member of the Mines Club Rugby team, a brilliant student, a good friend, and would be graduating with us today with Cum Laude honors, with a degree in Petroleum Engineering. Many of us had the privilege of knowing David; his genuine kindness and generosity were a welcome presence and have been missed. David had a pure spirit with a strong sense of purpose. His bright, easy smile and exuberant willingness to connect with others contributed to many happy memories. There is no doubt that he was one Helluva Engineer.

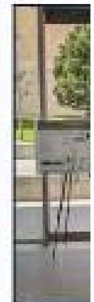
—Excerpt from Convocation Address

Far left: David's friends, teammates and classmates wore this pin in his honor at Commencement.

Left: David participating in the Frisbee exercise during field session in Massadona.

Our 100th

Colorado School of Mines was still relatively young, just under 50 years old, when they decided to expand the degrees offered to include Petroleum Engineering. The department was launched in fall of 1921 with the first students graduating with a PE degree in spring 1922. We are having a blast exploring our past, celebrating the present and preparing for the future in recognition of reaching the 100 year milestone. Included below are highlights of what the department has been up to and how you can get involved.

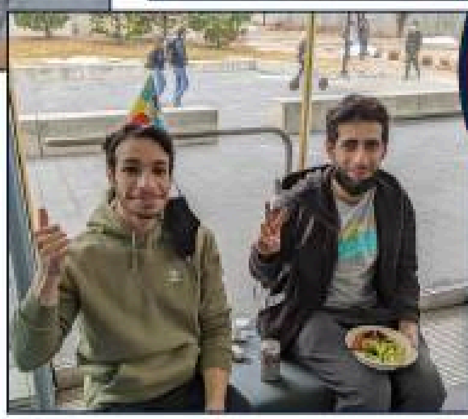


Petroleum Engine

100

1922-

Colorado Sc

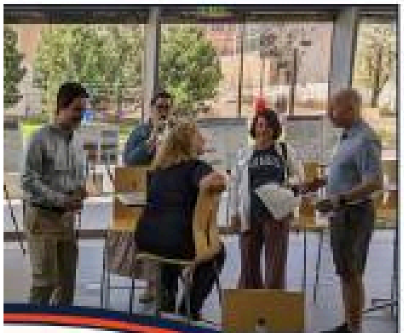


100th Anniversary Launch Party

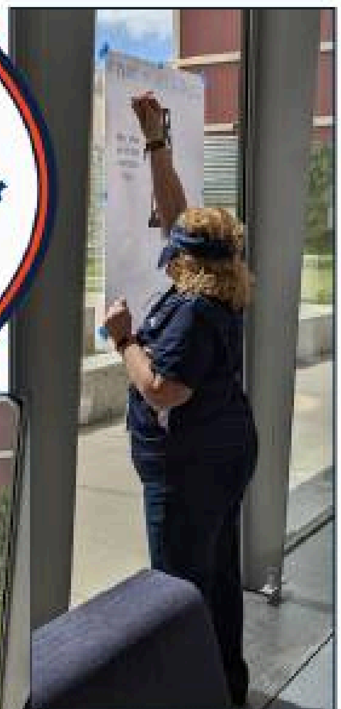
Happy Birthday to us!

Anniversary

Marquez Hall Open House



Students gave tours of the building and labs to alumni and friends of the department. We also had a student research poster contest.



Pin-the-drill-bit-on-the-rig has been popular at multiple events. Dr. Ramona Graves even played during the MZ Open House!

What's Coming

See what else we have planned for the year!

FALL EVENTS

August: Welcome Back BBQ - Students

September: Alumni Panel - Students

October: ATCE Alumni Reception - Students & Alumni

November: PE Hall of Fame Gala - Students & Alumni

WANT TO JOIN SOME OF THE FESTIVITIES?

Go to petroelum.mines.edu/100 for details.

The above 100th Anniversary lapel pins will be available to alumni at the ATCE reception and Hall of Fame Gala. Students graduating this calendar year are receiving one of the graduate lapel pins.

PE Hall of Fame

We are excited to announce the creation of the Mines PE Hall of Fame! Starting this year we will induct a new class of illustrious alumni on every even numbered year.

A committee of alumni and friends of the department spent the last several months deciding on who to include in this inaugural class. We weren't planning on having this many, but there are so many amazing alumni from the last 100 years that we couldn't narrow it down any further.

Check out the new PE Hall of Fame website for details about the selection criteria and full bios for all of the inductees.

HALL OF FAME GALA

Join us to celebrate!

Friday, November 4th

6:00 pm - 9:00 pm

Student Center Ballrooms

Colorado School of Mines

Register to Attend

All proceeds will go to the PE 100th Anniversary Excellence Fund.

Victor Alderson

- Mines President who founded the PE department
- Wrote one of the first text books on oil shale
- Alderson Hall, the first home of the department, is named after him

Steve Chesebro' '64

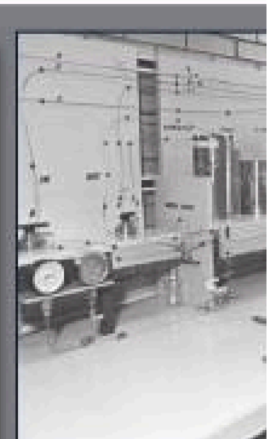
- Held executive positions at Tenneco, Penzoil and Harvest Natural Resources
- Serves on the Colorado School of Mines Foundation Board of Governors
- Received a Mines honorary doctorate in 1998 and Mines Distinguished Achievement Medal

DeAnn Craig '73, '80, MSc'02, PhD '05, MS Intl Pol Econ Res '06

- First female president of SPE and AIME
- Served as adjunct professor and on CSM Foundation's Board of Trustees
- Five degrees from Mines

L.B. (Buck) Curtis '49

- "Father" of the Tension Leg Platform
- Inductee of National Academy of Engineering and Offshore Petroleum Engineers Hall of Fame
- Received Mines Distinguished Achievement Medal



Hall of Fame Nominees

R. Chuck Earlougher '36

- Designed a water injection system to compensate for oil extraction, thus preventing Long Beach, CA from sinking
- Received the AIME Anthony F. Lucas Gold Medal. Mines Distinguished Achievement Medal and the Coolbaugh Memorial Award

Lincoln Elkins '40

- Pioneer in enhanced oil recovery and contributor to the technology of reservoir and production engineering
- Received the AIME Anthony F. Lucas Gold Medal
- Received Mines Distinguished Achievement Medal

Lloyd Elkins, Sr. '34

- "Father of Hydraulic Fracturing"
- Held 14 patents
- President of SPE and AIME

Dennis Gregg '50

- President of the Society of Petroleum Engineers and board chairman of the Offshore Technology Conference
- Mines' Distinguished Achievement Medal
- The DeGolyer Distinguished Service Medal

Hugh Harvey '74, MSc '80

- Applied horizontal drilling techniques to potash extraction
- Received a Mines Distinguished Achievement Medal
- Founded the Harvey Scholars Program

Ted Nelson '30

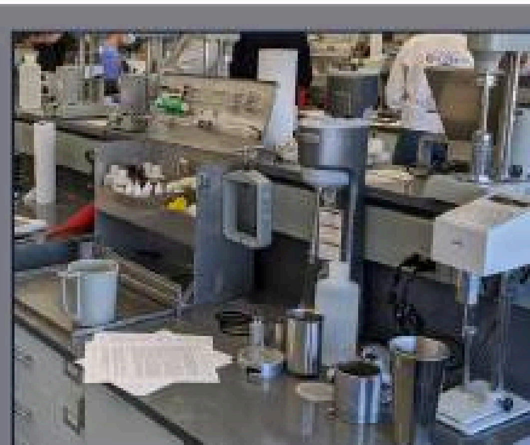
- Developed the Houdry and TCC catalytic cracking process
- Mobil named a geophysical ship after him
- Awarded AIME Charles F. Rand Memorial Gold Medal

Ralph Schilthuis '30

- Executive vice president and member of the board of management at Humble
- Received the SPE John Franklin Carl Award, the Alfred Noble Prize, and the Mines Distinguished Achievement Medal
- Served four years at the Office of Petroleum in Washington, D.C. during World War II

Russell Volk '26, MSc '31

- Pioneered petroleum exploration and development in the Denver-Julesburg basin
- Earned 15 Varsity letters in football, wrestling, boxing, basketball, and baseball and had the campus gymnasium renamed in his honor
- President and CEO of Plains Exploration Company

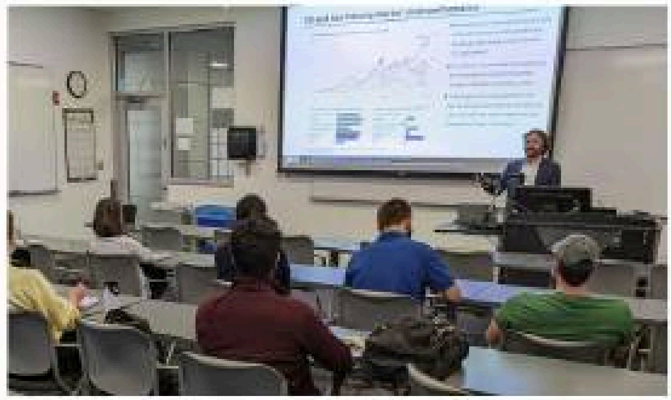


Distinguished Seminar Series

It was a pleasure to be fully in person this past school year. We also implemented a discussion hour after the seminar presentation to give students and faculty an opportunity to have more in-depth and long ranging conversations with our guest speakers.

We are still looking for speakers for this coming spring 2023. We are especially interested in speakers who can address future opportunities (research opportunities in new techniques, future of the field, etc.), specialized technical topics or related topics such as artificial intelligence or banking and its involvement in O&G.

Please contact the department at (303) 273-3740 or **petroleum@mines.edu** with speaker referrals or to volunteer to speak on these or related topics.



PRESENTERS IN FALL 2021

- Underground Storage Technology and R&D – Mr. Larry Kennedy Jr., PG & E
- Characterizing and Controlling the Propagation of Mechanical Discontinuity Using Unsupervised, Supervised and Reinforcement Learning Techniques – Dr. Siddharth Misra, Texas A&M University
- Fitting Square Pegs into Square Holes: Petrotechnical Data Analytics into the Upstream Value Chain – Mr. Zach Warren, Velocity Insight
- Research Headwinds: Navigating R&D When Priorities Change – Mr. Shane Siebenaler, Southwest Research Institute (SWRI)
- Well Instrumentation and Fiber Optics – Critical Information to Understand the Interplay Between: Well, Simulation and Subsurface – Dr. Gustavo Ugueto, Shell
- CCUS – The Need for It and Its Current Status – Dr. Rajesh J. Pawar, Los Alamos National Lab
- Research and Opportunities for CCUS in Wyoming – Dr. J. Fred McLaughlin, School of Energy Resources at University of Wyoming

PRESENTERS IN SPRING 2022

- Micrometer, Chalk, Chainsaw: Real World Petroleum Engineering Applications – Dominic Spencer, Bowline Energy
- Capital Considerations in Oil & Gas Industry with Today's Golden ESG Standards – Osman Apaydin, KODA Resources
- The Future of Drilling: Advancing Drilling Automation, Data Analytics, Machine Learning and AI – Dr. Eric Van Oort, University of Texas at Austin
- Reservoir Fluid Geodynamics: A Fundamentally New Approach to Reservoir Evaluation – Oliver C. Mullins, Schlumberger
- Integrating Multiple Diagnostic Methods to Determine Limited Entry Treatment Effectiveness – Dave Cramer, ConocoPhilips
- Geothermal Development in the United States Past, Present, and Future: A Personal Perspective – David D. Faulder, CYRQ Energy
- Hydraulic Fracture Geometry Characterization in Unconventional Reservoirs: Numerical Modeling and Data Interpretation – Kan Wu, Texas A&M University
- Geothermal Energy: Current Uses and New Possibilities – Patrick F. Dobson, Lawrence Berkeley National Laboratory (LBNL)

Chevron Short Course Series

We were thrilled to go back to in-person short courses this year. It allows a greater degree of personalized instruction on the short course topic.

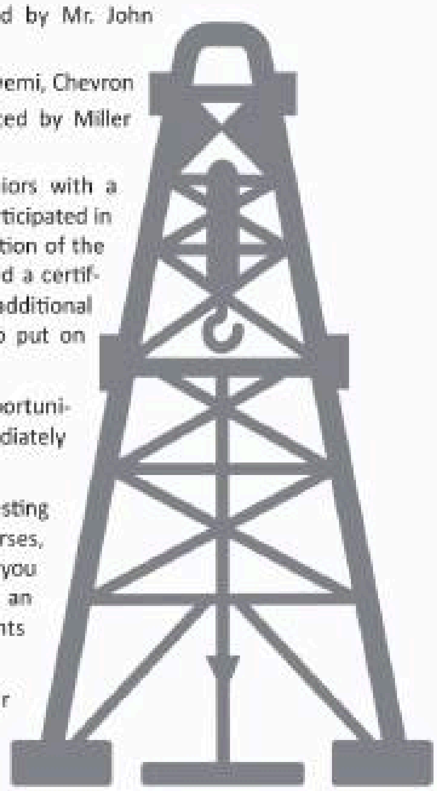
- Data Analytics, Presented by Naser Erwemi, Chevron.
- The Strong Link between Production and Reservoir Engineering, Presented by Bill O'Brien
- Trouble Free Drilling Presented by Mr. John Mitchell
- Python, Presented by Naser Erwemi, Chevron
- Reliability Engineering, Presented by Miller Newlon, Aera Energy LLC.

Around 40 students, mostly seniors with a few juniors and grad students, participated in the series this year. Upon completion of the short course the students received a certificate of completion as well as additional skills, knowledge, and training to put on their resume.

Students were excited for the opportunity to learn skills that were immediately useful in classes and internships.

We are always looking for interesting and useful instructors and courses, so please contact Mark Miller if you would like to participate or share an opportunity for a course students would benefit from.

A big thanks to **Chevron** for their continued support of this series.



Petroleum Data Analytics Graduate Certificate

The graduate level online Petroleum Data Analytics Certificate program is growing and we are so pleased to see the positive response.

The program is focused on the practicing engineer with field level operations. The Petroleum Data Analytics Certificate provides an opportunity to receive a valuable Mines Certificate that fills the gap between a graduate degree and an industry short course. Plus, you earn graduate level credit hours. It is taught by industry-renowned Mines faculty with vast experience in the technical areas and in the digital oilfield. The Petroleum Engineering Department has worked with the Computer Science and Applied Math faculty to offer this practically oriented four three-credit hour course certificate program. In collaboration with the Trefny Engineering Education Center at Mines, the certificate is fully on-line with a global reach. This graduate level certificate will be extremely valuable for the individual and for any company that wants an in-depth education for staff and management at an exceptional value without having to come back to campus. Don't miss this amazing opportunity!

If you want to get involved, learn more at:

online.mines.edu/pda

Supporting PE Students

Scholarships provide much needed financial assistance to students pursuing studies in the Department of Petroleum Engineering, especially to those who demonstrate a passion for learning and applying new knowledge in support of the science and engineering community.

Donations can be made to any of the **petroleum engineering scholarships** found on our website. You can support our students by making a gift, in any amount.

Go Online: **weare.mines.edu/supportpe**

Mail a Check or Visit Us:

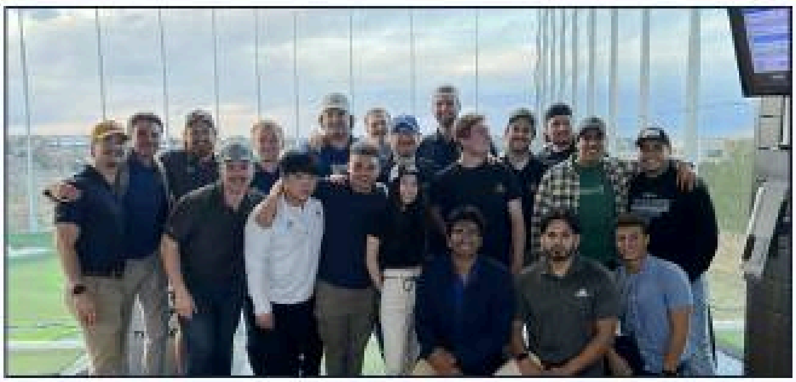
Starzer Welcome Center
1812 Illinois St
Golden, CO 80401

Pi Epsilon Tau (PET)

During the 2021-2022 academic year, Pi Epsilon Tau (PET), the petroleum engineering honors society, came back stronger than ever from its COVID induced dormancy. This year's activities focused on reengaging existing members as well as raising awareness for PET.

PET's flagship event this year was attending NAPE expo in February 2022 as a combined effort with CSM's chapter of American Association of Drilling Engineers (AADE). A total of 12 students attended the exposition in Houston, allowing for networking with students and professionals alike, as well as granting engineering students exposure to the land management and M&A side of oil and gas, a traditionally overlooked side of industry under traditional petroleum engineering curriculum. Highlights of the trip included attending a CSM alumni dinner where PET members mingled with everyone from last year's graduates to executives at major operators and meeting several of the influential faces behind oil and gas policy.

In-house, the PET officer team met frequently to plan this year's events as well as construct a solid platform for next year's PET group to launch from. This included raising awareness of PET and what it does, especially among younger petroleum engineering students taking rock properties. As a result, PET more than doubled in size to a total of 34 confirmed active members by May 2022. To induct and meet the new members, PET held a semester-ending event at TopGolf, where nearly the entire club came to celebrate the new PET class. PET is going into the 2022-2023 academic year with a with a strong leadership team of both rising juniors and seniors, and will undoubtedly exceed the fun and meaningful year we had the last 12 months!

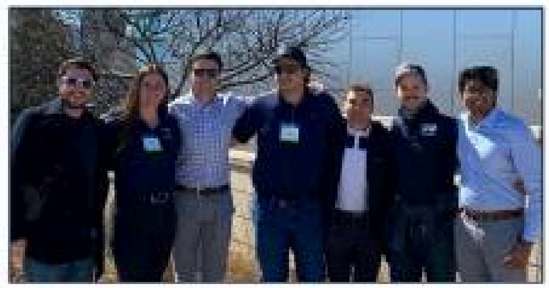


Left: Students at the end-of-semester TopGolf activity. Right: PET Students during the alumni reception at NAPE.

Society of Petroleum Engineers (SPE)

During the past academic year, our officer team has been dedicated to working towards a great academic year to make sure SPE continues to grow and engage the community through several events. There were numerous events and continuation of newly implemented programs which were held and executed during the past academic year including successfully expanding outreach to other SPE chapters and organizations, more than 10 lunch & learns, mock interviews, joint session with the SPE Denver section, facility tours, golf tournament, clay shoot tournament, volunteering events, happy hours, skills seminars and mentorship program. Our Annual Mudbug Masquerade was held for the first time since 2020. One of the biggest events was the 2022 Joint Session, organized by the CSM SPE Student Chapter and SPE Denver Section which was held on April 20th at the Colorado School of Mines campus. This year, we were honored to have 2022 SPE International President, Mr. Kamel Ben-Naceur as our keynote speaker. It was a successful event where every attendee (students, professionals, and professors) was very engaged and enjoyed themselves. There was also a poster session at the event where graduate students were able to present their research work to professionals and fellow students.

Our mentorship program, which was executed last year, continued to help students developing mentoring relationships and to ensure students feel connected to the industry. Other than the mentorship program, SPE Point System was also developed recently which is in place to assign point values to members to incentivize them to participate in various chapter and Denver section events. We are also very excited to share being awarded the Student Chapter Excellence Award for 2022 by Society of Petroleum Engineers International. The award is in recognition of our student chapter's programs in technical dissemination, professional development, member engagement, community involvement, and operations. SPE seeks to continue offering more benefits to its members. If you have any interest in putting on workshops, giving lunch & learn lectures or supporting SPE in any other way, please reach out to csmspe@gmail.com. Thank you for the support!



Left: SPE Chapter and Denver Section Officers at 2022 Joint Session, April 20.

Above: SPE Officers and Members in Oklahoma City for NASS (North American Student Symposium) 2022.

The annual Mudbug Masquerade was a hit with a bigger than expected turnout. Co-hosted by SPE, AAPG, AADE and ARMA, this spring event keeps growing in popularity and remains one of the favorite events for students, faculty and staff.

Field Session I, PEGN 315 by Linda Battalora and Mark Miller

Field Session 1 is almost back to normal! While the 2020 summer field session was cancelled, and the 2021 field session had a multitude of COVID precautions, we are fortunate to report that in 2022 our students were again able to travel. This year's exotic destination was Midland, Texas. We are very grateful to companies and CSM alumni for helping this year's field session achieve our various learning objectives: seeing operators, service companies, drilling rigs, frac jobs, production and water treatment facilities. At the end of the week, we were treated to an Alumni reception. Just as we had adjusted to 100 degree days in Midland, we flew back to Colorado. The weather when we landed was not just cool, but literally snowing and freezing.

We are very grateful to the following companies for hosting the field tours and sponsoring meals and to the Mines alumni and supporters that helped to facilitate the tours during our week in Midland. We especially thank **ConocoPhillips, Baker Hughes, ChampionX, Liberty Oilfield Services, Tap Rock, Weatherford, Apache, Atlas Sand, CrownQuest,** and **Don-Nan**. We also thank the Midland "M" Club, Mines Foundation, and CHEVRON for sponsoring the Alumni/Student event at the "Blue Door" on the last evening of Field Session. Overall the Field Session was a huge success, and we look forward to going back to Midland next year!

Above: Playing Oilfield Pictionary at Apache.

Above Right: Indoor tour at Weatherford International.

Below: Part of the group at a ConocoPhillips site.

Above: Getting a closer look at an Apache production site.

Above Right: The group checking out a Rotoflex at Weatherford.

Right: Part of the group at a ConocoPhillips facility.

Below: The whole field session group with their guides at a Liberty Frac site.

Field Session II, PEGN 316 by T. Sorensen

Happy 100th Anniversary from Massadona! This year had its own collection of challenges, and the students overcame in true Oredigger fashion. A warm, sunny start to fieldwork took a colder turn after 3 days when the temperature dropped 50 degrees F and sustained winds of 30 mph made for a long, noisy night. Luckily the firepit was usable and much deadwood from around camp has now been cleared out and put to good use. S'mores, hot cocoa, and karak kept us all warm, and we even held the debate around the firepit. Meanwhile, the first round of rafters earned kudos for enjoying a trip which snowed on them three times while on the water!

The weather became more forgiving once it was time to visit the new owners of the Rangely Field, and we are very excited to be partnering with Scout Energy, who purchased the field from Chevron. We all enjoyed a wonderful presentation series from them, and are grateful for their willingness to step in where Chevron helped us in the past. Our traditional visit to PLS and their cased-hole logging systems happened the next day, and the owners said our students were the most engaged and attentive group of students they have ever taught from Mines.

Before finishing up, we discovered torbenite crystals in an anthill in the camp, so we will apparently always have a small supply of naturally occurring uranium near the much-contested cornhole setup. Said cornhole competition was fierce, and resulted in the sound and enjoyable defeat of the instructors...multiple times. We look forward to many more years of survival at the cornhole boards, hopefully with less wind and snow.

Above: The frisbee exercise demands intense concentration.

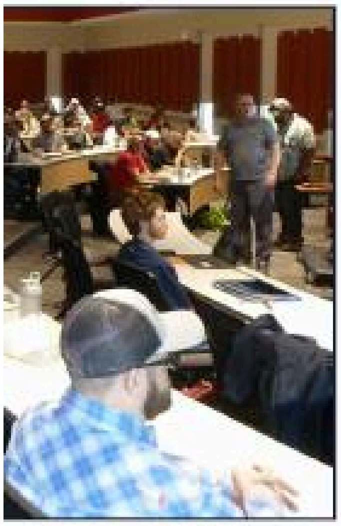
Left: Cornhole!

Right: from top to bottom:

Listening to Scout Energy's presentation.

Group shot on the last day.

Around the fire pit during one of the really cold days.



Right from top to bottom:

Getting some coursework done at camp.

Taking a rest from hiking during a geology lecture.

Enjoying the shade while working on an exercise.

Mines PE Department Alumni Reception at ATCE

We are so excited to have a reception at ATCE again! We'll be celebrating the department's 100th Anniversary and our first alumni reception at ATCE since the pandemic, so we hope to see many of you there.

Monday, October 3

6:00pm – 7:30pm

Ballroom of Americas B, Level 2
Hilton Americas Hotel

Register to Attend

Social Media Options

PETROLEUM ENGINEERING COLORADO SCHOOL OF MINES

Look for this logo to find the department's official social media accounts.

MINES PE LINKEDIN GROUP

We started a new group on LinkedIn called **Colorado School of Mines Petroleum Engineering Department**. Make sure to join if you haven't already to get the weekly research features and hear about events and opportunities for alumni.

FOLLOW PE ON FACEBOOK

Follow us on Facebook for the fun stuff like event photos, historical pictures and student achievements. Search for **@MinesPetroE** to find us.

#IDIGMINES GIVING DAY

The fifth annual #idigmines Giving Day continued to have departments and organizations across campus compete to get the most donations in 24 hours. On the line were bragging rights and a share of the Grand Bonus.

Our bonus funds are so big this year thanks to the PAB members. They issued a challenge and you met it, so they donated $7,500.

Other bonuses we received included the Global Challenge, Engagement Activities and the alumni 1:1 Match. Thanks to everyone who thought of us when doing these extras!

#idigmines Results for Petroleum Engineering

Thanks to everyone for participating. We had the most donors yet and hope to see the numbers go up again next time!

	2018	2019	2020	2021	2022
Total Gifts Made	55	63	42	70	48
Total Unique Donors	55	62	42	70	54
Dollars Raised	$12,810	$17,485	$12,217	$15,360	$9,709
Bonus Funds	$777	$850	$3,521	$1,990	$10,175
Total Dollars	$13,587	$18,335	$15,822	$17,350	$19,884