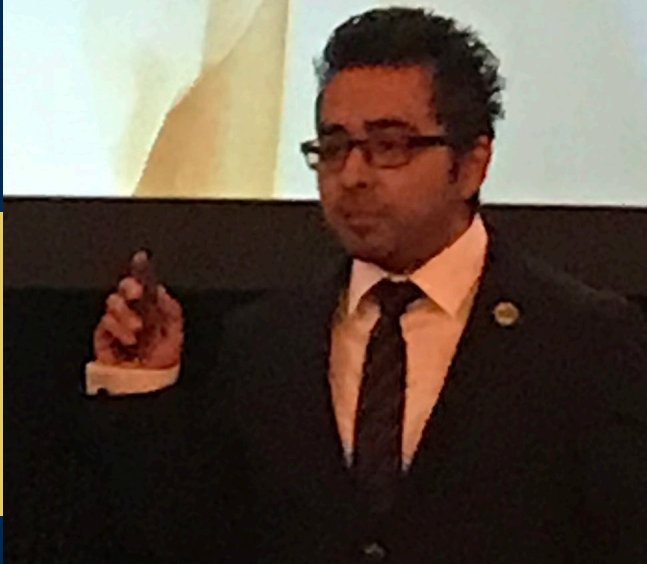
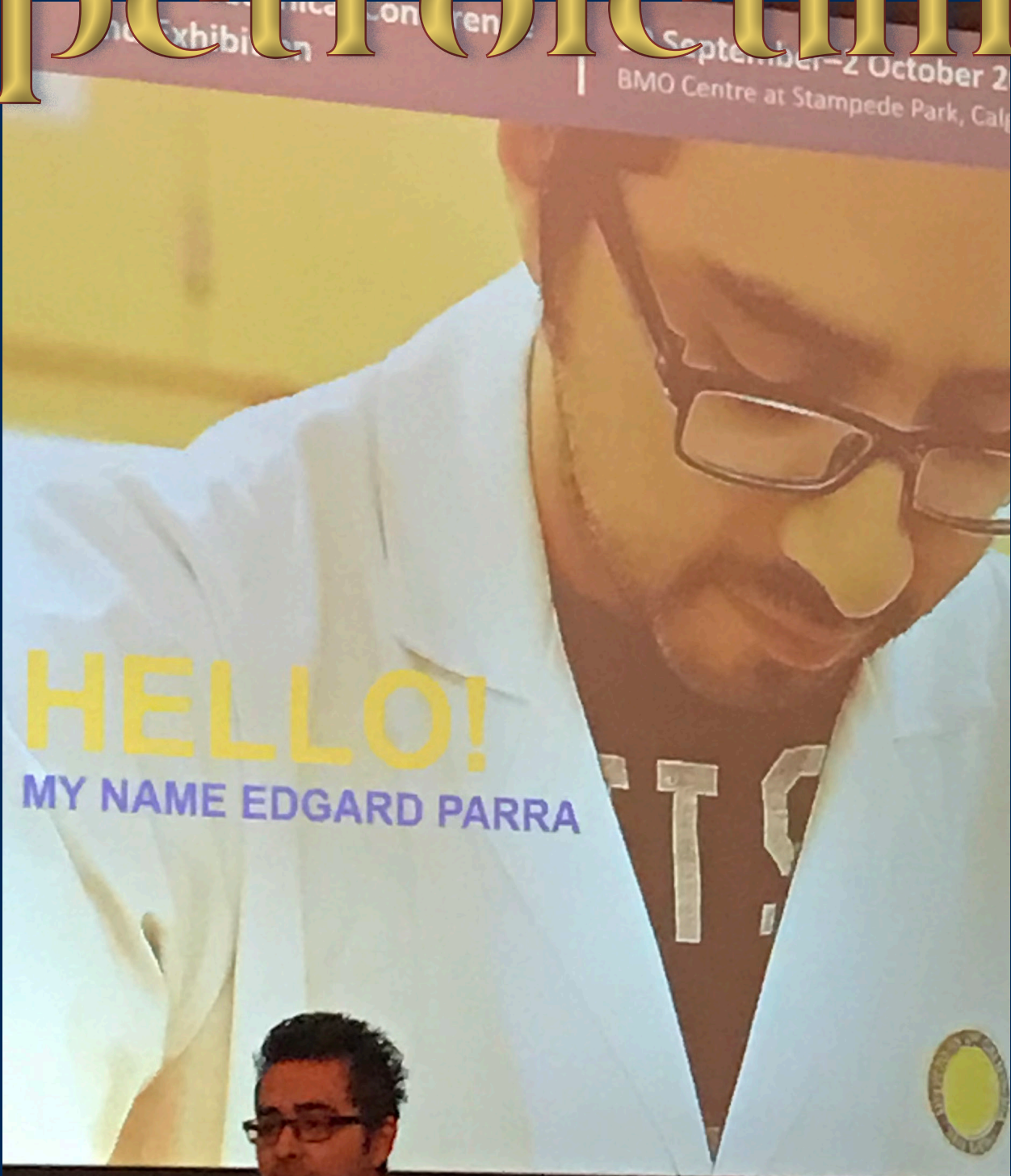


ISSUE 01/NOVEMBER 2020

petroleum

FOR THE PETROLEUM AND NATURAL GAS ENGINEERING DEPARTMENT



SPE ATCE
CONFERENCE
2019



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PETROLEUM MAGAZINE - ISSUE 01

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From the Chair

What a year it has been! I hope you and your loved ones remained healthy and safe. I still remember how many meetings we had in March 2020 to adapt new teaching and learning environments. On March 17th, the university decided to switch to 100% online classes due to the national lockdown. I remember how I felt when I offered my first online class using Zoom. We finally completed the spring semester with much better outcomes than we expected.

I wanted to thank all faculty, staff, and students for working together and for their support in finishing the 2020-spring semester out strong. With the stalwart leadership from Academic Affairs and a large investment on equipment, the department has moved to a new phase of a teaching style: hybrid model. We offered most of the Fall classes in hybrid mode from which our students have two options to register for classes: either 100% online or face-to-face. There are, of course, pros and cons of the hybrid teaching model and one must learn to maximize the strengths and minimize the weaknesses of this model. It's definitely not an easy task but there is one thing for certain; the department will continue to move forward and meet the challenges as we have been doing.

The department granted 19 B.S., 5 M.S., and 3 Ph.D. in the 2019-2020 academic year. It was very sad that we could not organize the annual Langdon Taylor Banquet this year to celebrate and honor our graduates. We chose to ship out the hard hats to our graduates due to the restrictions. Thank you Kim Royle, our department secretary, for arranging the shipment so well. As expected, our graduates have been impacted greatly due to the pandemic outbreak, which leads to the

crash of the oil and gas prices beginning in March, 2020. Companies ceased coming to our campus for recruiting this year including Chevron. Some of the internships this summer were cut or were switched to a virtual format. I wanted to thank our graduates for the way they handled themselves so well during this difficult time with great hope and boldness. We are humbly asking you, our alumni, to step up and help out our students, especially our graduates, in any way you can so they can transition to the industry in such a trying time.

A few more updates: (1) AAE Permian Basin Chapter donated to the department a total of \$65,000 to completely remodel the multipurpose room, MSEC 367. The department has used this room for a distance education smart classroom, on-line meeting room, conference room, teaching room, etc. (2) The department reformed the Industrial Advisory Board Committee which consists 11 members from the oil and gas industry in Fall 2019. The Advisory Board Committee will help the department create a link to oil and gas companies; familiarize academia with current industry vision and direction; recommend curriculum changes; assist with ABET visits; and assist in recruiting undergraduate and graduate students. (3) We separated the drilling and well design lab into two different labs: drilling lab and a new well completion lab. We purchased four new state of the art pieces of equipment so our students can perform tests on cementing and hydraulic fracturing fluids under reservoir conditions. (4) We constructed a brand new production lab facility. With this new facility, our students can conduct tests on the flow in the wellbore, multiphase flow, artificial lift methods, etc. (5) Our student chapters, AAE and SPE, were very active in 2019.



AAE student chapter sent our students to Midland TX for field trip twice in 2019. During the field trip, our students observed drilling and hydraulic fracturing operations, visited the petroleum museum, and attended a drill bit workshop. The SPE student chapter sent our students to the ATCE conference in Canada, organized the golf tournament, etc.

Lastly, the department wants to let you know

that Dr. J. Michael "Mike" Kelly decided to retire from New Mexico Tech after serving the department as a professor for 17 years. A quote from Dr. Kelly: "I've truly enjoyed Tech's students, whether as a professor or as an advisor. The other reason for turning to teaching was that I was becoming bored in industry, as increasingly the focus tended to be on the business end, rather than on engineering and practicalities in the field."

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NMUT Petroleum Engineering • Class of 2020



Stephen Richard Albritton, II



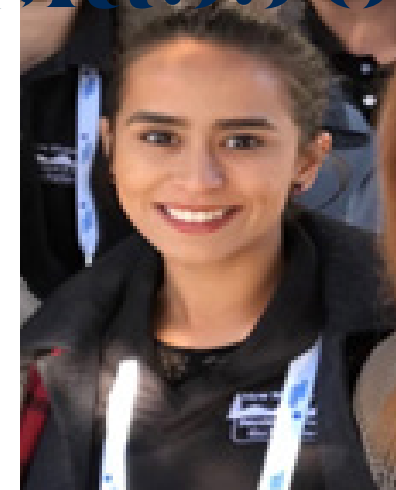
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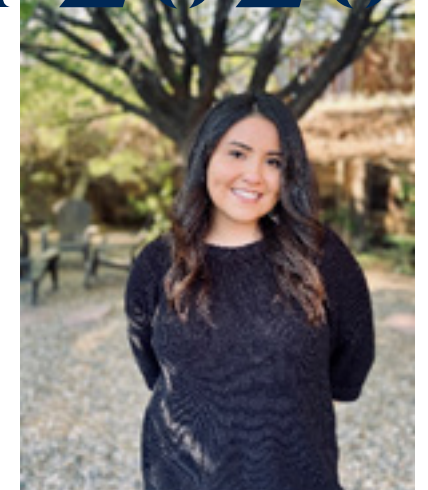
Patrick Vance Burgess



Danielle Martinez Ochoa



Arzoo Rishad



Andrea Salinas



Joseph P Carilli



Eneque Essomba Jacqueline
Jennifer



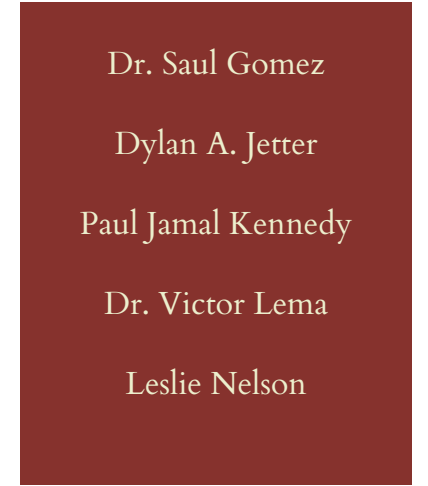
Luis R. Garcia



Zufuru Tejan-Kella



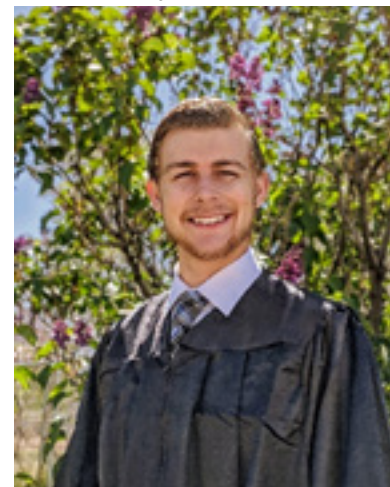
Carmin M. Vazquez-Ramirez



Dr. Saul Gomez
Dylan A. Jetter
Paul Jamal Kennedy
Dr. Victor Lema
Leslie Nelson



Carlos Gomez



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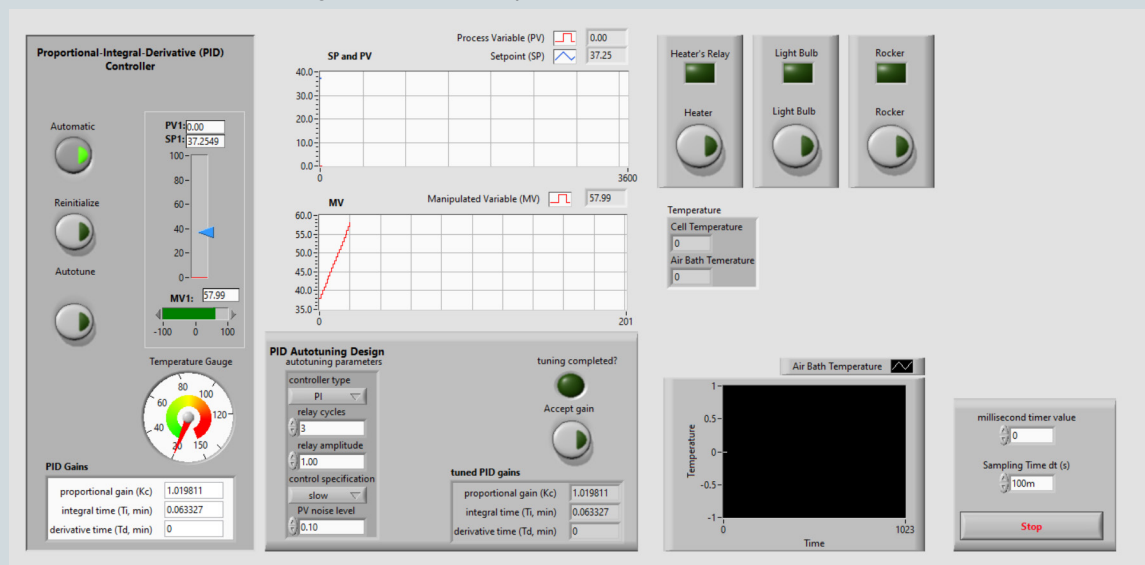
Dr. Hamid Rahnema:

Dr. Rahnema's research groups study the behavior of reservoir crude oil and other injected gases such as CO₂. Properties of the mixture, including solubility, viscosity, and swelling volume, are measured and obtained through special tests. Moreover, they are not only conducting experiments but also upgrading our equipment continuously to ensure that they are state-of-the-art. The PVT set up is controlled remotely and measurements are taken by computer in order to reduce human error as well as increase efficiency. These data help to optimize the operating condition of CO₂ injection in the field.



Figure 1: PVT machine which is used to measure properties of mixture of oil and CO₂

Figure 2: Control panel of the PVT machine



Dr. Her-Yuan Chen:

Dr. Chen has been teaching reservoir classes - undergraduate and graduate levels for years. He also teaches fluid mechanics (ES216) every semester. The department recently asked him to teach the production engineering class this Fall 2020 and it seems he enjoys teaching this class. Due to the pandemic, our students have not had a chance to party in Dr. Chen's house this year. Our students love him and the department has been blessed to have him in the department.

faculty

Dr. Thomas Engler:

Twenty-three students divided into five teams completed their senior design projects in May of 2020. Starting with acquiring and analyzing data to identifying potential projects in the Fall semester to writing a comprehensive AFE in the Spring, the teams were able to successfully propose potential development even under COVID-19 constraints. The projects and areas were:

1. Two in the San Juan Basin; one targeting the Mancos Oil region and the other the Mancos gas area.
2. Two in the Permian Basin: one in the West Palmillo (2nd Bone Spring Sand) Field in Eddy Co., NM and the other in the Phantom (Wolfcamp) Field in Loving Co., Tx.
3. One in Oklahoma in Grady/Caddo County targeting the Marchand sand in the Northeast Verden Unit.

Significant time and effort were dedicated to two main service areas:

The first was continuing as Faculty Senate Chair for

Dr. Engler teaching the Senior Design Project



another year, and thus presiding over the senate meetings and attending a number of related committee meetings.

The second was preparing and attending Oil Conservation Commission meetings. This was an active year in both rulemaking and specific order hearings.

As expected, all of the above were negatively impacted by the pandemic. However, all were able to be successfully continued or accomplished through alternative means.

ALUMNI SPOTLIGHT

J. Michael "Mike" Kelly, Ph.D.

BY MEGAN SCHWINGLE

You would be hard pressed to find someone more connected to New Mexico Tech than alum, former Regent, and recently retired professor Dr. J. Michael "Mike" Kelly.

Mike's history with New Mexico Tech begins with his father, John, who left Boston in the early 1930's to venture west and start school at the (then) New Mexico School of Mines.

After earning a B.S. in Mining Engineering in 1936 and a P.E. in Petroleum Engineering in 1939, both from NMT, John set off on what would be a successful career. Along with running his own oil company, Elk Oil, John served the state and nation in many capacities including as the director of the New Mexico Bureau of Mines and Mineral Resources, and as the State Geologist.

John was appointed Assistant Secretary of the Interior for Mineral Resources by President Kennedy in 1961, and was instrumental in securing legislation in 1977 that established the Petroleum Recovery Research Center (PRRC), an organization dedicated to solving problems related to the oil and gas industry. The PRRC is housed in the aptly named John M. and Esther L. Kelly Petroleum Building at New Mexico Tech.

Growing up around the family business, Mike knew from a very young age what he wanted to do. After graduating from high school, he packed up and moved to Oklahoma to study petroleum engineering at the University of Tulsa (TU). Its fraternity culture and size were not a good fit and after only a year, Mike traded his TU cape for a NMT pickaxe in 1969.

The differences between Tulsa and NMT were a welcome change. As Mike noted, there was little hand-holding at NMT in the late 60's,

"You're adults. If you want it bad enough, put in the effort and do it."

The Sterling Colgate era offered independence and an opportunity to grow. NMT's hands-off approach to education and social engagements was refreshing compared to Tulsa, which still had house mothers at the time. Mike remembers,

"There was a great freedom on this campus; NMT was small and everyone knew everybody. You knew all the faculty, you partied with them."



1971 Porphyry
Mike Kelly (left) and Michael Crowley (right)

Mike lived on campus for the remaining three years of his undergrad studies; one year in the "Zoo" (West Hall) and two in South Hall, rooming with **Michael Crowley** (B.S. Petroleum Engineering, 1972). Mike couldn't name just one favorite memory as "life was good here," with his petroleum crew and a few geophysics guys thrown in. 49ers and the "Ore House" may have come up in this conversation once or twice, but we won't expand on that.

Like many growing up in the oil and gas industry, Mike planned to gain field experience before going to work for his family. Sadly, close to his graduation, an Elk Oil

employee passed away, so Mike jumped in to help his family's company. After 6 years, Mike left Elk Oil to go out on his own. He started Keltic Services, a well service company in 1982, and ran the business for 30 years. He also started a fiberglass fabrication company in 1988, and ran that for 12 years as well.

During his time in business, Mike never lost touch with NMT. His work in the oil industry kept him very connected with the PRRC, and he had a continued interest in staying involved with the school. His ties became even closer in 1992 when he was appointed by Governor Bruce King to the Board of Regents, where he would serve for five years.

The major accomplishment of the Board during his tenure was to establish the Chemical Engineering Department, a decision that had a lasting impact on the future of NMT, Mike recalls,

"Establishing the Chemical Engineering Department allowed NMT to eventually start other engineering departments as well.... There was resistance, even in the 90's, to increasing engineering on this campus."

Mike credits the influence and impact **Dr. Robert Lee** (Professor of Chemical and Petroleum Engineering), had on the Board's decision. Now, a little over 20 years later, the majority of students at NMT major in engineering.

As if Mike didn't have enough on his plate, during his time as a Regent he decided to take a few hydrology classes to help him in his business. One class became two, and after several more years of classes, Mike graduated with his M.S. in 1997. The ink was still wet on his diploma when Professor Lee mentioned the idea of a doctorate, Mike says,

"I was thinking, I'm not an academic but Dr. Lee said, 'No, you'll fit into my team really well.' So I decided, what the hell, I'll go for it, as I have a lot of respect for Robert Lee. He was my mentor."

As a Ph.D. student Mike taught classes on petroleum economics and production engineering. He received his doctorate in 2000, earning his third degree from

ALUMNI SPOTLIGHT

J. Michael "Mike" Kelly, Ph.D.

NMT. The summer before school began in 2003, a call from Dr. Tom Engler resulted in Mike being roped in as an adjunct professor. Adjunct turned to associate and before he knew it, Mike had taught production engineering at NMT for 17 years.

So how does a self-proclaimed non-academic end up teaching as a professor for 17 years? For Mike, it came down to the students and being a lifelong learner himself, he notes,

"I advised grad students for a while and that was fun.... Some of them were really unique, as NMT has an international reputation and student body. And because I wasn't actively involved in research, the grad students had to find their own projects; many of their projects were quite diverse, and could be applied to research in their home countries.

"I've truly enjoyed Tech's students, whether as a professor or as an advisor. The other reason for turning to teaching was that I was becoming bored in industry, as increasingly the focus tended to be on the business end, rather than on engineering and practicalities in the field."

To add to his roles as alum, regent, and professor, Mike is also a donor to NMT. In honor of their late father and mother, Mike and his siblings established the John M. Kelly Scholarship in 1995 and the John Kelly Endowed Faculty Chair in 2011. Mike has generously supported the President's Scholarship and the Petroleum Engineering Department for a number of years. He also recently established a graduate assistantship in petroleum engineering, the Roustabout Graduate Fellowship. When asked what inspires his support, Mike responded,

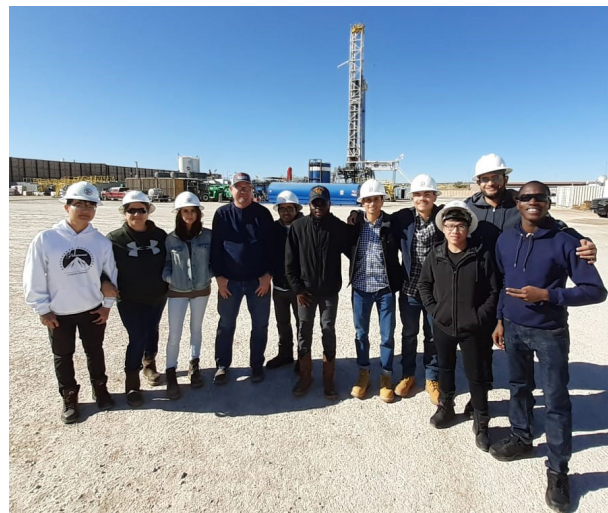
"The atmosphere of the school when I was an undergrad helped me later in industry. Not only was the academic and technical education first-rate, but NMT's approach gave me the confidence to try new ideas and innovations in my own businesses.

"The students who go to a small school are different, especially in engineering; and we here at NMT send students out into the world who are not only academically strong, but who are also practical, in-

student clubs



AADE's Mission is to provide the forum for the dissemination of practical drilling technology to those employed or interested in the drilling industry. At New Mexico Tech, AADE creates networking and learning opportunities through trainings, rig tours, research, and other means.



2020 Drilling Rig Visit



2020 AADE Field Trip - Midland TX

In the past year, NMT's generous Parent Chapter has funded multiple rig and facility tours in the Permian Basin to provide students with an opportunity to speak to on site engineers and make a visit to the petroleum museum in Midland, TX. AADE also offers free annual trainings by Wild Well Control to ensure students from Tech are certified before they graduate! Between the trainings and trips, AADE also volunteers for on campus events and even hosts a Cornhole Tournament during 49ers week in the Fall Semester.



2020 AADE Fundraising Activity

Our goal as New Mexico Tech's SPE Student Chapter is to collect and exchange knowledge regarding the exploration, production, and development of oil and gas resources. We also want to provide resources and opportunities for our students to enhance their professional abilities and excel in the petroleum industry.



How We Can Help Students

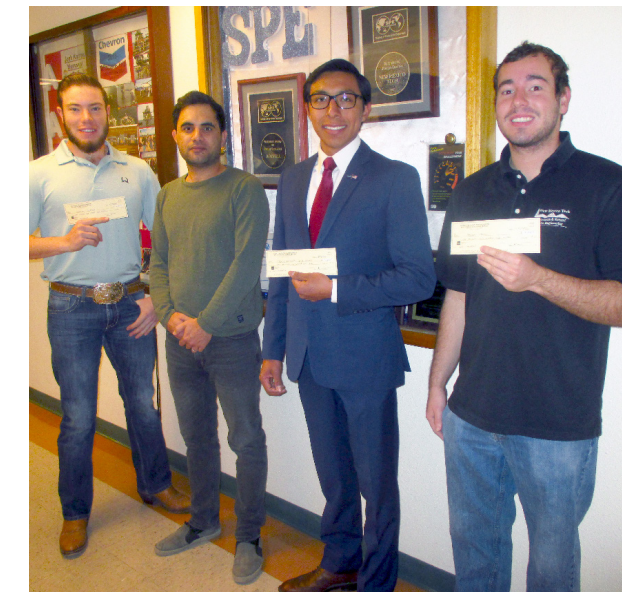
The NMT Student Chapter provides various SPE programs that you can participate in, such as eMentoring, paper contests, and online communities. You can apply for a mentor and receive practical career advice directed toward your education and career interests. SPE student members have the opportunity to meet practicing professionals at meetings or SPE events as well as receive discounts on textbooks and SPE publications. These opportunities will provide our student members with the resources and experience needed to be successful in the oil and gas industry.



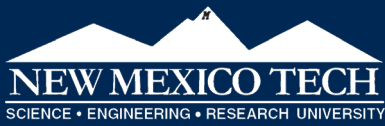
2019 SPE ATCE Conference



2020 SPE 49ers Golf Tournament



2020 Denver SPE Scholarship



<https://www.nmt.edu/academics/petreng/>