EMPLOYER PROFILE

Oil and gas drives need for innovative engineers

Pioneer Natural Resources: Marrying engineering to teamwork

A week-long bus ride through the scorching terrain of southern Texas may not sound like an ideal summer getaway. But for the staff and interns of the oil and natural gas company Pioneer Natural Resources, it is the ultimate in “cool” road trips.

On this annual tour of Pioneer’s assets, students visit drilling rigs, hydraulic fracture stimulation fleets, gas plants, and other field operations. Though intense, the trip is among the highlights of the summer. Interns gain invaluable industry exposure while traveling on a spacious, well-appointed bus, enjoying entertainment and fine dining along the way.

Back at the Irving, Texas, headquarters, “There’s a lot of energy around the office,” says Pioneer’s Engineering Advisor Ray Flumerfelt, referring not just to the 66,000 barrels of oil and 370 MMcf of natural gas extracted daily, but to the talented and rapidly growing staff set to increase by 50 percent in 2011.

True engineering leadership opportunities abound at Pioneer. According to Flumerfelt, “One of the things that’s unique is that we have a capital budget that exceeds $1.5 billion a year. That money is spent by approximately 200 engineers and 100 geoscientists. The amount of responsibility on our technical employees is pretty remarkable. Because engineers touch all aspects of our business and demonstrate the ability to handle substantial responsibility, our leadership team is largely made up of engineers.”

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PIONEERING INTERNS:

Three high-energy UPOP students

Pioneer’s CEO Tim Dove ’79 became a UPOP mentor-instructor in January 2010. This led to a highly successful employer/intern relationship with UPOP, with several students interning at the Texas company since then.

UPOP’s Class of 2013 had three students at Pioneer in the summer of 2011:

Andrew Sommer ’13: Mechanical Engineering

In order to make a lasting impact on industry and the world, says Andrew Sommer, “You need to be able to apply your technical abilities and convey your ideas...”

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Looking ahead

The National Academy of Engineering has identified 14 “Grand Challenges” for the 21st century†. We expect that the UPOPers of 2021 will be tackling these issues, and we will strive to recruit mentors and experts to support them in these pursuits:

- Make solar energy affordable
- Provide energy from fusion
- Develop carbon sequestration methods
- Manage the nitrogen cycle
- Provide access to clean water
- Restore and improve urban infrastructure
- Advance health informatics
- Engineer better medicines
- Reverse-engineer the brain
- Prevent nuclear terror
- Secure cyberspace
- Enhance virtual reality
- Advance personalized learning
- Engineer the tools for scientific discovery

Letter from the executive director

Dear friends of UPOP,

This year MIT’s Undergraduate Practice Opportunities Program (UPOP) celebrates ten years of introducing students to the skills, tools and cognitive frameworks they need to translate their “hard” science, math and engineering training and talent into thriving careers that they themselves must design. These are the “firm skills” that define UPOP’s curriculum and its enduring mission.

UPOP’s founding decade paralleled momentous developments in technology from the emergence of Google, Facebook, Twitter, the iPhone and MMOG’s, to the mapping of the human genome and use of carbon nanotubes in nerve regeneration. UPOP students have seen global crises from Katrina, the BP oil spill, two Asian tsunamis and an earthquake in Haiti, to the collapse of the World Trade Center twin towers in New York, the I-35 bridge over the Mississippi River and Lehmann Brothers on Wall Street. In this decade, the United States elected its first African-American president and North Korea announced its first nuclear missile test.

UPOP’s curriculum is constantly updating and improving to address the challenges that stem from such global changes, while it grows to meet increased demand by employers and students. In this decade, UPOP enrollment has grown from 73 in AY01-02 to 420 applicants in AY11-12 and our roster of UPOP employers now exceeds 1,000 organizations.

While anniversaries provide the opportunity to reflect, MIT is all about the future. Dean Ian Waitz has envisioned a School of Engineering that...

- Is more flexible, multidisciplinary and global
- Offers more authentic practical experiences
- Develops leadership and professional capability, and
- Fosters greater innovation and entrepreneurship

UPOP is well positioned to support this new vision with the help of a vast community of MIT alums, students, faculty, mentors, and even future students. In January 2011, we held a forum to envision UPOP ten years hence, asking industry leaders and UPOP students to brainstorm their collective insights. We even interviewed fourth-graders who may be MIT sophomores in 2021 for their aspirations and fears. I hope you will join me in our search for answers—and new questions—in our endeavor: to be “Primed for 2021.”

Finally, to ensure UPOP sustainability, we have launched an ambitious fundraising campaign to raise $5 million for the endowment. I hope you will spread the word to your friends and colleagues and even consider making a personal or corporate gift yourself—which will be matched, dollar for dollar, by the Gordon Foundation. You can help to advance this mission of cultivating the next generation of MIT leaders.

Susann Luperfoy

† http://www.engineeringchallenges.org/cms/8996.aspx

EMPLOYER PROFILE:

Pioneer Natural Resources

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Five of Pioneer’s eight-person senior leadership team members are engineers, including Pioneer’s president and chief operating officer, Tim Dove, who graduated from MIT in 1979 with a BS in mechanical engineering. UPOP’s focus on the marriage of engineering, leadership, and teamwork meshes successfully with the Pioneer ethos. Tim Dove has served several times as a mentor-instructor during UPOP’s intensive January workshops, imparting his experiences and perspectives while mentoring a number of students—several becoming Pioneer interns. “We’ve had quite a few UPOP students in our intern program,” says Flumerfelt. “They’ve done great!”

Pioneer prides itself on its “very high character leadership team,” says Flumerfelt. It is driven by a deep sense of responsibility with “a strong culture of doing the right thing for the environment and protecting employees and their welfare.” Two examples: an EPA case study has showcased Pioneer’s methane emission reduction efforts, and multiple news outlets have named it one of Greater Dallas’ best employers.

The perks Pioneer offers its staff members are extended to Guadalupe Mountains National Park, Texas.
In addition to rigorous training, interns attend social events, baseball games, and of course the week-long tour. They also take on meaningful projects with lasting impact. These “generate conclusions and recommendations that significantly impact our business,” explains Flumerfelt. “At the end, we invite interns into the boardroom to present in front of senior management and technical staff.”

Prior to the presentation, interns are coached by a public-speaking expert. “We focus a lot on technical training,” says Flumerfelt, “but also on leadership.”

Camille Wasden ’13, who served as an engineering intern with the Gas Processing Department, was inspired by the blend of people- and process-orientated tasks at hand. She says, “I found that solving problems for the plant workers, or designing to meet their specifications, was very fulfilling.”

Pioneer sees in today’s interns the new hires of tomorrow. “In terms of who we select, we want the best and brightest,” says Flumerfelt. “The people we look for in our intern program are significant game changers down the road. They need to be superstars and the people who will be running the company in the future. That’s why we recruit in schools like MIT.”

Marie Schmidt ’13
Chemical Engineering

According to Marie Schmidt, UPOP “gives students a safe place to practice communicating and networking with professionals while helping them secure exciting summer internships and research.”

For Marie, encounters with UPOP’s engineering leaders have yielded important results: all the networking practice, she says, made her feel “more prepared to enter the professional world and sell my strengths to potential employers.”

Thanks to her new networking prowess, Marie procured an internship at Pioneer Natural Resources, where she “was able to apply the team-work strategies as well as some of the professional skills we practiced.” She also discovered the importance of seeking guidance: “I learned many things about the oil and gas industry over the summer, but I think the most important professional skill I learned was how to ask questions and get help.”

Camille A. Wasden ’13
Chemical Engineering

If you catch Camille Wasden in an elevator, you’re in for a treat. Through UPOP, “I learned to give an elevator pitch, a skill that has come in handy during career fairs, networking events, interviews, and my summer internship.”

In addition, she has learned about teamwork and collaboration through UPOP’s team-based challenges: “A lot of the activities were geared toward learning how you learn/think... how to help others understand you better, and how to work with people who think differently from you.”

Last summer, during her internship at Pioneer Natural Resources (see employer profile on page 1), Camille put both her interpersonal and technical expertise to work. “I applied my chemical engineering skills to technical projects, while using my people skills to work with vendors and other engineers.”
“UPOP’s teachings—of job search strategies, communication and negotiation skills, conflict resolution, leadership and teamwork—help students understand their importance in the workplace.”
—Mike Szeto ’72

MENTOR PROFILE, CLASS OF 1972:

Michael Szeto:
The courage to embrace change

If there’s any one thing that alum Michael Szeto has learned, it’s “not to get too hung up on any specific plan or direction in your career. Whatever it is that you decide to do will work out, and probably not in the ways that you think.”

Szeto embodies his own theory. His career has encompassed the worlds of computers, finance…and ballet. Szeto’s passion for science and math began in his youth. He grew up in Hong Kong, and though neither of his parents had attended college, and his high school provided no college counseling, he aspired to attend MIT. Once admitted and enrolled, Szeto sought out ways to use engineering techniques to solve socioeconomic problems. His combined technical expertise and business savvy led Szeto to Harvard Business School and then to Boston Consulting Group, where he worked with emerging-technology companies. After that, he landed a job in IBM’s Canadian division.

In the next phase of his career, Szeto oversaw the introduction and rollout of the IBM PC. Later, As VP of Corporate Development, Szeto oversaw divestitures, spinoffs, external investments, and strategic relationships. He learned to navigate Wall Street, and eventually joined JP Morgan, where he focused on “building its technology investment banking business.”

By the late 1990s, according to Szeto, “the IPO market became dominated by a small number of large Wall Street firms and their elite clientele.” Disappointed with the prevailing climate, Szeto joined the leadership of WR Hambrecht + Co. The private financial services firm sought to level the playing field in IPOs through a transparent online auction system. But when the technology market crashed, Szeto found himself “fighting in a market that had zero business for anyone.” He decided to retire from banking and “reset priorities.”

Soon, a new venture pirouetted into the forefront. Szeto’s daughter, Katie, then a high school student (and later at MIT), was also a serious student of ballet. Advanced ballet training would have required hours of travel to and from New York City. So Szeto, with his wife, started the Greenwich Ballet Academy in Greenwich, Conn., a 5-minute drive from Katie’s high school. The elite nonprofit ballet school now enrolls 100 dancers, and a new generation of parents has taken over operations.

Giving back to MIT is one of Szeto’s post-retirement goals, and he first volunteered as a UPOP mentor-instructor in January of 2009. “What we need to teach,” he says, “is that being technically bright is a necessary but not sufficient condition for getting things done in the real world.” Szeto asserts that “UPOP’s teachings—of job search strategies, communication and negotiation skills, conflict resolution, leadership and teamwork—help students understand their importance in the workplace.”

Szeto urges students to become comfortable with happenstance. At the start of his own career, he reflects, “I wouldn’t have told you I’d end up on Wall Street. I never would have thought I’d someday be involved with a ballet school! MIT has taught you well to jump into any unstructured situation and formulate a framework for rational analysis. Those skills will serve you well. Enjoy the journey, and be courageous and brave enough to embrace change when it comes your way.”

Mike Szeto ’72 accepts the Desh Deshpande Award 2012 for outstanding contributions to UPOP. photo | jessica jones

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