Lamar University and Energy

Narrator: The reputation of Southeast Texas as an energy hub begins more than a century ago with the discovery of oil at Spindletop Hill. The 1901 Lucas Gusher sent oil streaming more than 100 feet into the air for nine days before it was capped, helping usher in the petroleum age and creating a boomtown south of Beaumont. That historic era is commemorated on the Lamar campus with the Spindletop-Gladys City Boomtown Museum, a valuable teaching tool.

College of Arts and Sciences

Narrator: For Lamar history major Tyler Quibodeaux, working at the museum has provided hands-on exposure to the importance of preservation and experience in archiving historic objects. He even used knowledge he gained from his museum work in a paper he wrote for a historical methods class.

Tyler Quibodeaux: As a history major, I appreciated the connection between the museum and the history of this area, of Spindletop, and all the men and women who dedicated their resources to enhancing oil production in the field.

Narrator: Oil and gas exploration is still a vital component of the energy industry, and Lamar’s Department of Earth and Space Sciences is helping meet those needs. In specialized courses like geophysics and petroleum subsurface geology, students learn to use industry-grade software and interpret seismic data, a rarity for undergraduates. These students expect to find rewarding career opportunities after graduation.

Joseph Kruger: A lot of the professors here do undergraduate related research. I, for example, am taking students out into the field. They’re learning how to use gravity meters, which is important for oil and gas exploration. They’re also learning how to use equipment such as GPS equipment, which is used in surveying for oil and gas.

Joseph Kruger: We’re seeing a big increase in geology studies simply because we’re getting an increase in the demand for oil and gas and thus an increase in the demand for geologists.

Joseph Kruger: The broad base of knowledge is very important because they not only need geology, but they need chemistry, they need physics, and they need math to become successful geologists in the oil and gas industry.

Josh McBride: Geophysics. Not a lot of schools teach geophysics in particular much less Kingdom Suite. So we’re getting actual applicable industry experience with software, plus we’re being groomed for being able to present our data in a confident way.
Josh McBride: We have excellent career opportunities in petroleum geology. Three-quarters of all petroleum geologists in the world currently are 55 years and older. They are expected to be retiring over the next 10 years. Oil companies as a result are clamoring to recruit as many new geologists as they can.

Christine Gartner: I'm a native Southeast Texan and my grandfather worked at Dupont, so the oil industry has a very prevalent place in my life and in our community. And one of the things that brought me to geology was the fact that you can find a job pretty easily and you can do so right after you graduate. So that probably was the thing that inspired me the most to be a geology major.

Christine Gartner: We learn about the structures that we’re seeing in the surface. We learn about how to requisition seismic data, and how to instruct like drilling companies on how to get that oil out of the subsurface so that we can use it in every day life like gas for your car.

**College of Fine Arts and Communication**

Narrator: Communication students at Lamar immersed themselves in the energy industry to produce the documentary Operation: Infinite Potential for the Jason Project, shown to students from throughout Southeast Texas.

Laura Koonce: I learned a lot about the solar energy and wind energy and just renewable energy sources that we have available to us here in Southeast Texas.

Laura Koonce: In working on the Jason Project, there was a lot of overlap between what we were doing in the process of creating the documentary and what we were learning in classes, not just filming classes, but also in the broad communication spectrum of learning how to effectively communicate with each other.

O'Brien Stanley: It’s great experience for them. They work as a team. It really gives them terrific experience. And they come out of the project changed. They come out of the project really changed as shooters, as editors. They know how to put stuff together. They know to make a complicated documentary. They’re proud of their work. We enter it into contests, and they do great.

O'Brien Stanley: The support that the energy companies give us through these projects and the Jason Project helps train students, and then they go back and work on corporate informational videos, and the money is really good in these companies.

**College of Business**

Narrator: A two-time alumnus and member of Lamar’s College of Business Hall of Fame, Bart Simmons knows that Lamar prepares students well for business careers in the energy industry. So when he needed help at his company, TriStar Producer Services, he hired MBA student interns to negotiate millions in additional unsecured credit to help him grow his business.
Bart Simmons: After the financial melt down it was hard for a privately held company to go out there and get unsecured lines of credit or to expand those lines of credit to expand my business.

Bart Simmons: That got us thinking about a way that we could potentially utilize some of the Lamar MBA students to help us in that process.

Bart Simmons: We felt that it would be good if we could utilize students that were well versed in finance in particularly the oil and gas industry could use them to go call on our counter parties that we do business with. Go to their offices, present our financials so that they could indeed explain all about the company, the cash flow, the balance sheet, the income statement, our history in the oil and gas industry and could indeed ask for additional credit.

Bart Simmons: The students were unbelievable. Successful. In fact they exceeded our expectations. We ended up ... we've done this for three years. We've had a total of five students run through it.

Bart Simmons: We would teach these students all about the company. In fact they got to the point where they could analyze our cash flow statement so well and answer any question with any of our customers.

Chad Champion: The Lamar MBA program, one of the biggest take-aways that I had is working in groups. The group dynamic in the classroom. Translating that to what I do everyday in the project environment where you have multiple people and you’re trying to come up with a solution for your client in the energy industry.

Chad Champion: The MBA internship with TriStar was one of the critical points in the program for me and in my career. It’s pretty much launched me to where I am today.

Chad Champion: The biggest thing I got out of that was the hands-on experience with Bart Simmons, the CEO of a successful energy firm in Dallas and also to sit down with the CFO as well and get that hands on practical experience of how the business works, how the industry works and tie that all together.

Chad Champion: At the end of the program we gave a presentation with Dr. Mayer, Dr. Venta and Bart all in the same room and to be able to show that impact, that we actually made an impact on a business.

Bart Simmons: The students that are coming out and they’re equipped to really deal well in the energy business. So, I think it opens doors.

College of Education and Human Development
Narrator: The College of Education and Human Development is using innovative approaches to improve STEM education to help meet the needs of industries like energy. The college's ExxonMobil Bernard Harris Summer Science Camp introduces high-ability middle school students to hands-on learning activities.

Otilia Urbina: The camp was designed to develop a pipeline by providing students hands-on, real-world activities, we're hoping that they decide to pursue energy industry careers.

Otilia Urbina: Even if our students don't select an energy industrial career path, we're hoping that they will leave us with an appreciation of energy industry and what they're trying to do for society.

Narrator: Some former campers still see the camp as a turning point in their science education and continue to turn to camp journals for inspiration years later.

Caleb Buxie: Every once in a while I’ll go back and I’ll look into the journal. It will encourage me like, OK, I can keep pressing on, I can keep moving on. Because when I was a little kid, they already taught me how to problem solve. They taught me how to do these many things, and after I completed these tasks, I felt good about it.

Caleb Buxie: Now that I am in college and I’m going through the electrical engineering program, I started to think of either going to a refinery or going to a factory or going to an energy company.

Victoria Rocha: I learned that experiments don't always go right the first time. You keep on trying them over and over again but that's why it's an experiment. You learn what does work, what doesn't work. It just kind of let me know, don't give up, keep on trying. Keep on trying because eventually you will get it.

**College of Engineering**

Narrator: The robust cooperative education program in the College of Engineering allows students to apply their classroom knowledge in the field, providing immediate benefit to them and to industry partners in Southeast Texas and across the country.

Katrina Brent: There is great benefit for our students who participate in these energy industry coops. Our students are able to go out into the real world and gain experience that they then can bring back into the classroom and really understand what they're learning through their text books.

Katrina Brent: Our co-op students have great employment opportunities upon graduation. Many of them will co-op with the same company two to three times throughout their college career and that really secures them a full time job many times after graduation.
Aaron Lavergne: I was interested in the co-op program at Lamar just because of the fact that I knew there were so many companies that were coming to grab students at Lamar and I knew that coming in grabbing an internship that was a major thing to do while you’re in school because that’s what companies look for – a student with work experience coming out with his degree.

Aaron Lavergne: I co-oped at ExxonMobil this summer and at ExxonMobil I was in the process design department basically what I did there was coordinate projects that had to get done around the refinery like upgrades and replacement of out-of-date pipe and replacement of things like that.

Paige Hoyt: I’m very excited that chemical engineers have such a great future in this area in the oil and gas industry. Beaumont Texas is one of the best areas to be in for chemical engineers in the world.

Paige Hoyt: My two internships at the Valero Port Arthur Refinery have brought me priceless opportunities.

Paige Hoyt: The different products that I’ve been able to touch upon at Valero have really helped me to look to my future and see what I will be doing in the actual industry.

Narrator: Research by faculty and students in the College of Engineering is exploring exciting new possibilities in energy. The work in the lab of Dr. Tracy Benson, assistant professor of chemical engineering, is just one example. Benson and his students are working on ways to capture the 20 million tons of carbon dioxide emitted during industrial processes annually and convert it into useful chemicals.

Tracy Benson: The long-term impact on the energy sector is finding something useful to do with one of their waste streams, and that’s carbon dioxide.

Tracy Benson: So if we can use it then to extend our carbon resources that’s a benefit to both the industry and to the society at large.

Tracy Benson: The benefit to society is taking this waste carbon dioxide and then converting it to a useful fuel or chemical.

Tracy Benson: We’re emitting carbon dioxide along with steam into the atmosphere. And over time we’re really worried what environmental impacts this will have. And so over the last decade many people have been talking about carbon sequestration and that’s taking it out of these flue stack gases and then pumping it way below ground. Our technology is being able to convert that carbon dioxide into a salable product.

Tracy Benson: So what we’re doing is we are developing catalyst powders. And to the naked eye they just look like maybe powder of clay that you’d pick up off the
ground. But when we use characterization tools we can look at them on the nanoscopic level and what we're able to do with these powders is to take and decorate the surfaces with very specific metals that promote very specific reactions and so for the reactions that we're looking at promoting are the carbon dioxide conversion to carbon monoxide. In almost all of these types of reaction scenarios you also have byproducts and so the other part of our work is trying to minimize unwanted byproducts.

Tracy Benson: Industries want to be good stewards in the environment but we have to do that in a very economical way.

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