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Spring 2017

### Annual Report 2017

Brandy McKnight

*Louisiana Tech University*

Estevan Garcia

*Louisiana Tech University*

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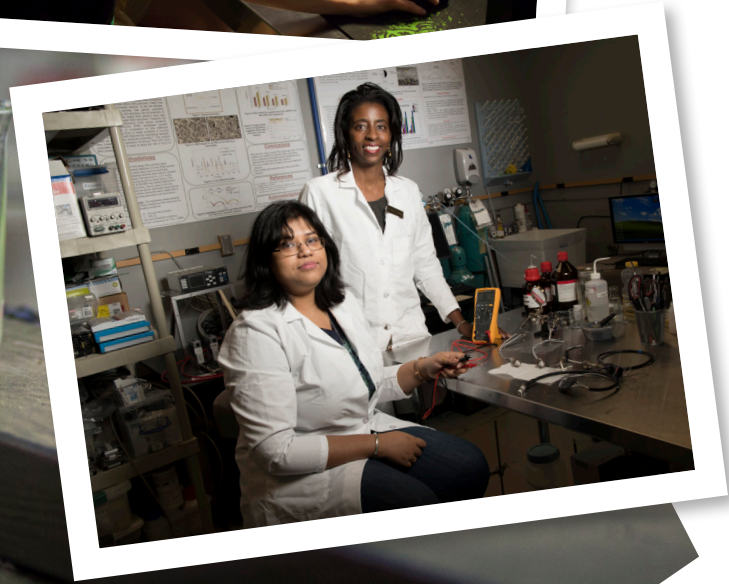
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**ANNUAL REPORT**  
**2017**





## **MISSION**

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Our mission is to provide our students with a quality education that responds to the needs and challenges of our ever-changing world and includes an international perspective that stimulates social and ecological awareness.

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# MOVING FORWARD

*The College has made significant changes to its administrative structure, developing three new positions, Director of Online Programs, Director of Project-Based Learning and Director of Assessment, as well as reviving the Associate Dean for Strategic Initiatives position. These new leadership positions will facilitate the College's efforts to improve its model of education and retention.*

## LEADERSHIP TEAM

**Dr. Hisham Hegab**  
Dean

**Dr. Heath Tims**  
Associate Dean: Undergraduate Studies

**Dr. Collin Wick**  
Interim Associate Dean: Graduate Studies

**Dr. Katie Evans**  
Associate Dean: Strategic Initiatives  
Director: Mathematics and Statistics

**Dr. James Palmer**  
Associate Dean: Research  
Director: Biomedical Engineering

**Dr. Galen Turner**  
Director: Computer Science, Cyber Engineering, Electrical Engineering

**Dr. David Hall**  
Director: Industrial Engineering, Instrumentation and Control Systems  
Engineering Technology

**Dr. Lee Sawyer**  
Director: Chemistry, Physics

**Dr. Leland Weiss**  
Interim Director: Civil Engineering, Construction Engineering Technology,  
Mechanical Engineering

**Dr. Daniela Mainardi**  
Interim Director: Chemical Engineering, Nanosystems Engineering

## PROGRAM CHAIRS

**Dr. Steve Jones**, Biomedical Engineering  
**Dr. Eric Sherer**, Chemical Engineering  
**Dr. Marilyn Cox**, Chemistry  
**Dr. Jay Wang**, Civil Engineering  
**Dr. Jean Gourd**, Computer Science  
**Dr. Norm Pumphrey**, Construction Engineering Technology  
**Dr. Miguel Gates**, Cyber Engineering  
**Dr. Davis Harbour**, Electrical Engineering  
**Dr. Michael Swanbom**, Instrumentation and Control  
Systems Engineering Technology  
**Dr. Jun-Ing Ker**, Industrial Engineering  
**Dr. Dave Meng**, Mathematics and Statistics  
**Dr. Henry Cardenas**, Mechanical Engineering  
**Dr. Sandra Zivanovic**, Nanosystems Engineering  
**Dr. Steven Wells**, Physics

## PH.D. PROGRAM CHAIRS

**Dr. Steve Jones**, Biomedical Engineering  
**Dr. Weizhong Dai**, Computational Analysis and Modeling  
**Dr. Shengnian Wang**, Engineering  
**Dr. Gergana Nestorova**, Molecular Sciences and  
Nanotechnology

## RESEARCH CENTER DIRECTORS

**Dr. Dentcho Genov**, Center for Applied Physics Studies  
**Dr. Leon Iasemidis**, Center for Biomedical Engineering  
and Rehabilitation Science  
**Dr. Sumeet Dua**, Center for Secure Cyberspace  
**Dr. Katie Evans**, Integrated STEM Education Research Center  
**Dr. Niel Crews**, Institute for Micromanufacturing  
**Dr. John Matthews**, Trenchless Technology Center

## COLLEGE COMMUNICATIONS

**Brandy McKnight**, Writer and Editor  
**Estevan Garcia**, Design Layout and Photography

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## FROM THE DEAN BREAKING NEW GROUND

Dear Friends,

I am pleased to say the College of Engineering and Science (COES) at Louisiana Tech University is breaking new ground in a variety of ways. We are thrilled to announce that our new Integrated Engineering and Science Education building will likely start construction at the beginning of next year.

The new 128,000 square-foot facility will greatly enhance our ability to provide an unparalleled education to our students and help attract the best faculty and staff to support our College's future growth.

We are also breaking new ground in our College's academic programs. Our newest bachelor's degree program, Instrumentation and Control Systems Engineering Technology, started this fall and now

provides our engineering technology students a project-based, hands-on freshman curriculum similar to the *Living with Lab* curriculum that is taken by our first-year engineering majors. Our first in the nation bachelor's degree program in Cyber Engineering is off to a solid start and continues to grow while it undergoes its initial accreditation review by ABET this year. We have recently expanded our online programs to offer a master's degree in industrial engineering, as well as a graduate certificate in Six Sigma Black Belt training.

As you will read in this report, our students are leading the way by establishing new student organizations like our Aerospace Engineering Club, creating new products and services through innovation and serving the people of our community. Our faculty are passionate about working with these students to help them become our country's future leaders in engineering and science. We are particularly excited to have 19 new faculty in the College bringing their new ideas and energy to help us expand our efforts.

As we continue to break new ground in preparing the BEST engineers and scientists for tomorrow, I would encourage you to stay connected with us, and I invite you to visit us in Ruston and see the impact that our students, faculty and staff are making in this world.

Best Regards,

Hisham Hegab, Ph.D.  
Dean and Thigpen Professor  
hhgab@latech.edu



# HACKING INTO THE FUTURE

FUEL EFFICIENCY MEETS MODERN UTILITY

*"I could not be more pleased with the creativity, innovation, drive and cooperation that I saw from this team during this 42-hour brain-blitz."*

- Dr. Michael Swanbom







*Louisiana Tech Hack-a-Truck team exercising their imaginations on the as-yet-unmodified future food truck.*

Last winter, members of the Louisiana Tech University and University of Illinois Eco-marathon teams joined forces to design an award-winning, superhero-themed food truck for Shell's inaugural "Hack-A-Truck" event.

At Google's invitation, Louisiana Tech Eco-marathon team members Matthew McHenry, Tommy Naquin, Kyle Dupree and Matthew LaCroix, and team advisor Dr. Michael Swanbom, chair of Tech's new instrumentation and control systems engineering technology program and senior lecturer of mechanical engineering at the University, traveled to the Google Garage in Mountain View, California, to meet their teammates and begin designing.

The team designed the entire concept for the truck, which they dubbed "SuperGyros," from a blank slate, developing a menu, choosing appliances, engineering the food preparation process and creating an overall concept and design for the truck within a 42-hour time frame.

The final design optimized the customer experience while integrating emerging technologies in energy harvesting. It included a sleek look and an environmentally friendly product that runs on bio-diesel composed of recycled coffee grounds, supplemented with a solar panel and a wind turbine that power the small appliances and televisions inside the truck.

Representatives from Shell and food truck manufacturer Cruising Kitchens, along with a former food truck chef, awarded the Louisiana Tech/ University of Illinois team and their SuperGyros truck with the "Best Overall Team," "Most Creative Design," "Best Story" and "Best Food" awards based on three categories: design, engineering and sustainable technology.

Cruising Kitchens built SuperGyros with a few modifications, and the truck was featured at the Shell Eco-marathon Americas 2017, where the Louisiana Tech team also won the "Best Vehicle Design Award" in the UrbanConcept category for the new Turbo Hound car. The team built Turbo Hound from eco-friendly materials, minimizing the use of carbon fiber.

In addition to being featured at the Eco-marathon Americas 2017, the truck has been taken on a cross-country tour that began this fall. After the tour, Shell will donate the truck to a charity in northern California.

"Hack-A-Truck" is part of Shell's Make the Future initiative to design the next generation of environmentally and economically friendly food trucks.

The food truck design is featured on the Cruising Kitchens website at <http://www.cruisingkitchens.com/builds/current/shell-hackatruck-1/>.



*Left to Right: Matt McHenry, Tommy Naquin, Kyle Dupree and Matt LaCroix were joined by Dr. Michael Swanbom on Google's campus in Mountain View, California, to apply their creative skills toward designing the "Food Truck of the Future."*

### **Louisiana Tech Members of the SuperGyros Team**

**Kyle Dupree**, Mechanical Engineering  
**Matthew LaCroix**, Computer Science  
**Matthew McHenry**, Electrical Engineering  
**Tommy Naquin**, Mechanical Engineering  
**Dr. Michael Swanbom**, Instrumentation and Control Systems Engineering, Mechanical Engineering

### **SuperGyros Team Awards**

Best Overall Team  
 Most Creative Design  
 Best Story  
 Best Food





# AIMING HIGHER

AEROSPACE ENGINEERING CLUB

## Officers

### President

John Aguillard, Electrical Engineering

### Vice President

Riley Luttgahrm, Electrical Engineering

### Treasurer

Tristan Drummond, Civil Engineering

### Secretary

Logan Caskey, Mechanical Engineering

### Chief Communications Officer

Julie McClain, Electrical Engineering

### Advisor

Mr. T.J. Spence, Electrical Engineering



With more than 70 members from majors across the College, the Aerospace Engineering Club has become one of the largest student organizations on campus and the largest within the College. This number is all the more impressive considering that the club has existed for only a year.

The club's quick growth may have something to do with the organization's high-altitude balloon launch series, which has been dubbed the "Harley Series" and, thus far, has included launches of four balloons carrying payloads of varying weight. Then again, students may be interested in the planned rocketry and satellite projects or even in the club leadership's goals to apply for and receive NASA funding for upcoming projects. These are not lofty plans to an organization chasing the goal of establishing Louisiana Tech as the premier university for aerospace engineering in the state.

The organization got a start on its aggressive agenda in the last academic year, when the students launched three high-altitude balloons and developed plans to launch rockets and satellites in the 2017-2018 academic year.

High-altitude balloons Harley I, Harley II and Harley III soared the skies last year, and Harley II and Harley III rose more than 100,000 feet into the sky, capturing images and video in flight. The organization launched Harley M, or Harley Miniature, at Gumbo Fest this fall. Harley M carried a small payload that included a revised video transmission system, improving on the system used by Harley III, which transmitted a live video feed during its ascension.

Data from the launch of Harley M will be used to build and test a new ground station, which will be the first permanent duplex communications

system for the balloon launch system at Louisiana Tech. The new system will allow the payload to receive commands from a ground station, as well as transmit data back to the organization, allowing the club to pull more images from the payloads from longer distances. The organization plans to use data collected from the balloon launch series to deploy CubeSats using balloons rather than rockets and, thus, using less fuel.

This year, the organization also plans to shift from short-range, latex balloons with heavy payloads to super pressure balloons made from polyethylene or Mylar that will be smaller, but will stay in the air for weeks rather than hours and possibly circumnavigate the globe.

The Aerospace Engineering Club hopes that the balloon launch series will help secure NASA funding to build a satellite. Club leaders hope to build the satellite in the clean room of the Institute for Micromanufacturing at Louisiana Tech before the end of 2019.

This year, the club will establish a Mission Control Lab as a command center for the balloon, rocket and satellite launch programs. The lab will provide a mission control for monitoring launches and for documenting collected data. A viewing area will be open to the public for balloon and rocket launches. Access to the room will be restricted for the CubeSat mission, but portions of that launch will be streamed online.

Once a command center is established, the Aerospace Engineering Club plans to begin developing its rocketry program, starting with test rockets and building up to the construction of a 13-foot sounding rocket during the 2017-2018

academic year. The early rockets are expected to soar between 8,000 and 10,000 feet and will test the flight systems the students develop over the year. The sounding rocket is anticipated to reach an altitude of roughly 50,000 feet.

Since no test range in Louisiana is qualified to launch a rocket to 50,000 feet, the organization will launch from a larger facility, likely from one of the launch pads in White Sands, New Mexico. Some members of the team will travel to the launch site, while the rest of the team will remain in Ruston to run mission control at Louisiana Tech.

More than 20 gigabytes of photos and videos from the Harley II and Harley III voyages and the Harley M mission report can be viewed at <http://orgs.latech.edu/aero/>.

#### **NASA INTERNSHIP**

*Organization President John Aguiard was awarded a summer internship with NASA's Marshall Space Flight Center in Huntsville, Alabama, through NASA's Space Hardware and Robotics Academy. The Academy is a selective program that accepts only 70 interns per year and is designed to train students for leadership roles once they enter the workforce.*

*John spent the summer working with the Electromagnetics and Telemetry department as a project lead on a communications project for the Lunar Resource Prospector Rover mission, a mission that will send a lander/rover combination to the South Pole of the Moon in 2020. Once there, the Lunar Resource Prospector Rover will explore the surface for water and other resources for establishing a permanent colony.*



# CYBER ENGINEERING IN THE 21st CENTURY

PREPARING GRADUATES FOR THE REAL WORLD



As Louisiana Tech continues to prepare the next generation of cyber engineers, the University and College of Engineering and Science are expanding opportunities for students to develop real-world skills in the field through industrial partnerships.

The latest example of such a partnership is the TechX lab, a workspace that provides students and faculty with an inexpensive, secure and modular environment to apply the skills they need for the workforce. The lab is co-sponsored by Bossier City technology company CSRA and has been tailored to provide Louisiana Tech students with the skills that fit the company's workforce needs.

TechX provides students with access to smart TV devices and state-of-the-art private cloud infrastructure, along with a study area similar to recreation areas at technology giants like Google. The devices provided through the lab are critical to the fields of computer science, cyber engineering and computer information systems, helping prepare students to populate the growing information technology workforce in north Louisiana and beyond.

This lab supplements the Cyber Engineering curriculum, which was also developed with input from local firms like CSRA and includes the hands-on *Living with Cyber* program.

You can learn more about the TechX lab at <http://techx.latech.edu/>.



# STUDENT SPOTLIGHT

## PATRICK HARRIS JR.



How do you define an outstanding student? A student with multiple scholarships? A student with a history of success in research and development? One who is active in extracurricular activities?

Meet Patrick Harris Jr., a senior in the Construction Engineering Technology program at Louisiana Tech. Patrick is an Austin, Texas, native who has multiple scholarships, two patents, and is active in the Louisiana Tech and Ruston communities while maintaining a 3.3 grade point average. Oh – and he also completed an internship with the Bridge Division of the Texas Department of Transportation last summer.

His list of academic accomplishments and volunteer experience has landed Patrick several scholarships, including the College of Engineering and Science's P.K. Smith Endowed Scholarship, the Steve Titsworth Scholarship, the Justices of the Peace and Constables Association of Texas Scholarship and the Hugg Trust Scholarship.

Patrick's interest in building safe communities led to his development of a device for helping subscribers ensure the safety of individuals with high blood alcohol levels. He filed for and received two patents for the concept, in which a device is fitted to a cell phone to read and send blood alcohol results to subscribers.

That devotion to community building is one of the factors that helped Patrick choose Construction Engineering Technology as his major. He says that he wants to work in the field rather than behind a desk, and his experiences as a Louisiana Tech student push him closer to his career goal of becoming a project manager or superintendent in the construction engineering technology sector.

"Here at Tech, I'm learning skills I will need in my field and being introduced to professionals and peers alike. The Louisiana Tech Construction Engineering Technology program does a good job of giving you a taste of everything you'll encounter once you enter the professional sphere."

Patrick has spent his academic career involved in Louisiana Tech and greater Ruston organizations, further developing his leadership and communication

skills. Through his participation in the Tech student chapters of the Associated General Contractors of America (AGC) and the North American Society for Trenchless Technology (NASTT), Patrick has traveled across the country to cities like Washington, D.C.; Palm Springs, California; and Houston, Texas; where he has represented the University at the international No-Dig Trenchless Technology Conference and the national Underground Construction Technology Conference.

In addition to AGC and NASTT, he is a member of the Louisiana Tech chapter of the Black Student Union and of the Mount Sinai Missionary Baptist Church Media Ministry.

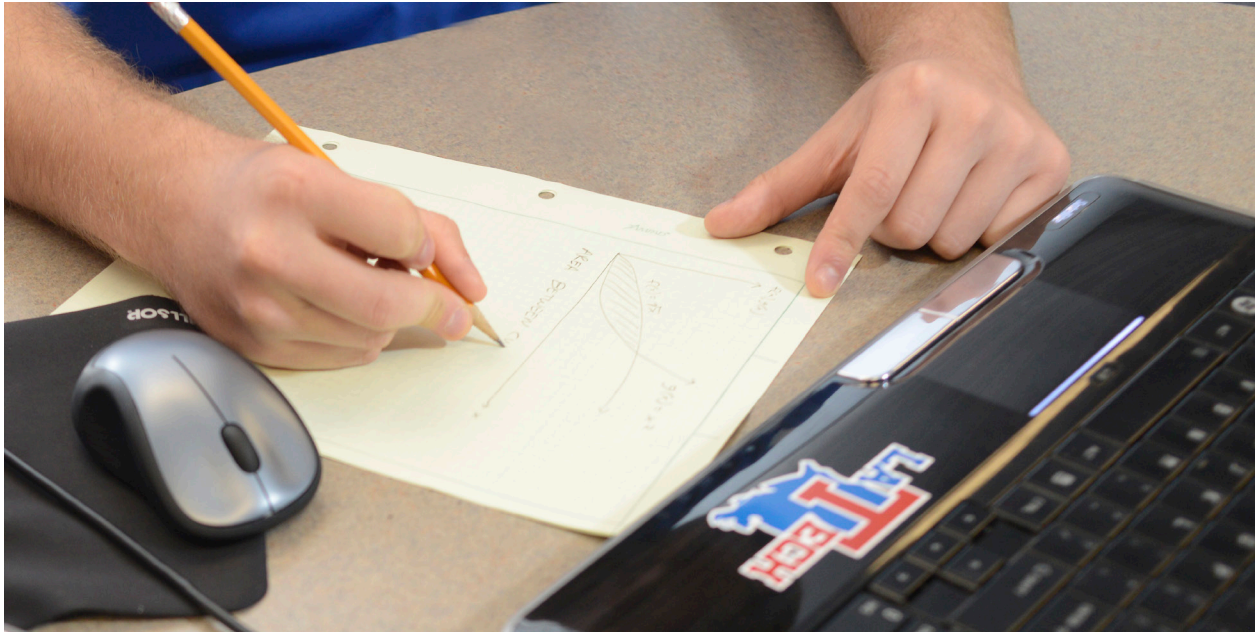
"I chose to attend Louisiana Tech because, unlike larger universities, I am not just a student number here. All my professors know me by my first name, and I can honestly say I think of them as mentors both inside and outside of the classroom."

Mr. Reginald Jeter, professional in residence for civil engineering and construction engineering technology and one of Patrick's professors, says that Patrick exemplifies what a student can accomplish at Louisiana Tech.

"Patrick is a phenomenal student because of his positive mindset toward learning, his outstanding work ethic and his respect for his classmates and Tech Faculty. Louisiana Tech is fortunate to have quality students like Patrick."

# ADAPTING FOR THE FUTURE

## ONLINE PROGRAMS



The College of Engineering and Science continues to adapt to meet growing demand for education tailored to nontraditional and distance learners. To serve more students, the College is offering more flexible course options, including increasing its online courses and programs.

In addition to the master's degree program in Engineering and Technology Management, which has won several awards over the years, students can pursue two graduate certificates and a master's degree in engineering through nontraditional paths.

They can complete Six Sigma Green Belt certification, Six Sigma Black Belt certification or a master's degree in Engineering with a concentration in Industrial Engineering by taking classes online, on campus or both.

The College also offers many required undergraduate courses in engineering, mathematics and the sciences online. These online options open opportunities for professionals, members of the military and students who are located away from the Louisiana Tech campuses to earn a degree with the University.

### ***Online Enrollment and Courses***

***Undergraduates Enrolled - 1376***  
*2016-2017 Academic Year*

***Graduates Enrolled - 369***  
*2016-2017 Academic Year*

***Online Undergraduate Courses - 42***  
*2016-2017 Academic Year*

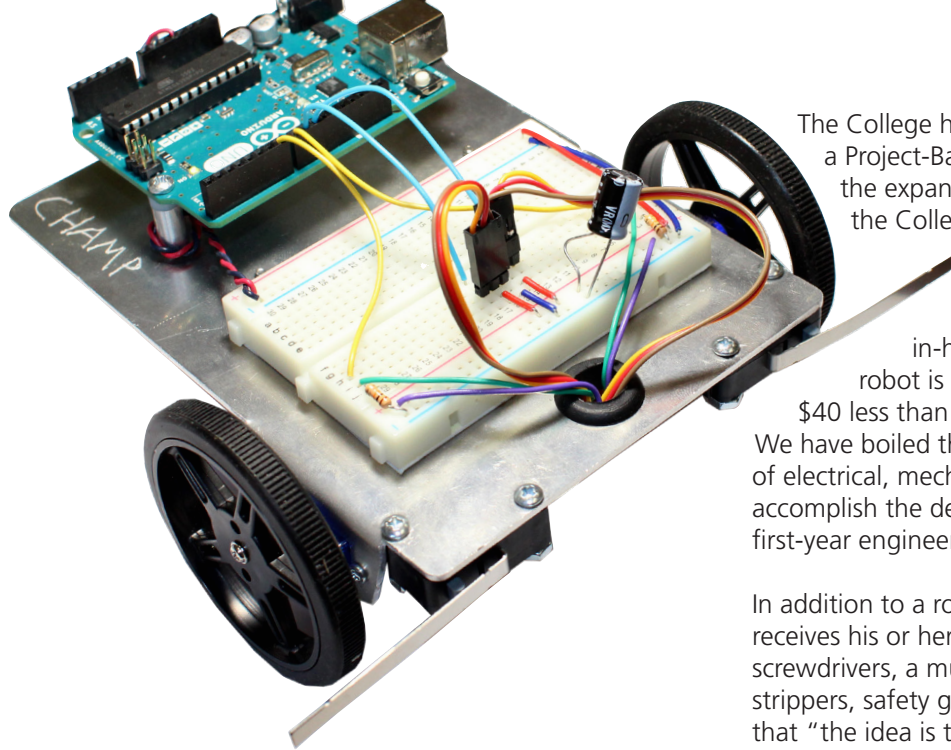
***Online Graduate Courses - 27***  
*2016-2017 Academic Year*

Over the 2016-2017 academic year, the College offered 42 undergraduate and 27 graduate courses that included an online section. These courses accounted for more than 4,000 credit hours for undergraduate students and more than 1,000 credit hours for graduate students across the College.

Dr. Katie Evans, Associate Dean for Strategic Initiatives and Director of Mathematics, Statistics and Online Programs, says that as the number of online course options continues to grow, more students are able to take advantage of Louisiana Tech's unique courses.

"Our online degree and course offerings are a vital component of the suite of educational opportunities we offer. Our faculty work hard to provide high-quality instruction to students who are enrolled either in a face-to-face class or in an online course and located elsewhere around the world."





The College has also hired Ms. Ashley Osborne as a Project-Based Learning Specialist to support the expansion of hands-on projects. This year, the College's focus is on supporting the revision of our first-year engineering content to utilize a new robot that was designed in-house. Dr. Hall says that "the new robot is more compact and costs roughly \$40 less than our previous robot configuration. We have boiled the kit down to an essential list of electrical, mechanical and software elements to accomplish the desired outcomes for courses in the first-year engineering sequence."

In addition to a robot, each engineering student receives his or her own tool bag that includes screwdrivers, a multimeter, a dial caliper, wire strippers, safety glasses and other items. Dr. Hall says that "the idea is that students will add items to their arsenal as they move along."

Dr. Krystal Corbett, an engineering lecturer, is leading in the revision of the course materials. Dr. Corbett explains that "much of the attention this year will be on restructuring content to more systematically build student ability to solve complex, multi-step problems, including circuits, conservation of energy, material balance and statics problems."

Over a longer-term, the College will focus on expanding projects to the core sophomore-level mechanics, electricity and energy courses. A multidisciplinary team of faculty is currently working to define the content and projects for these revised fundamental courses, and the College is moving forward with a plan to renovate classroom space to allow a studio-style learning experience in these courses.

## HANDS-ON EDUCATION PROJECT- BASED LEARNING

By Dr. David Hall

Building on its tradition of hands-on education, the College has also expanded its focus on project-based learning. Dr. David Hall, associate professor of mechanical engineering and director of instrumentation and control systems engineering technology and industrial engineering, will lead the expansion of the College's hands-on education model as Director of Project-Based Learning. Dr. Hall helped develop Tech's premier hands-on education program, *Living with the Lab*, in which first-year engineering students are immersed in programming Arduinos and designing their own product for the College's annual spring Freshman Design Expo.

## New Degree Program in Instrumentation and Control Systems Engineering Technology

By Dr. Michael Swanbom



The College of Engineering and Science introduced a new four-year degree program this fall called Instrumentation and Control Systems Engineering Technology (ICET). This new program will provide students with an opportunity to learn high-demand skills through hands-on learning experiences focused on real industrial instruments and controllers.

The ICET program features courses rooted in electrical engineering technology (such as electrical machinery and power), as well as courses designed to develop a basis for understanding industrial processes (such as fluid mechanics and heat transfer). Knowledge from these courses is synthesized in another series of courses in which students use real industrial programmable logic controllers and arrays of connected sensors and actuators to control processes set up in the laboratory.

Dr. Michael Swanbom, program chair of the ICET program, says that "this new program is designed to address the growing need for technologists who are equipped to understand and troubleshoot automated industrial processes which have become the norm in manufacturing facilities regionally and nationwide."

The new program replaces the Electrical Engineering Technology program, which will be retired after Spring Quarter of 2020.



# RECORDING LIGHT IN DARKNESS

## NASA ECLIPSE HIGH-ALTITUDE BALLOONING PROJECT



*Students pose with a Saluki statue on the campus of Southern Illinois University in Carbondale, Ill., host of the solar eclipse balloon launch. Left to Right: Brendon Doran, Tyler Fontenot, Elizabeth Talbot, T. J. Spence, John Aguilard, and Andre Aguilard.*



A group of Louisiana Tech students and professors enjoyed the 2017 solar eclipse from Carbondale, Illinois, where they launched a high-altitude balloon and payload designed to collect environmental information.

Dr. Arden Moore, assistant professor of mechanical and nanosystems engineering at the Louisiana Tech Institute for Micromanufacturing, led the research group in developing a payload as part of the NASA Eclipse Ballooning Project.

Andre Aguiard (sophomore, electrical engineering), John Aguiard (junior, electrical engineering), Brendon Doran (master's degree student, electrical engineering), Tyler Fontenot (sophomore, electrical engineering), T.J. Spence (doctoral student, engineering), Elizabeth Talbot (sophomore, chemical engineering), Madeline Carlisle Collins (Louisiana Tech alumnae, mechanical engineering 2017) and James Covington (Louisiana Tech alumnus, mechanical engineering 2017) developed the payload with Dr. Moore's guidance over the 2016-2017 academic year.

Designed with a total weight of 500 grams to match the limit imposed by NASA, the payload was attached to the balloon, designed by Louisiana State University, along with payloads from McNeese State University and Delgado Community College. The purpose of Louisiana Tech's payload was to record broadband ultraviolet (UV), UV-A, UV-B and UV-C irradiance as well as temperature and pressure at up to 100,000 feet of altitude before, during and after the eclipse.

The Louisiana Tech team designed and programmed a data-recording scheme using techniques they learned in Louisiana Tech's first-year engineering

*Living with the Lab* program. The data-recording scheme included an Arduino that read the outputs from the various sensors on the payload and wrote them to a microSD card that the students recovered after the flight to analyze the data.



*The Louisiana Tech team's balloon payload is shown prior to final launch preparations, with an array of UV sensors visible on the right hand face.*

Sophomore Electrical Engineering student Andre Aguiard became involved in the project during the Winter Quarter of his freshman year. He says the project helped build his interest in the aerospace industry and prepare him for future collaboration with his peers.

"I appreciated the opportunity to further my knowledge and develop skills in aerospace design alongside my classmates. Aside from the

scientific part of the trip, seeing the eclipse was awesome!"

"The entire team did a great job," Dr. Moore said. "What's great about design projects like this is that different engineering disciplines can come together and create something really interesting. I definitely think their experiences in the *Living with the Lab* series help lay the foundation for being able to work together on projects like this."

Dr. Mary Caldorera-Moore, assistant professor of biomedical engineering and *Living with the Lab* faculty member, and Dr. Lindsey Keith-Vincent, director of the Science and Technology Education Center at Louisiana Tech, were also on hand at the launch.

The project was funded through a grant from the Louisiana Space Consortium Louisiana Aerospace Catalyst Experiences for Students program via federal funding from NASA.

### ***Students Involved in the Project***

***Andre Aguiard, Electrical Engineering***

***John Aguiard, Electrical Engineering***

***Brendon Doran, Electrical Engineering***

***Tyler Fontenot, Electrical Engineering***

***T.J. Spence, Engineering***

***Elizabeth Talbot, Chemical Engineering***

***Madeline Carlisle Collins, Mechanical Engineering '17***

***James Covington, Mechanical Engineering '17***



# BUILDING NEW BRIDGES

## NEW FACULTY

*The College of Engineering and Science is proud to welcome 19 new faculty members to the University. These faculty members will teach courses throughout the College.*



**Dr. Kaushallya "Kay" Adhikari**  
**Assistant Professor, Electrical Engineering**  
*B.S., Tribhuvan University  
M.S., University of Massachusetts  
Ph.D., University of Massachusetts*



**Prashanna Bhattarai**  
**Lecturer, Electrical Engineering**  
*B.S., Tribhuvan University  
M.S., Louisiana State University  
Ph.D., Louisiana State University*



**Dr. Kevin Cherry**  
**Lecturer, Computer Science, Cyber Engineering**  
*B.S., Louisiana State University  
M.S., Louisiana State University  
Ph.D., Louisiana State University*



**Dr. Marsha Cole**  
**Lecturer, Chemistry**  
*B.S., Grambling State University  
Ph.D., Louisiana State University*



**Dr. John Doyle**  
**Assistant Professor, Mathematics & Statistics**  
*B.S., University of Georgia  
M.A., University of Georgia  
Ph.D., University of Georgia*



**Dr. Benjamin Drozdenko**  
**Assistant Professor, Cyber Engineering, Computer Science**  
*B.S., Rensselaer Polytechnic Institute  
M.S., Northeastern University  
Ph.D., Northeastern University*



**Dr. Elisabeth Fatila**  
**Assistant Professor, Chemistry, Physics**  
*B.S., University of Guelph  
Ph.D., University of Guelph*



**Dr. Levi Good**  
**Assistant Professor, Biomedical Engineering**  
*B.S., University of Wyoming  
Ph.D., Arizona State University*



**Dr. Matthew Hartmann**  
**Visiting Lecturer, Electrical Engineering**  
*B.S., Louisiana Tech University  
M.S., Louisiana Tech University  
Ph.D., Louisiana Tech University*



**Dr. Ankunda "Anky" Kiremire**  
**Lecturer, Computer Science, Cyber Engineering**  
*B.S., Makerere University  
M.S., Louisiana Tech University  
Ph.D., Louisiana Tech University*



**Dr. William Long**  
**Lecturer, Mechanical Engineering**  
*B.S., Louisiana Tech University*  
*M.S., Mississippi State University*  
*Ph.D., Mississippi State University*



**Dr. Elizabeth Matthews**  
**Assistant Professor, Civil Engineering,  
 Construction Engineering Technology**  
*B.S., Louisiana Tech University*  
*M.S., Louisiana Tech University*  
*Ph.D., Louisiana State University*



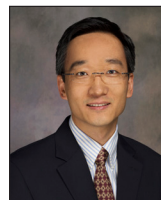
**Dr. John Matthews**  
**Director, Trenchless Technology Center  
 Associate Professor, Civil Engineering,  
 Construction Engineering Technology**  
*B.S., Louisiana Tech University*  
*M.S., Louisiana Tech University*  
*Ph.D., Louisiana Tech University*



**Dr. Manki Min**  
**Associate Professor, Computer Science,  
 Cyber Engineering**  
*B.S., Seoul National University*  
*M.S., Seoul National University*  
*Ph.D., University of Minnesota*



**Dr. Andrew Peters**  
**Assistant Professor, Chemical Engineering**  
*B.S., University of Maryland*  
*Ph.D., Georgia Tech*



**Dr. Chuanbin "Shawn" Sun**  
**Assistant Professor, Civil Engineering, Construction  
 Engineering Technology**  
*B.S., Northeast Dianli University*  
*M.S., Dalian University of Technology*  
*Ph.D., University of Nebraska - Lincoln*



**Andrey Timofeyev**  
**Visiting Instructor, Computer Science**  
*B.S., Karaganda State Technical University*  
*M.S., Louisiana Tech University*



**Zibo "Brian" Wang**  
**Visiting Instructor, Computer Science**  
*B.S., Dalian University of Technology*  
*M.S., Louisiana Tech University*



**Jessica Wasserman**  
**Instructor, Chemistry**  
*B.S., McNeese State University*  
*M.S., Louisiana Tech University*



# NO BOUNDARIES

TRENCHLESS TECHNOLOGY CENTER CONTINUES TO PUSH FORWARD



*Construction Engineering Technology students deploying 550kip capacity horizontal actuator to evaluate required engagement and disengagement force on joints of 36" diameter steel casing pipes used in underground construction.*



As the Trenchless Technology Center enters its 28th year, Center Director Dr. John Matthews and International Program Director for Trenchless Technology Dr. Tom Iseley prepare to push forward with the Center's cutting-edge research, education and international collaboration efforts.

Dr. Matthews, who is also an associate professor of civil engineering and construction engineering technology at Louisiana Tech, has spent more than a decade working in the trenchless construction industry, beginning with research he performed as a Louisiana Tech graduate student.

He says that his return to Louisiana Tech gives him the opportunity to apply the leadership, collaboration and innovation that the Center is known for to a variety of problems, and to continue to build on the infrastructure put in place by his predecessors.

"I feel privileged to serve as the Director of the internationally known Trenchless Technology Center. The TTC has had and will continue to have a huge impact on growing the trenchless industry. I'm also lucky to be able to learn from Dr. Iseley."

In the coming year, the TTC will continue to facilitate cooperative research between industry, university and government through faculty projects. The Center will continue to facilitate forums and specialty schools across the country to help educate municipal and consulting engineers on the latest developments and innovations in trenchless technology. The specialty schools will provide extended learning opportunities on specific topics such as auger boring and utility surveys.

While Dr. Matthews will focus on presenting the latest educational and engineering techniques

around the country, Dr. Iseley will continue to focus on developing and promoting TTC technologies abroad.

Dr. Iseley will continue to provide leadership on national and international workshops and seminars, serve on international scientific program committees and present TTC research and technology at international conferences. In addition, he will work on larger projects created in partnership between the TTC and governments and businesses around the globe.

Dr. Iseley continues to serve as the director of the Underground Infrastructure Training and Competence Center (UNITRACC), an international, joint initiative between the TTC and Stein & Partner GmbH, a German engineering company. He will also develop and support TTC's buried asset management training and certification programs in partnership with the Buried Asset Management Institute – International, which includes participants from 15 countries.

Dr. Iseley is currently working to expand opportunities through Memoranda of Understanding the Center has with three universities, a research institute and a major water utility in China. As part of the project, a visiting scholar from each of the three universities, who will be fully funded by the Chinese government, will perform research at the TTC.

The TTC will also continue work with Louisiana Tech's international undergraduate student internship exchange program. Each summer, the TTC exchanges two of its students with two students from the Hong Kong Polytechnic University (HKPU). In addition to these projects, Dr. Iseley developed a graduate-level course in English and Chinese that was first taught

at Tech this fall and will be taught at Southwest Petroleum University, located in the Sichuan province of China, in the spring.

He said that he looks forward to working with Dr. Matthews and with TTC's international partners in the future.

"It has been great to work with Dr. Matthews," he says. "He has proven to be an effective leader since he has returned. These are exciting times for the TTC."

#### **MORE ABOUT DR. MATTHEWS**

*Dr. Matthews received three degrees from Louisiana Tech, two graduate degrees in Engineering with a concentration in Civil Engineering, and a bachelor's degree in Construction Engineering Technology.*

*After graduation, he worked on water and wastewater rehabilitation projects with the TTC as a post-doctoral research associate before joining Battelle, where he served as their water infrastructure lead. He later joined Pure*

*Technologies as the pipe renewal manager and returned to Louisiana Tech in March of 2017.*

*He moved to Ruston with his family, wife, Dr. Elizabeth Matthews, and their two sons, Mikey (age 4) and A.J. (age 2).*

*Dr. Elizabeth Matthews joined the Louisiana Tech faculty in Fall Quarter of 2017 as an Assistant Professor of Civil Engineering and Construction Engineering Technology.*





# BREAKING NEW GROUND

INTEGRATED ENGINEERING AND SCIENCE EDUCATION BUILDING





Architectural Renderings

## **INTEGRATED ENGINEERING AND SCIENCE EDUCATION BUILDING ON TRACK FOR 2018 GROUNDBREAKING**

*By Gary Strebeck*

The College of Engineering and Science is excited to announce that the project for the Integrated Engineering and Science Education building is one step closer to reality, having gone out for bid on November 2. Bids will be opened on November 30, and construction could begin as early as January of 2018. Construction is scheduled to be complete in time for the Fall Quarter of 2019.

The 128,000-square foot facility will be the largest academic building on the Louisiana Tech campus and create a state-of-the-art learning environment to support the College's emphasis on hands-on education

through the *Living with the Lab* and *Living with Cyber* curricula. First and second year students from science and engineering disciplines will benefit from modern classrooms, upgraded labs, project workspaces and prototyping areas.

Funding for the \$37 million project includes capital outlay from the State of Louisiana and contributions from Tech alumni, friends and corporate supporters. Naming opportunities for spaces within the building are still available.

*For more information about supporting the building project, please contact Gary Strebeck at [gary@latech.edu](mailto:gary@latech.edu) or 318-257-4971.*

### **AVAILABLE NAMING OPPORTUNITIES**

***Student Work Space and Help Desk***

***Physics Lab and Classroom Wing***

***Cyberspace Lab***

***Engineering Labs***

***Large Chemistry Lecture Hall***

***Nanosystems Engineering Lab***

***Undergraduate Studies Office Suite***

***General Classrooms***

***Math Classrooms***

***Conference Rooms***

***Offices***



*"This isn't about YourVote, it's about people being involved in their government."*

- Jay Harrison

## **BUILDING A COMMUNITY**

ENGINEERING ALUM HELPS BUILD YourVote APP



College of Engineering and Science alum Patrick Larkin (B.S. in Construction Engineering Technology, 2010 and M.S. in Engineering and Technology Management, 2016) has teamed up with College of Business alumnus and YourVote™ founder Jay Harrison to reconfigure the way politicians interact with their constituents.

Patrick, the company's chief operating officer, and Jay, the company's chief executive officer, channeled the collaborative spirit they learned at Louisiana Tech to turn Jay's concept of a simple, quick way for elected officials to communicate directly with constituents into a finished iPhone app. They hope the app will create a sense of community and a culture of participation in local and national politics similar to the community culture at Tech.



# YOUR VOTE

## Where your voice matters

Using his knowledge of Lean Six Sigma principles, Patrick was able to help Jay transform the theoretical business plan into a successful working production plan. Patrick's experience with the define, measure, analyze, improve and control (D.M.A.I.C.) data-driven cycle for optimizing business processes helped them produce the resulting cloud-based software interface and smartphone app that revolutionizes communication between elected officials and the people they represent.

"The business plan needed an implementation plan," Patrick said. "YourVote really is inspired by the Lean Six Sigma D.M.A.I.C process. I combined my experience in project management and education in engineering management to breathe life into the concept. This made for a platform that is leaps and bounds more efficient and effective for elected officials and constituents alike."

Dr. Beth Hegab, coordinator of Louisiana Tech's Engineering and Technology Management program, says that Patrick's application of Six Sigma principles in this business showcases his innovation.

"It is impressive to see Patrick already successfully using the tools he learned in Louisiana Tech's new Six Sigma Black Belt certification program," she said.

"The premise of the concept is simple," Jay explained. "Elected officials ask for constituents' opinions through a poll or question they write. The question is then sent to constituents' smartphones through our app. Constituents can respond with the tap of a button, and the elected official has instant data to take action. The best part about it is your opinion is anonymous to the elected official."

Elected officials can add a poll once a week, allowing them to drive the narrative and constituents to participate in the post-election cycle, a cycle that

many elected officials and constituents ignore. As it takes mere seconds to answer a question, the nonpartisan platform allows the people who have little spare time to participate in the democratic process. In addition, the real-time polling gets more people excited about being included and politically active.

"I think of it as utility for governance instead of an app," Jay said. "YourVote is a utility infrastructure to facilitate transferring power, like a power pole that transfers electricity - only this app transfers power to constituents."

While the app is only available for iPhone products, Jay and Patrick are in the process of developing an Android platform as well. You can learn more at <https://www.yourvote.com/>.



# DISTINGUISHED ALUMNI 2017

## RECOGNIZING EXCELLENCE

Each year, the College recognizes an outstanding alumnus from each degree program and an outstanding alumnus from one of the College's legacy degree programs. These Distinguished Alumni are selected by the alumni advisory boards of each program, and the legacy recipient is chosen by a College committee. The recipients have achieved excellence in their chosen fields of endeavor, and their accomplishments inspire students, challenge alumni and bring great pride and honor to the College and the University.



**Jasmina Brooks ('99)**  
*Biomedical Engineering*

Jasmina "Jass" Brooks is a senior marketing and product development professional with more than 15 years of experience in the medical device industry. In her current role as a Director of

Global Strategic Marketing with Biosense Webster, Inc., a Johnson & Johnson company, Jass is responsible for product strategy development and shaping the product pipeline for the Navigation portfolio.

Jass has dedicated her career to the development and advancement of solutions for cardiovascular care. She spent the first 15 years of her career with GE Healthcare, based in Houston, Texas. Jass spent three years driving commercial marketing strategy for electrophysiology and interventional cardiology for Europe, the Middle East and Africa and had the opportunity to travel to and work with customers from more than 30 countries.



**Larry W. Solley ('63)**  
*Chemical Engineering*

Larry W. Solley is currently a Director of ESCO Technologies, Inc. of St. Louis, Missouri, and Bourns Electronics of Riverside, California.

Larry worked his way up from a production supervisor to plant manager, and was transferred to the Monsanto subsidiary Fisher Controls, Co. as Vice President, Strategic Planning. He later became Vice President, Marketing/Sales and Group Vice President. He was promoted to President, Chairman and CEO of Fisher Controls International, Inc. in 1990.

When Monsanto sold Fisher Controls to Emerson Electric in 1992, Larry became Executive Vice President and Business Leader of the newly formed business unit, Fisher-Rosemount. He led the integration of Fisher into Emerson, and was responsible for implementing major product and facility rationalization programs before retiring in 2002.

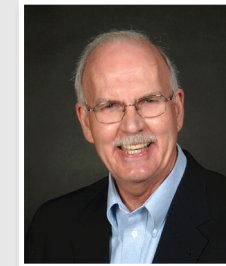


**Danny G. Shaw ('70)**  
*Civil Engineering*

Until January 31, 2017, Danny G. Shaw was a shareholder of Baker, Donelson, Bearman, Caldwell & Berkowitz, P.C., an 800+ attorney law firm with offices in more than 20 cities. He served as Chair of

Baker Donelson's Construction Law practice group from 2005 to 2015.

Danny is currently a principal in ShawADR, LLC, offering alternative dispute resolution services to the design and construction industry. A licensed professional engineer and an attorney, he has represented clients in construction, design professional liability insurance, property insurance and government contract related matters. Prior to obtaining his law degree, Danny worked as an engineer for Chicago Bridge & Iron, served the United States Navy Civil Engineer Corps administering construction contracts for the Navy and served as a contract administrator for the Washington Metropolitan Area Transit Authority.



**Lester J. Wenk ('67)**  
*Chemistry*

Lester J. Wenk began his career with Uniroyal Chemical in Scotts Bluff, Louisiana, as a process engineer. He was involved in the startup of a new carboxylated latex plant and was then

assigned to attend an IBM school. Several years later, he joined G.R. Stucker & Associates in Baton Rouge, performing off-site safety audits and process modeling for a process control effort.

Lester then went to work for Celanese Chemicals in Bay City, Texas, as a process engineer involved with process control computers. He later joined the Environmental Group at Celanese, where he focused on RCRA and solid waste management, compliance and reporting. He is now retired from the chemical industry and is an enrolled agent operating a tax service and working as a substitute teacher in high school and junior high.



**Shelia D. Anderson ('86)**  
*Computer Science*

Shelia Anderson is a transformational information technology executive with global experience within CIO organizations, and has top-tier consulting, services and

outsourcing experience across multiple industries, in both Fortune 100 and Russell 2000 companies. She is honored to serve as the Division CIO for USAA's P&C Company, the fifth largest personal auto and homeowner's insurer in the United States. She leads agile working teams in the strategy, innovation, development and maintenance for P&C's application suite.

Shelia joined USAA in 2012 as Vice President of the Business Applications Support Organization. Prior to joining the USAA, she was the Executive Director within the Central Region and Dallas office with Grant Thornton's Business Advisory Services Practice.



**Dolph Williams ('74)**  
*Construction Engineering Technology*

Dolph Williams, the founder and CEO of Frosty Factory, turned a one-man operation into a worldwide company.

Over the past 34 years, he has transformed the Frosty Factory into a 65,000-square foot factory with 30+ full-time

employees and annual sales of more than 2000 machines.

After graduating from Tech, Dolph began his career with Arkansas Power & Light, before moving back to his hometown of Many, Louisiana, to help expand his parents' liquor store. Later, he moved back to Ruston where his parents opened Wil-Mart liquor store just outside of town. After demand for daiquiris outstripped their ability to produce them, he began inventing and building his own frozen drink machines that could produce the number of drinks required. It was there that Frosty Factory of America was born.



**Nicholas K. Akins ('82)**  
*Electrical Engineering*

Nick Akins is chairman, president and chief executive officer of American Electric Power. He is AEP's sixth CEO in the company's more than 100-year history and the only management

representative on AEP's board of directors. Prior to being elected president of AEP in 2010, Nick served as Executive Vice President – Generation of AEP.

Before joining AEP, Nick served as Vice President – Energy Marketing Services at Southwestern Electric Power Company, where he was responsible for directing the activities of Market Development and Energy Delivery External Affairs within Energy Delivery. He later served as president and chief operating officer for Southwestern Electric Power Company, serving approximately 439,000 customers in Louisiana, Arkansas and northeast Texas.



**Michael R. Tanner ('83)**  
*Electrical Engineering Technology*

Michael Tanner serves as a Principle Data Scientist for Innova Electronics Corporation in Orange County, California. During his career, he has worked closely with engineering

standards bodies and major equipment manufacturers to develop industry standards and has held several executive and senior management positions, including Vice President of Network Engineering at Terre Star Networks and Executive Director of Engineering at XO Communications, in which he led the design and development of many first of their kind implementations.

Michael has been responsible for the research, design, development and implementation of leading edge, large-scale networks and products including one of the first adaptations of ATM networking, MCI's nationwide ATM network that provided connectivity for the National Science Foundation's supercomputers.



**David E. Wilson ('63)**  
*Industrial Engineering*

Dave Wilson began his career as a Second Lieutenant at the United States Air Force Systems Command Satellite Control Facility in Sunnyvale, California. He served a four-year active duty tour in a



highly classified environment during the height of the Vietnam War. While participating in operational military missions, he also helped pioneer further development of the capabilities of sophisticated earth-orbiting surveillance satellites.

After release from active duty, David embarked on his civilian career, but continued military service in the Air Force Reserves for the next 25 years. He retired from the Air Force in 1994 at the rank of Colonel with more than 31 years of military service and received the Legion of Merit medal upon retirement. David's first civilian job was with a NASA contractor, TRW Systems, at Johnson Space Center, Houston, during the Apollo moon-landing program. He later went into the energy business, working for several natural gas companies in executive, marketing and technical management positions.



**Margaret Gilbert ('80)**  
*Mathematics*

Margaret Gilbert has more than 30 years of experience in telecommunications, financial services, agribusiness, government and manufacturing in Australia, New Zealand, the Philippines,

Thailand, the United States, Bermuda and, most recently, Hong Kong. She has served on the board of directors for a high school in Sydney, Australia, and as chairman of the board's ITC sub-committee.

Margaret has taught programming at Richland College, part of the Dallas County Community College District in Texas, and has been a tutor and frequent industry speaker on IT project management at the University of

Technology Sydney. She was selected to attend a *Global Thinking* workshop in Manila, Philippines, in November 2017.

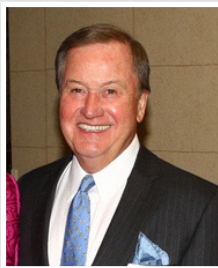


**James R. Albritton ('86)**  
*Mechanical Engineering*

James Albritton owns and operates a successful ACE Hardware store in Willow Park, Texas, and a small company which he started with his brother in Conway, Arkansas,

to manufacture and sell tiny, teardrop-style camping trailers.

James started his career at General Dynamics Corporation in Fort Worth, Texas, where he worked on research and development projects involving composite materials. In 1991, he left General Dynamics and started his own consulting company, Exodyne Technologies, to pursue opportunities in highway safety product design. Eighteen U.S. patents later he is the proud "father" of three highly successful crash cushions and related products that are saving lives around the world.

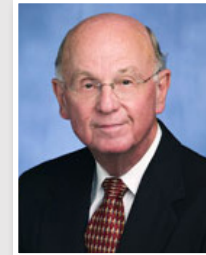


**Robert Ted Enloe III ('61)**  
*Petroleum Engineering*

Ted Enloe, is the Managing General Partner of Balquita Partners, Ltd. and a frequent lecturer on corporate governance and board responsibilities at universities such as Harvard,

Babson University and Southern Methodist University.

Ted co-founded Capstead Mortgage Corp., Tyler Cabot Mortgage Securities Corp. and Seaman's Corp. He served as the President and Chief Executive Officer of OptiSoft, Inc., as the President and interim CEO of Surigent Networks, Inc. and as Vice Chairman of Compaq. He also served as CEO and President of Liberte Investors. Ted has served on several prestigious boards, including those of the Advanced Switching Communications, Inc. and Leggett & Platt, which he still serves on.



**Claude E. Cook Jr. ('51)**  
*Physics*

Claude Cook began his career at Mobil Oil Company's Dallas laboratories while he worked toward a Ph.D. He then began working with Humble Oil and Refining Company, now

ExxonMobil. He was engaged in research in Exxon's laboratories in Houston for 32 years, with the exception of one year he spent doing postdoctoral work at Columbia University.

When Claude was 40 years old, he decided to combine his expertise in technology with the law and enrolled in law school. After graduation, he practiced law part-time and continued working full-time for Exxon in research. After retiring from Exxon, he began consulting and practicing patent law, later opening a law office in Conroe, Texas. From 2001 to 2003, he prepared and filed patent applications for himself in a technology that has begun to develop in the oil industry. He closed his Conroe office in 2015 and now practices on a limited basis from his home.

# FOUNDATION BOARD

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##### **Past President**

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Louisiana Tech University  
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Enable Midstream Partners  
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Isaacs Construction Services  
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Former Senior Project and  
Environmental Engineer (Ret.)  
Lucite (formerly DuPont)  
Brighton, TN

#### **Kaitlyn McDaniel (ME '08)**

Project Scheduler  
Dow Chemical Company  
Katy, TX

#### **Brent Parker (PHYS '97)**

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University of Texas Medical Branch  
League City, TX

#### **Philip Parker (CET '83)**

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Philip Parker Co.  
Shreveport, LA

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Executive Vice President  
HGA  
West Monroe, LA

#### **Mike Swain (EE '89)**

Senior Sales Executive  
Intel  
Houston, TX

#### **Morgan Tanner (EE '15)**

Control System Engineer  
ExxonMobil  
Baton Rouge, LA

#### **Ray Weaver (GEOL '77)**

Sr. Geoscientist  
KJ Energy  
Tyler, TX

### **Life Directors**

William "Billy" Brown (CE '75)

David Bufkin (ME '48)

John Dailey Jr. (ME '43)

Travis DeFreese (EE '54)

M. Bruce deLeon (CS '69)

Joe English (ME '61)

Tommy Folk (CE '69)

Ronald Harrell (PE '57)

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A.C. Hollins Jr. (CET '72)

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Thurmon Lauret (CE '66)

Jerry Lazenby (CE '65)

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Tom Singletary (MATH '68)

Thomas Smith (IE '65)

Jimmy Terrill (PE '59)

Gene Trammell (ME '78)

Jim Wyche (ChE '57)



# BY THE NUMBERS

## COLLEGE STATISTICS

### ENROLLMENT

**2966**

TOTAL COLLEGE ENROLLMENT  
(FALL 2017)

**26.0**

FIRST-TIME FRESHMAN  
AVG. ACT (FALL 2017)

**2634**

UNDERGRADUATE STUDENTS  
(FALL 2017)

**332**

GRADUATE STUDENTS  
(FALL 2017)

### SCHOLARSHIPS

**300+**

SCHOLARSHIPS AWARDED  
(2017-18)

**\$480,000**

SCHOLARSHIPS AWARDED  
(2017-18)



**3**

GRAND CHALLENGE  
SCHOLARS  
(Academic Year 2016-17)

**447**

TOTAL DEGREES CONFERRED  
(2016-17)



**334**

B.S. DEGREES CONFERRED

**89**

M.S. DEGREES CONFERRED

**24**

PH.D. DEGREES CONFERRED

## FACULTY (FALL 2017)



**115**  
TOTAL FACULTY

**19**  
NEW FACULTY

## STARTING SALARIES (as of Spring 2017)



**\$66,457**

ENGINEERING GRADUATES  
(SPRING 2017)

**\$59,211**

SCIENCE AND TECHNOLOGY GRADUATES  
(SPRING 2017)

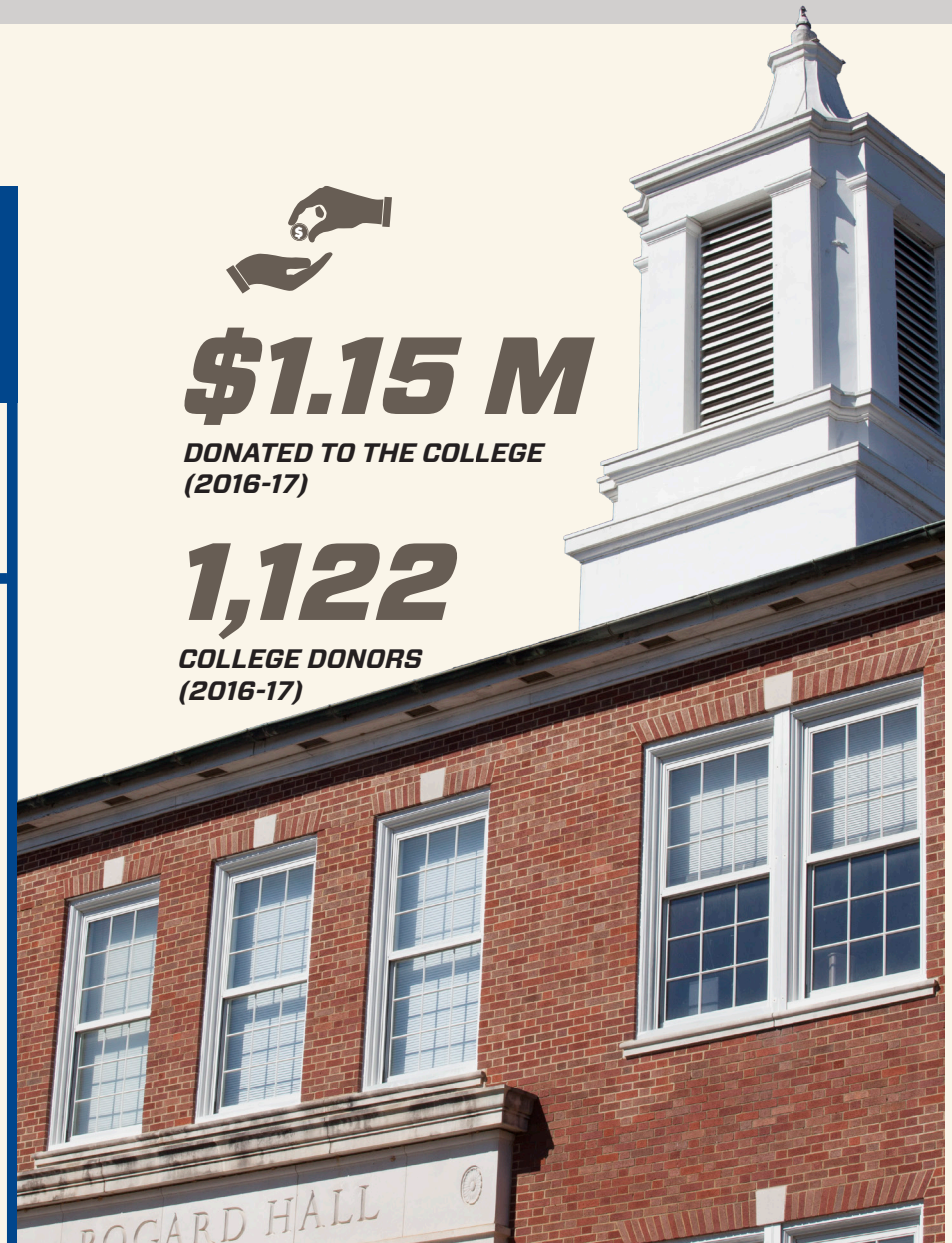


**\$1.15 M**

DONATED TO THE COLLEGE  
(2016-17)

**1,122**

COLLEGE DONORS  
(2016-17)





# INDUSTRIAL PARTNERS

## DEVELOPING RELATIONSHIPS



Industrial Partners develop relationships with faculty and students while providing resources to meet critical needs in the College of Engineering and Science. Industrial Partner gifts not only enhance academic programs but also support specific scholarships, student organizations and competitions, and student events such as football tailgates, Gumbo Fest and Spring Release. Maintaining partnerships with industry helps ensure that the College continues to produce graduates that are able to meet current and future industry needs. The College would like to thank and acknowledge these companies for their support.









**LOUISIANA TECH UNIVERSITY**  
**COLLEGE OF ENGINEERING AND SCIENCE**  
**P.O. BOX 10348**  
**RUSTON, LA**  
**71272**

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