

SPRING 2024

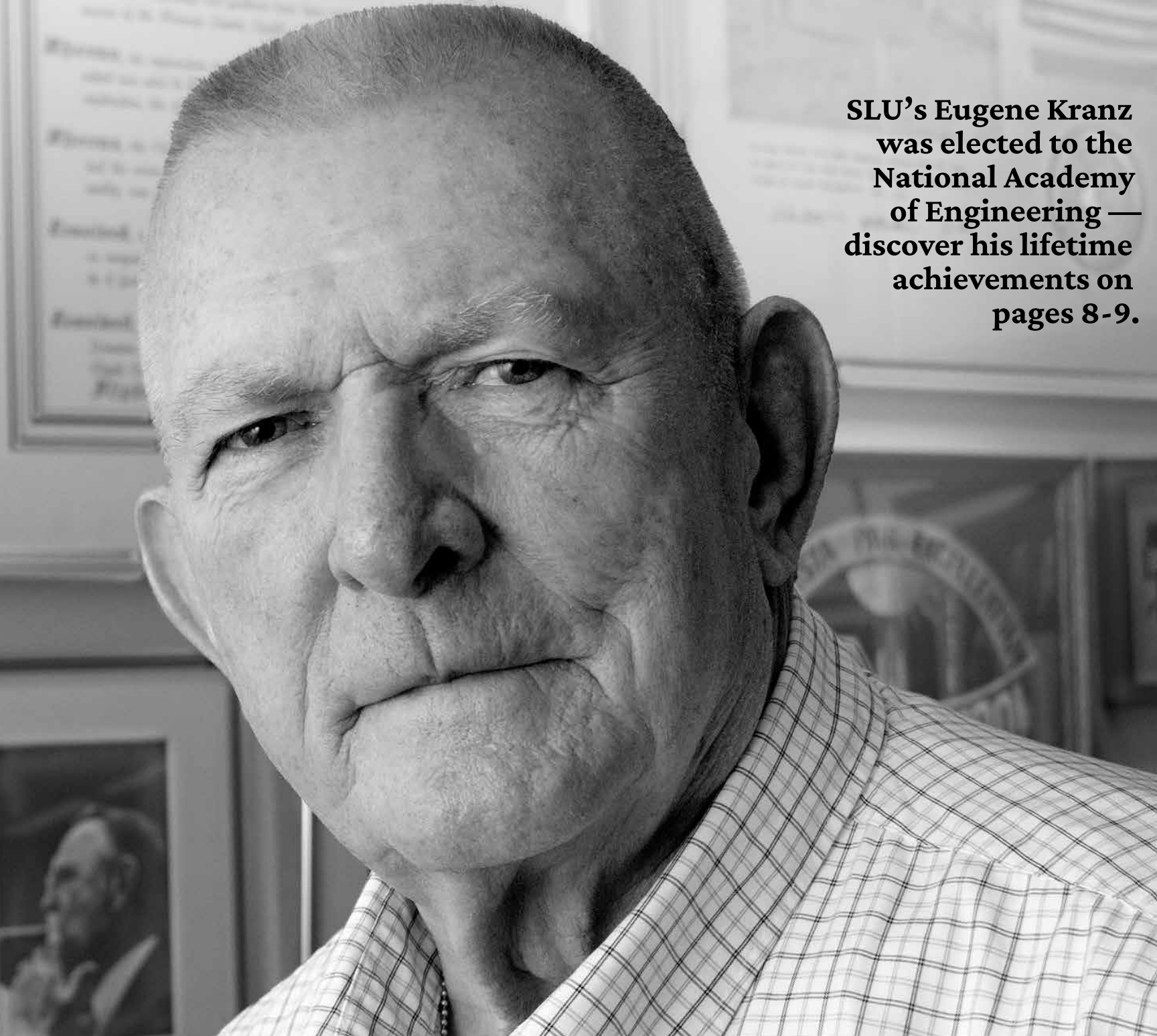
INAUGURAL  
ISSUE

# BILLIKEN *Blueprint*

SAINT LOUIS UNIVERSITY

SCHOOL OF SCIENCE AND ENGINEERING

**SLU's Eugene Kranz  
was elected to the  
National Academy  
of Engineering —  
discover his lifetime  
achievements on  
pages 8-9.**





# FOCUS IN THE *Years Ahead*

The Saint Louis University School of Science and Engineering sets its sights on excellence through achievement. In its infancy, structures and policies will be refined to ensure the best possible outcomes for students, faculty and staff. Gregory E. Triplett, Ph.D., inaugural dean of the School of Science and Engineering, shared a few overarching goals for the coming years.

## CONVERGENCE

The School will strive to encourage collaboration across all nine departments. In time, the School's efforts will foster the intellectual diversity needed for groundbreaking research. Together, the science and engineering community will converge to nurture ideas, develop communication processes and uncover answers to humanity's greatest questions.

## INNOVATION

The nine departments housed under the School will identify advanced ways to approach challenges in sustainability, technology, medicine and beyond. Additionally, innovative student programs focusing on entrepreneurship are in active development.

## STUDENT OUTCOMES

SLU seeks to strengthen the workforce through exceptional education and research opportunities. The School aims to open more opportunities for both graduate and undergraduate students to engage in research. Like the faculty around them, students will be encouraged to explore facets beyond their specialty — preparing them for modern, cross-disciplinary workforces.

## DIVERSITY, EQUITY & INCLUSION

In line with Catholic Jesuit values, the School must continue to be a welcoming atmosphere for all. The School will renew its focus on key diversity, equity and inclusion goals — including greater recruitment and stronger support systems for minority populations.



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Image courtesy of NASA

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# FROM THE *Dean*



As the inaugural dean of the School of Science and Engineering at Saint Louis University, I am filled with a profound sense of pride and gratitude as I reach out to each one of you through the pages of our annual magazine. It is my honor to share the remarkable journey our new School of Science and Engineering has embarked upon.

By combining the Parks College of Engineering, Aviation and Technology with the Departments of Chemistry, Computer Science, Earth and Atmospheric Sciences and Physics, we offer unique, meaningful academic and research experiences for our students. Now, future innovators equip themselves with interdisciplinary knowledge, empowering them to better understand complex challenges from many perspectives.

Though the years have transformed us, the passionate spirit of “Parks” is alive and well in the new School of Science and Engineering. We dedicate

ourselves to the pursuit of knowledge, exploring with curiosity at the forefront — together, our community yields countless stories of triumph, resilience and innovation. Our legacy extends far beyond campus confines, touching lives and inspiring change around the

“With excellence, integrity and enduring spirit, our new School of Science and Engineering will define the *legacy* of tomorrow.”

world. The future looks bright, and I am humbled to lead this tremendous group of trailblazers.

The global landscape will evolve, yet the unwavering dedication to excellence that defines the School of Science and Engineering will remain constant. Our faculty, staff and students will push the boundaries of knowledge and adapt to unprecedented challenges. Our alumni

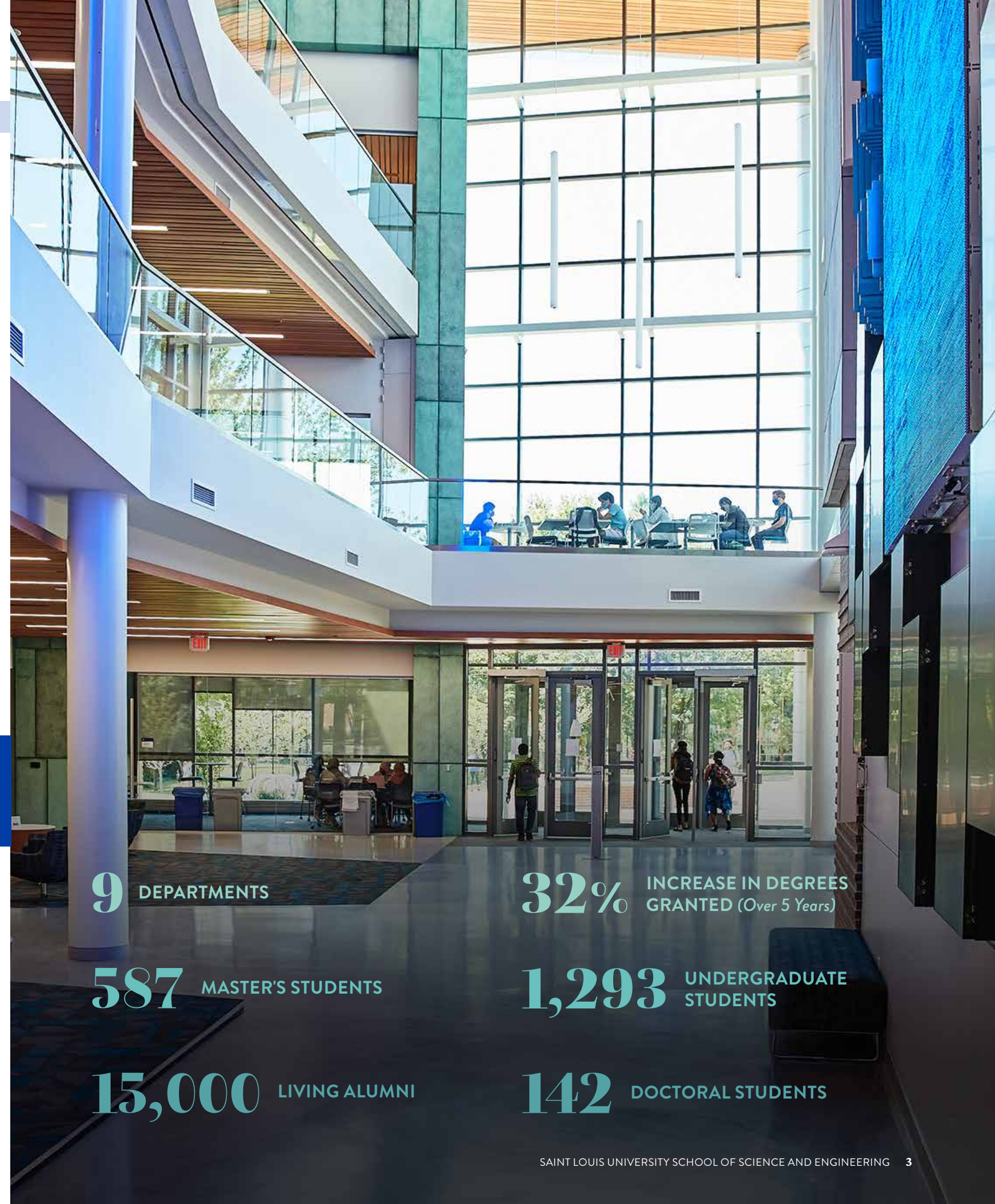
will serve as beacons of leadership and service in their respective fields. At the same time, our generous supporters will make continued growth a reality.

As we celebrate our collective achievements, we look to the future with excitement for the next generation of scholars. I believe the coming years hold many opportunities for collaboration, innovation and impact. With your partnership, we can share our reputation as a destination for the innovative and intellectually curious. Together, we will also renew our focus on inclusive excellence — falling in line with our guiding Jesuit principles.

Now, I invite you to engage with the newly formed School of Science and Engineering community. Your insights and contributions are invaluable to our storied history and the shape of our continued success. From participating in community events to sharing your professional journey, your involvement strengthens the ties that bind us.

With excellence, integrity and enduring spirit, our new School of Science and Engineering will define the legacy of tomorrow. As we press forward, I am confident our collective expertise will shine brightly in the world’s most critical industries.

In Partnership,  
**GREGORY E. TRIPLETT, PH.D.**  
*Dean and Professor of Electrical and Computer Engineering*



9 DEPARTMENTS

587 MASTER'S STUDENTS

15,000 LIVING ALUMNI

32% INCREASE IN DEGREES GRANTED (Over 5 Years)

1,293 UNDERGRADUATE STUDENTS

142 DOCTORAL STUDENTS



# Rising EXCELLENCE

The School of Science and Engineering at Saint Louis University offers fertile ground for scientific inquiry and discovery. Faculty members have built our research reputation through notable grants from the National Institutes of Health (NIH) and the National Science Foundation (NSF).



## Impacting Health and SAFETY

PIOTR MAK, PH.D.

Piotr Mak, Ph.D., associate professor of chemistry, received an NSF CAREER Grant in 2022. His project, “Unraveling Diverse Mechanisms of Heme Degradation Processes,” aims to understand how heme molecules get broken down by enzymes in living organisms through the use of a unique combination of powerful spectroscopic and biophysical techniques.

“This unique and novel approach to studying these important enzymes was a key part of being successful in obtaining this grant,” Mak said. “The proposed research objective has a significant societal impact on human health and safety, as well as environmentally saving biotechnological processes.”

The award provides \$695,000 over a five-year funding period. As the Department of Chemistry moves operations into the newly renovated Monsanto Hall, Mak and his team of researchers are well-equipped to continue their exciting studies in the coming years.

## Replacing Vital REACTIONS

JAMIE NEELY, PH.D.

Precious metals are used for the vast majority of transition metal-catalyzed bond formations in the pharmaceutical industry. These metals are expensive, scarce and even toxic — yet scientists have been met with difficulty in applying safer, more abundant metals to accomplish the same reactions.

In March 2023, Jamie Neely, Ph.D., assistant professor of chemistry, received a \$500,000 NSF grant to study iron in new types of chemical reactions. Currently, her lab is targeting a particular substructure found in many medicines and attempting to access them through an iron catalyst.

“We have preliminary evidence that we can generate some of these structures using iron,” Neely said. “Now, we’re working on fine-tuning that chemistry and rendering it catalytic.”



## Examining Environmental IMPACT

AMANDA COX, PH.D., P.E.  
ELIZABETH HASENMUELLER, PH.D.

Amanda Cox, Ph.D., P.E., director of the WATER Institute and associate professor of civil engineering, is studying reservoir sedimentation as part of a grant by the U.S. Army Corps of Engineers. Through her research, her team is developing machine-learning methods to estimate sedimentation rates — potentially improving our ability to maintain reservoir capacity.

“There is a lack of reservoir capacity monitoring because it’s expensive and time-consuming,” Cox said. “This gives us a tool that we can use to help identify potentially vulnerable sites.”

Meanwhile, Elizabeth Hasenmueller, Ph.D., associate professor of earth and atmospheric sciences, received funding through the U.S. Geological Survey to examine how microplastics are distributed through watersheds. Her research is identifying how plastics travel through our ecosystems to impact various organisms — including people in vulnerable populations.

“The work emphasizes how humans are impacting the environment and what that means for us,” Hasenmueller said. “The social justice aspect of SLU’s Jesuit mission reverberates in my research.”

“The social justice aspect of SLU’s Jesuit mission reverberates in my research.”

## Exploring the Applications of MICROGELS

SILVIYA PETROVA ZUSTIAK, PH.D.

Silviya Petrova Zustiak, Ph.D., professor of biomedical engineering and co-director of the Institute for Drug and Biotherapeutic Innovation, was recently awarded a \$3 million R01 grant from the NIH. The five-year study, titled “Development of Injectable Super-Lubricious Microgels for Sustained Release of Platelet-Rich Plasma to Treat Post-Traumatic Osteoarthritis,” focuses on developing long-lasting treatments for inflammation, pain and cartilage degeneration associated with knee osteoarthritis.

In osteoarthritis patients, the synovial fluid within the knee becomes extremely thin, causing friction between bones and subsequent pain. Zustiak is developing a microgel that can be injected directly into the synovial fluid. Early results show that the microgels are dual action — lubricating the joints and releasing therapeutic biomolecules over a sustained period.

“Ideally, it stops the degeneration, but not only that — there is evidence that some of the biomolecules in platelet-rich plasma can actually induce regeneration,” Zustiak said.



## Reimagining ACCESSIBILITY

JENNA GORLEWICZ, PH.D.

A picture is worth a thousand words — but how do you fully convey the information to people with low vision or blindness? Jenna Gorlewicz, Ph.D., associate dean of research and innovation and associate professor of aerospace and mechanical engineering, hopes to address this question through a \$5 million NSF Convergence Accelerator grant.

“This grant is all about bringing leading partners and teams together to develop new technology that will completely change the way we think about making accessible content,” Gorlewicz said.

For the next three years, SLU will lead 16 partners as part of Track H: Enhancing Opportunities for Persons with Disabilities. The project, called Inclusio, will transform how people create and consume accessible content. Inclusio will generate content that can be seen, felt and heard across multiple platforms. The hope is that through this end-to-end software platform, accessibility will permeate classrooms, workplaces and homes.



“This grant is all about bringing leading partners and teams together to **develop new technology** that will completely change the way we think about making **accessible content.**”



## Open Source with SLU

KATE HOLDENER, PH.D.

Academic research often requires custom software tools and applications that do not currently exist. Kate Holdener, Ph.D., assistant professor of computer science, recognized the opportunity to improve SLU research with custom software applications and automation, as well as the need for practical, hands-on experience for students.

Using a \$704,482 grant from the Alfred P. Sloan Foundation, Holdener created a collaborative software engineering lab — Open Source with SLU. Now, the lab accepts software development requests from SLU faculty members and puts computer science students to work.

Students at Holdener’s lab create open source tools, meaning code is available to everyone through public repositories. Equal access is important to Holdener — who emphasized that any student is welcome to join. Holdener hopes that this ongoing project will help students break down barriers present in today’s entry-level job listings. Their participation is a way to gain experience and stand out from a sea of candidates.

“This is an organization where we build quality software at a professional level,” Holdener said. “Students who build these tools get valuable experience that’s preparing them for their careers.”

As grant funding comes to a close, the Open Source with SLU team plans to fund future projects through other faculty grants. Yet, Holdener emphasized that they remain open to engaging with local companies across various industries as they enter this new chapter.

# Harmony for Science & Engineering



Previously, Saint Louis University’s science and engineering degrees fell under two different schools — the School of Engineering and the College of Arts of Sciences. In 2019, University leadership saw an opportunity to listen to both schools and find a way to bring them closer.

The University hosted more than 40 listening sessions and open forums where faculty, staff, students and administrators were welcome to express their feedback and ambitions for the future. After two years of input, leadership uncovered a shared desire for increased collaboration and identified a captivating path forward.

Four departments previously under Arts and Sciences — Chemistry, Computer Science, Earth and Atmospheric Sciences and Physics — moved to the new School of Science and Engineering. The School also became home to all disciplines previously under the Parks College of Engineering, Aviation and Technology.

Now, the School of Science and Engineering prepares effective leaders in science, engineering and aviation. Adapting to the 21st century, the School provides industry-relevant academic programs that feature fully integrated technical, liberal and experiential education rooted in Catholic Jesuit values.

With nine departments now joined together, the School develops technically proficient yet socially conscious leaders. Multi-faceted research will continually flourish, all in the hopes of finding solutions for humanity’s most pressing challenges.

### Science & Engineering Departments

- Aerospace and Mechanical Engineering
- Parks Department of Aviation Science
- Biomedical Engineering
- Chemistry
- Civil Engineering
- Electrical and Computer Engineering
- Computer Science
- Earth and Atmospheric (Geospatial) Sciences
- Physics





Image courtesy of NASA

# REACH FAR AND *Never Surrender*

In McDonnell Douglas Hall, a portrait of Eugene Kranz hangs as a reminder that greatness starts at Saint Louis University. More than a name on a wall, Kranz is a pioneer who reshaped the very fabric of space exploration. His journey set a new standard for students at the School of Science and Engineering, inspiring them to push the boundaries of what is known and leave an indelible mark on the world.

**U P AND AWAY** Kranz knew one day he would take to the skies, yet he needed foundational knowledge to do so. He chose to pursue his dream by enrolling in Parks College of Engineering, Aviation and Technology at Saint Louis University in 1951. Parks offered a comprehensive education paired with first-hand experiences, including welding, deconstructing and repairing engines. Kranz credits this as the starting point of his successful career in aviation and aerospace.

“From the standpoint of jobs I did — a pilot, engineer and flight director — my success hinged on the knowledge of what it takes to make things work,” Kranz said.

In the process of building his technical expertise, Jesuit principals molded Kranz’s leadership approach. One transformative course allowed him to delve into logic under the guidance of a Jesuit professor. There, he uncovered the intricacies of reasoning and the value of new perspectives — lessons that would

later prove indispensable in the most critical environment: Mission Control at NASA.

“We learned to debate, assess and come to better decisions,” Kranz said. “We opened our vistas to accept a new path from other people.”

After graduating from SLU in 1954 with a B.S. in Aeronautical Engineering, his dream came to fruition. Kranz began working as a pilot in the U.S. Air Force and later as a flight test engineer at McDonnell Aircraft Corporation. However, his innate curiosity soon charted an unexpected course. An advertisement requesting engineers to explore putting man into space pushed his aspirations toward the stars.

## **I** NTO THE UNKNOWN

In 1960, Kranz entered the NASA Space Task Group in Langley, Virginia, as an assistant flight director for Project Mercury. He carved a place for himself in Mission Control, uncovering his deep appreciation for its high-stakes environment.

“When you’re working five miles a second, you don’t have time to do a lot of discussion,” Kranz said. “You have

adaptive problem-solving further cemented his reputation at NASA, giving rise to another promotion to division chief for flight control.

Kranz reached the pinnacle of his career as flight director for the Apollo Program, where he steered groundbreaking moments in space exploration. With his guidance, the Apollo 11 crew took its first steps on the moon and demonstrated the limitless possibilities of human achievement.

Moreover, his leadership during the infamous Apollo 13 rescue mission revealed his true prowess under pressure. The spacecraft experienced an oxygen tank explosion en route to the moon, prompting quick and decisive action from Kranz and his “Tiger Team” to secure the crew’s safe return.

“They had confidence I was going to do the right thing,” Kranz said. “[The phrase] ‘failure is not an option’ truly encapsulated my mindset in dealing with a very high-risk environment.”

## **I** N HONOR OF EXCELLENCE

Kranz’s legacy has earned him portrayals in Hollywood films, honors from countless aeronautics

“I’m [always] surprised to receive these benefits,” Kranz said. “Through them, I hope to influence another generation of people to achieve the best.”

Kranz’s legacy transcends his monumental achievements in space exploration, continuing to ignite inspiration in research and education. Notably, a recent tribute at Saint Louis University’s School of Science and Engineering reflects his enduring impact.

In honor of Kranz’s influence, Dean Gregory E. Triplett, Ph.D., introduced the Gene Kranz Professorship of Research/Teaching Excellence. This prestigious professorship is not just a nod to Kranz’s storied career but a beacon to light the path for future innovators and explorers.

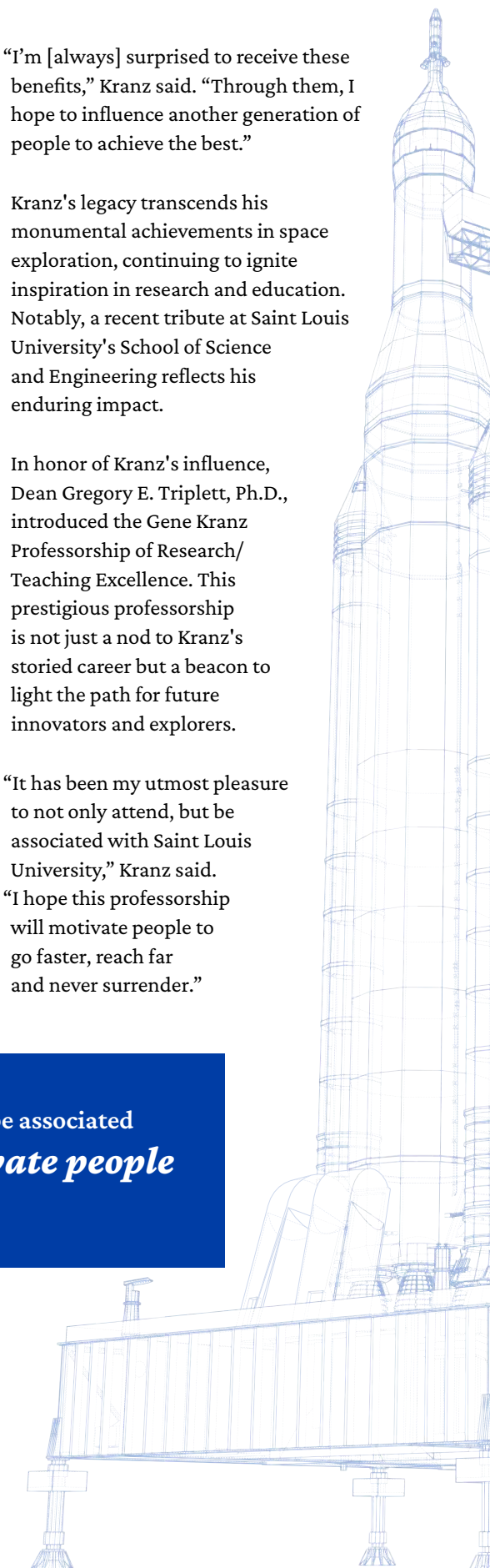
“It has been my utmost pleasure to not only attend, but be associated with Saint Louis University,” Kranz said. “I hope this professorship will motivate people to go faster, reach far and never surrender.”

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to adjust your frame of mind. You need higher levels of preparation.”

Kranz’s ascent was remarkable. He started as a valued team member and transformed into a mission-critical leader — eventually earning his first lead role as flight director for Project Gemini. His even composure and

organizations and multiple best-selling books. To this day, recognitions for his contributions steadily roll in. In 2024, he was elected to the National Academy of Engineering by his peers, who noted his lifetime dedication to aeronautics and commitment to advancing the human condition through engineering.





# The Legacy of Oliver “Lafe” Parks



**ON SEPTEMBER 25, 1927, OLIVER “LAPE” PARKS TOOK TO THE AIR FOR A JOYRIDE IN HIS LAIRD SWALLOW.**

Parks quickly lost control of the aircraft and crashed near where St. Louis Lambert International Airport stands today. He landed near a Jesuit seminary, sustaining a broken back, leg and jaw and losing an eye. Through months of recovery, he reflected on the need for instruction for all aviators.

Parks emerged from the experience with a new resolve — he would keep the next generation of pilots safe. That same year, he founded the Parks Air College, which became America’s first federally certified school of aviation. Prospective pilots flocked to learn from him and, unbeknownst to Parks, hundreds more would soon follow.

The World War II era transformed Parks Air College into a valuable training ground. The College began training one out of every 10 U.S. Army Air Corps pilots, plus thousands of aircraft mechanics. As wartime faded to normalcy, Parks realized that knowing how to fly was not enough. His students needed a comprehensive academic experience.

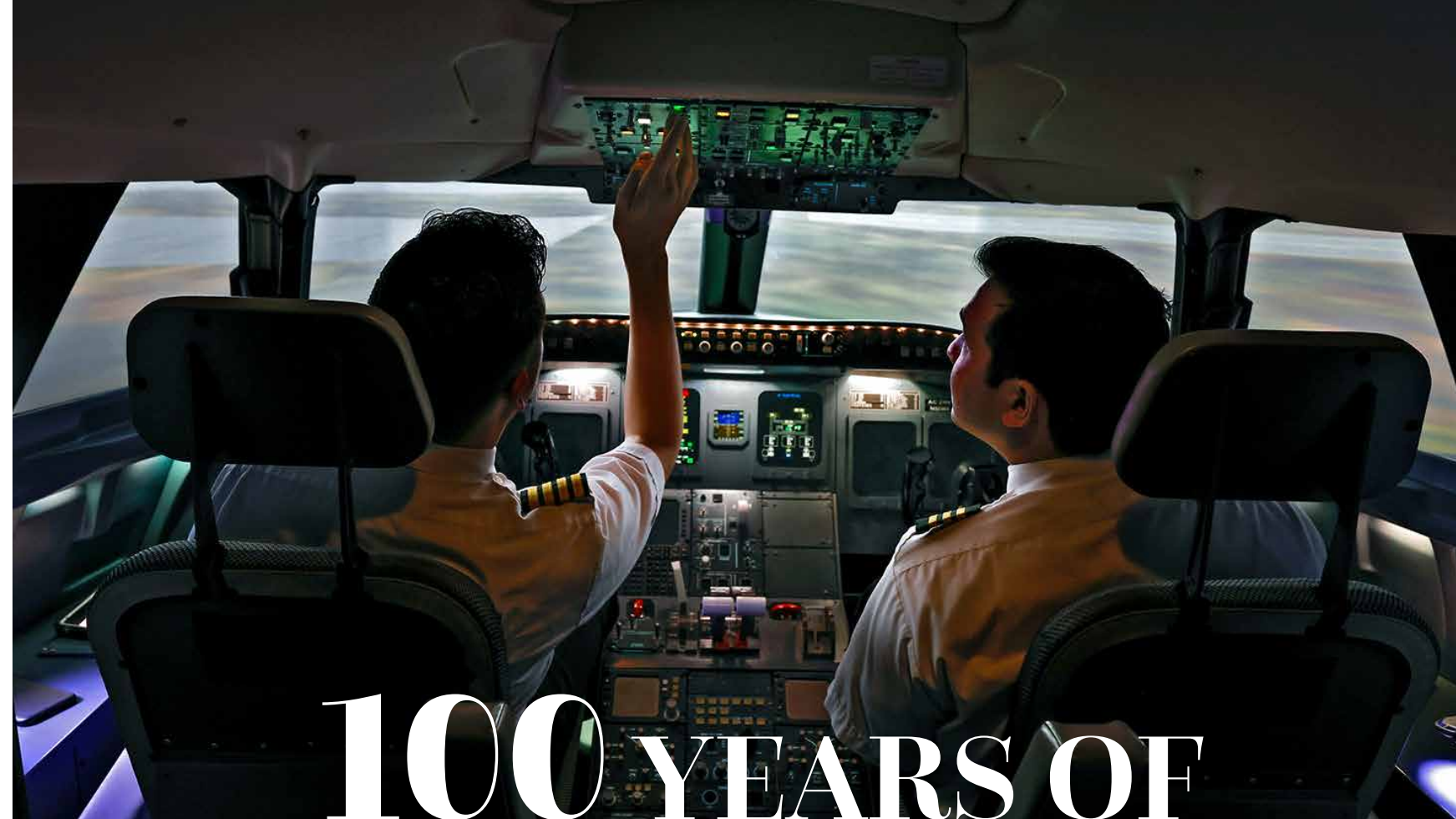


In 1946, he officially donated his aviation school to Saint Louis University — honoring the Jesuit help he received after his crash. The University helped expand his work, adding new programs, such as aircraft maintenance management, avionics engineering, electrical engineering, computer science, mechanical

engineering, biomedical engineering and civil engineering.

Today, the Oliver L. Parks Department of Aviation Science resides on SLU’s campus in McDonnell Douglas Hall. With each new class that takes to the skies, faculty and staff honor the memory of Oliver Parks through personable yet cutting-edge instruction.

**PARKS EMERGED FROM THE EXPERIENCE WITH A NEW RESOLVE — HE WOULD KEEP THE NEXT GENERATION OF PILOTS SAFE.**



# 100 YEARS OF Aviation

The Oliver L. Parks Department of Aviation Science actively fulfills Saint Louis University’s mission of creating global citizens. For nearly 100 years, Parks students have been intellectually, technically and ethically prepared to be responsible leaders in the aviation industry.

**THE ALLURE OF PARKS**  
Beyond its rich history, the Oliver L. Parks Department of Aviation Science offers an intentional, personable environment for aviation students. With small class sizes, students have the chance to create deep connections with faculty, staff and fellow students. Stephen Magoc, MBA, professor in the Department of Aviation Science, shared that the environment draws students from around the world to learn here.

“A lot of these kids will see the benefits of not being just a face out there in a crowd of hundreds of students in a class,”

Magoc said. “Our program is small — everybody knows each other.”

Moreover, students get the chance to take to the skies early on. At larger universities, planes are stretched thin between hundreds of students, so many students do not get to fly until they are sophomores or juniors. Meanwhile, SLU students take flight for the first time during their freshman year.

“First semester, the first or second week they’re in, they’re flying,” Magoc said. “That’s one of the things that really attracts students — the same kind of thing with aviation management.”



“A lot of these *kids will see the benefits* of not being just a face out there in a crowd of hundreds of students in a class. Our program is small — *everybody knows each other.*”

## TAKING FLIGHT

To support its instructional efforts, the Oliver L. Parks Department of Aviation Science maintains a varied fleet of aircraft for primary instrument training and commercial training. These efforts are conducted out of St. Louis Downtown Airport, between St. Louis Lambert International Airport and Scott Air Force Base.

Students start with lighter training aircraft such as the Diamond DA20. From there, they move up to Piper Seminole PA-44s for multi-engine training. These planes often hold hybrid systems, with analog and digital elements — ensuring all students are ready for the chance that their computer displays malfunction. Magoc shared that interacting with different types of equipment early on keeps students at the top of their fields.

“We try to stay at the front end of things,” Magoc said. “We’re able to know that our students are getting the latest and the greatest education they can get.”

As students advance through the program, they switch to technically advanced aircraft. The Piper Archer PA-28-181 with Garmin G1000® NXi offers a glass cockpit with entirely digital tools, mirroring modern, commercial aircraft.

## PREPARING FOR LIFTOFF

Flight simulators enable students to practice on the ground instead of taking risks in the skies. SLU’s fixed simulators, Frasca TruFlite Advanced Aircraft Training Devices (AATD), mirror the experience of a Piper Archer or Piper Seminole flight deck. Undergraduate students often use these machines to familiarize themselves with instruments, navigate line-oriented flight training scenarios and learn to work in a crew environment.

In addition to the AATDs, McDonnell Douglas Hall boasts a state-of-the-art

Boeing 737 MAX-8 simulator. Advanced students complete their capstone course in this machine, conducting flights as if operating a 200-seat, narrow-body airliner. These simulated experiences prepare students for the training they will receive as airline pilots.

The Oliver L. Parks Department of Aviation Science gives students the chance to get comfortable with aircraft types and ease their nerves. With years of students passing through, their consistent safety in the air signals the success of faculty’s instruction on the ground.



# Fly. Fight. WIN.

The Air Force Reserve Officer Training Corps (ROTC) provides exceptional men and women with the opportunity to become U.S. Air Force officers while completing a bachelor's degree. Through military training and academic work, Detachment 207 at Saint Louis University transforms cadets from nine institutions into leaders of character.

## SERVICE BEFORE SELF

From the beginning, cadets are all instilled with three simple values: integrity first, service before self and excellence in all they do. The lessons learned in SLU’s Air Force ROTC program result in skills that will ultimately help each person succeed in the Air Force and in civilian life. Lieutenant Colonel Michael Vyn, commander of Detachment 207, shared that people join the program because of a desire to live a life of service, even if they are not interested in becoming pilots.

“Odds are, there’s probably a job within the Air Force that aligns to an area you are interested in,” Vyn said. “I don’t just need pilots. I need engineers, cyber operations specialists, lawyers, doctors and nurses. There are a lot of different ways to serve in the Air Force.”

All facets of SLU’s Air Force ROTC program embody the Jesuit ideal of living as men and women for others. Cadets aim to one day uphold



national security — protecting the U.S. population by patrolling the skies, developing critical software, collecting intelligence and beyond.

## THE CADET JOURNEY

The cadet experience starts with a five-hour obligation each week. Underclassmen receive instruction from active-duty Air Force instructors, learning the history of the Air Force as well as the customs and

Upperclassmen increase their commitment by three hours per week. Juniors learn leadership and communication while seniors navigate National Security Strategy and prepare for active duty scenarios. To the cadets, each lesson carries weight — they retain what they learn at Detachment 207 so they can one day serve fellow servicemembers, friends, family members and the broader U.S. population.

“We work for the American people, living out this service ideal where *we work to support others.*”

courtesies involved with military service. They also attend a leadership laboratory taught by upperclassmen and engage in physical fitness training. Sophomores build on this foundation and learn the fundamentals of team building and communication skills.

“We build and reinforce the idea that as leaders, we are serving the Airmen, the Guardians or the United States population in general,” Vyn said. “We work for the American people, living out this service ideal where we work to support others.”



# Taking Studies to the *SKIES*

BRE BOOTH, AVIATION SCIENCE ('25)

**Bre Booth obtained her private pilot license in high school and her ascent has not stopped since.** Choosing to stay close to her hometown of Florissant, Missouri, she joined the Oliver L. Parks Department of Aviation Science in 2022 and continues to pursue her dream of taking flight. She has thrived under the intentional instruction provided by faculty and staff — with small class sizes available, each student has unfettered access to experts in their field.

“You get that one-on-one experience with teachers, faculty members and your flight instructor,” Booth said. “You really get to know the people in the aviation major here.”

Reputable aviation organizations have recognized Booth’s passion for her chosen career. In 2023, she secured a FedEx Express Flight scholarship to cover her instrument rating as well as a scholarship from the National Gay Pilots Association to cover her certified flight instructor license. In 2024, she officially earned her instrument rating and commercial pilot license.

Beyond her studies, Booth fully embraces her position as a student of influence. She shares her experience with prospective students as an ambassador for the School of Science and Engineering and the vice president of SLU’s Women in Aviation International Chapter. Recently, Booth began educational visits to all-girl high schools in the St. Louis area.

“I’M **EXCITED** TO COME BACK TO TALK TO GIRLS ABOUT THE **OPPORTUNITIES** IN THE **AVIATION INDUSTRY** FOR THEM AND HOW TO GET STARTED.”

Booth plans to graduate early in 2025 and remains excited about what the future holds. Ultimately, she aspires to eventually work her way up to the rank of captain for a major airline.



Shayne Murphy is part of the 3+3 program, a collaboration between Saint Louis University and Harris-Stowe State University (HSSU). The program allows students to attend each school and eventually graduate with a dual degree in mathematics and engineering — increasing the number of underrepresented graduates in STEM fields.

Murphy previously completed the requirements for a mathematics degree at HSSU. When he officially transferred to SLU for a mechanical engineering degree in 2021, he was unsure what to expect. He quickly found his credits transferred seamlessly — and, more importantly, the SLU community welcomed him with open arms.

“The transfer process can be kind of scary,” Murphy said. “But the faculty and administrators take care of and check up on you.”

With the two universities within walking distance of each other, Murphy feels supported by both communities as he completes his studies. He shared that SLU students, faculty and staff all contribute to a collaborative environment — teaching engineering processes as they should be.

Murphy also received the Patrick P. Lee Foundation Scholarship, which supports students pursuing careers in technical fields. For him, the scholarship has value beyond funding. He has embraced networking opportunities and found inspiration in those around him.

“I met with the distinguished scholars — seeing what they were and what they’re up to,” Murphy said.

“EVERYBODY IS **CONNECTED**, SO GOING THROUGH IS LIKE **SEEING A FRIEND** IN PASSING.”

His experience with the Patrick P. Lee Foundation inspired him. He hopes to one day establish his own scholarship foundation for inner-city high school students intending to pursue a major in STEM. When he graduates in 2024, he strives to establish a mechanical engineering firm in his hometown of Kansas City, Missouri.

## Building a Lifelong *NETWORK*

SHAYNE MURPHY, MECHANICAL ENGINEERING ('24)



# SLU- Madrid

A WORLDWIDE NETWORK OF BILLIKENS

**Science and engineering education plays a pivotal role in global economic development, wielding unparalleled influence on how we live our everyday lives.** Technical expertise is essential in addressing complex global challenges such as climate change, energy, health care and food security. The future is uncertain, but it is clear that proficient scientists and engineers are critical to the path forward.

The SLU-Madrid Department of Science and Engineering was formed to answer this call. SLU-Madrid is a captivating cultural melting pot of students from nearly 64 nationalities — all searching for multicultural perspectives and international connections built upon a world-class education.

## EXPANDING FULL-DEGREE OFFERINGS

The promise of advanced science and engineering degrees has drawn an increasing number of students from Spain, Europe and beyond. Responding to changing needs, SLU-Madrid has continually expanded programs and facilities to better serve these hopeful professionals.

Notably, manufacturing, automotive, biomedical and environmental

organizations seek mechanical engineers for their expertise in designing, optimizing and maintaining various systems and technologies. Yet, not enough professionals are available to fill the gaps.

In response, SLU-Madrid officially became the first U.S. branch campus to offer a complete bachelor's degree (B.S.) in mechanical engineering. The program is backed by the Accreditation Board for Engineering and Technology (ABET) in



the U.S. and recognized by the Spanish Ministry of Education and Innovation. Now, students may complete their degree fully in Madrid or move between both campuses throughout their studies.

“It's amazing — in September 2023, we started offering [the B.S. in mechanical engineering] and are already drawing a large number of students,” Taieb Gasmi, Ph.D., associate dean and program director of the Department of Engineering, said. “It was surprising and that's encouraging us to offer more American degrees in Spain.”

Moreover, students enrolled in mechanical engineering at SLU-Madrid can enhance their academic experience by pursuing a minor in various disciplines, including computer science, economics, communication or mathematics. Offering this degree entirely in Madrid provides greater access for those who face financial or other constraints preventing them from pursuing it in the U.S.

## RESPONDING TO GLOBAL NEED

Students have welcomed the complete STEM degrees at SLU-Madrid, especially in response to increased industry demand. The University also noted the ever-evolving digital landscape and the breadth of its impact. Every industry, from academia to government, has become embedded with technology — and more international professionals are needed to take the helm.

The campus is nearing the completion of course requirements for the computer engineering program. This move falls in tandem with recent programming, including full-degree programs in computer science and environmental studies. By fall 2024, SLU-Madrid plans to offer a B.S. in computer engineering.



A full B.S. in data science is also in the works, with estimated availability in 2025. This program will prove crucial in a highly data-driven marketplace as employers search for skilled data science professionals. SLU students with this degree will improve organizational

Madrid and St. Louis faculty and staff members provide the technical and cultural preparation needed in an increasingly globalized market. Ultimately, SLU pushes students to transform themselves and the world they live in. The Jesuit mission of care

“We are *always called upon* to go somewhere else and *solve problems*. We really are *problem solvers* in technology, health care and beyond.”

decision-making, providing systematic ways to analyze data and make informed growth decisions.

## UNITED IN GLOBAL CITIZENSHIP

Though spanning two different continents, the SLU campuses are mirror images of each other in perspective and processes. Science and engineering programs between the universities are seamlessly integrated, empowering students to transition between the two with ease.

“SLU-Madrid is very linked to the programs in St. Louis,” Gasmi said. “We are offering the same degrees — we are Saint Louis University.”

for humankind guides thousands of diverse permanent students, visiting scholars, faculty members and staff members to use their knowledge in innovative ways.

Though the landscape is changing, Gasmi shared his belief that society will continue to lean on expertise emerging from the Department of Science and Engineering.

“We are always called upon to go somewhere else and solve problems,” Gasmi said. “We really are problem solvers in technology, health care and beyond.”



# ALUMNI *Spotlights*

## Teresa CLABOTS, M.D.

Chemistry ('75)  
FORMER PEDIATRIC ENDOCRINOLOGIST



Teresa Clabots, M.D., always dreamed of helping people through the power of medicine. She studied chemistry at Saint Louis University with her goals in mind, using the knowledge from her coursework to inch closer to medical school. She reminisced about her

experiences, noting that SLU's faculty and staff helped her mind blossom in unexpected ways.

"I would dream about calculus at night and have the problem solved in the morning when I got up," Clabots said.

After completing her studies and her subsequent residency, her family moved to Lakewood, Washington, where she provided charitable care to families in need. She treated children with hormone disorders — managing enzyme deficiencies and handling insulin requirements.

She gradually built a strong practice for herself in Lakewood, often serving Hispanic and immigrant populations

due to her bilingual background. Clabots shared that each patient she helped stuck with her all these years.

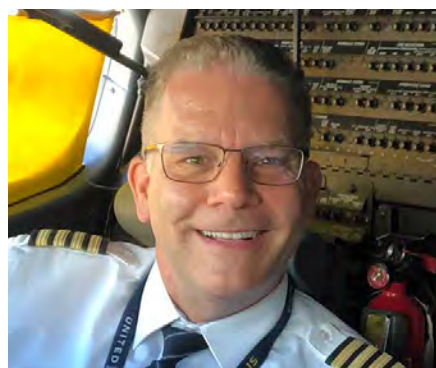
"I had some very rewarding experiences attending deliveries and also advocating for my patients to get medical care like machines or equipment that they needed," Clabots said.

After retiring four years ago, she was proud to pass her compassionate nature to her children. Four of them pursued a career in health care, concentrating in audiology, physical therapy, nursing and infectious disease.



## James BONO

Aviation/Airways Management & Operations ('89)  
CHIEF PILOT, UNITED AIRLINES



James Bono has been traversing the skies for decades as an airline pilot. But in 2020, he ascended to a top leadership role. Now, as chief pilot at United Airlines, he oversees nearly 2,800

pilots between Chicago O'Hare and Cleveland Hopkins International Airport.

He describes his role as being the shock absorber between airline policies and each pilot's needs. From training requirements to flight safety investigations, Bono ensures United is constantly growing stronger. He shared that his Jesuit education continues to influence him as he carries out United's mission of connecting people and uniting the world.

"My job is to have empathy," Bono said. "If I have a happy pilot, they're going to treat the passengers at the same level."

Bono reflects fondly on his foundational experiences at Parks College of Engineering, Aviation and Technology. He began with a blank slate, slowly building his hours and expertise through coursework. Beyond that, SLU community members — from faculty members such as John George, Ph.D., professor emeritus, to former classmate Terrence Kelly, Ph.D., professor of aviation science — pushed him to achieve his dreams.

"Now, I'm a 767 captain flying around the world," Bono said. "I was able to do this because of Parks at Saint Louis University."



## Peter KNUDTSON

Aerospace Engineering ('09)  
NEW BUSINESS LEAD, NASA GODDARD SPACE FLIGHT CENTER

As part of the Mission Engineering and Systems Analysis Division of the Goddard Space Flight Center, Peter Knudtson bridges the gap between NASA's scientists and engineers. He uses his background in aerospace engineering to help plan future space missions and inform technology development.

"I make sure that the division is well prepared for serving the engineering needs of space science here at Goddard and across the country," Knudtson said.

He traces his breakthrough to NASA back to his ambitions as a student. He got involved early, joining organizations such as the American Institute of Aeronautics and Astronautics (AIAA), the Society of Automotive Engineers (SAE) and the Saint Louis University Students for the Exploration and Development of Space (SEDS).

Knudtson believes that coursework was just the foundation of his education. Exploration was the next crucial step in his professional development. In NASA's university outreach efforts, he advises aspiring scientists and engineers to open their minds — take initiative by reading about fields of interest, joining extracurricular training programs and pursuing competitive internships.

"The key thing for students is to be engaged," Knudtson said. "It's ok if you don't know the exact direction you want to go as a student. Part of being at school is exposure to all of these different avenues and seeing what you like."

“THE KEY THING FOR STUDENTS IS TO **BE ENGAGED**. IT'S OK IF YOU DON'T KNOW THE **EXACT DIRECTION** YOU WANT TO GO AS A STUDENT.”





# SUPPORTING SLU STUDENT *Success*

From 1955 to 1959, Patrick P. Lee attended Saint Louis University's Parks College of Engineering, Aviation and Technology with funds from the war orphan's assistance program.

The scholarship changed his trajectory, opening doors that would have previously been closed. The weight of this opportunity stuck with him — spurring a dream that, one day, he would help students in the same way.

He used his aeronautics degree to start his own company, Enidine Incorporated, which eventually became International Motion Control, Inc. (IMC). After selling the company in 2007, he established the Patrick P. Lee Foundation, which supports higher education and mental health initiatives.



“We're looking for schools that share our values and prioritize the students' needs now and for their long-term success,” Mogavero said. “We work closely with our partner schools to identify opportunities — beyond financial support — that will position the scholars for professional success. This includes regional scholar convenings, webinars, newsletters and an alumni directory.”

network of scholars has developed deep relationships with one another.

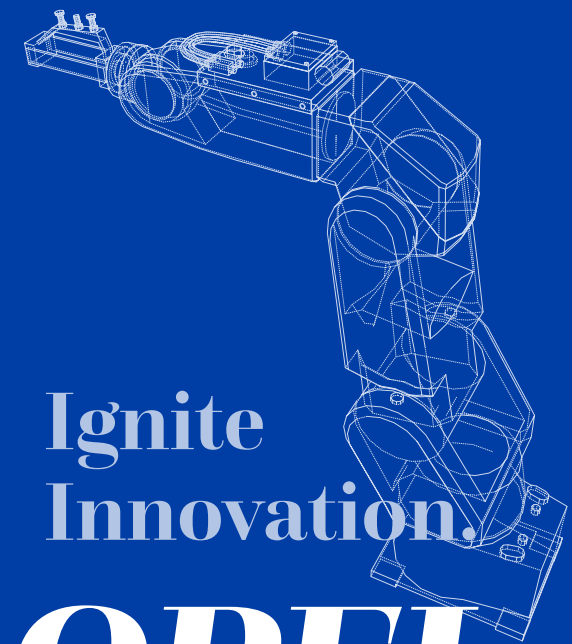
“They are an incredible group,” Mogavero said. “I think the Jesuit spirit of SLU really shines through in our scholars. They organize service projects in the community and find ways to celebrate and support each other throughout the school year. We are so impressed by the meaningful relationships they have built with each other, Lee Scholar alumni and the Foundation.”

In 2023, the Foundation opened a new opportunity for partner schools to receive mental health support for its students. SLU received a \$48,000 grant to deliver Mental Health First Aid training on campus. The program actively destigmatizes mental health challenges on campus and creates a more welcoming environment for all those who struggle. Together, SLU and the Patrick P. Lee Foundation will make campus brighter — one person at a time.

The organization's scholarships target engineering and computer science students from middle-income households who often get lost in the shuffle of financial aid. Since partnering with SLU, the Foundation has supported 92 Billikens with funding totaling nearly \$1.2 million. Mogavero shared that the

“THEY ARE AN **INCREDIBLE GROUP.**  
I THINK THE **JESUIT SPIRIT** OF SLU REALLY  
SHINES THROUGH IN OUR SCHOLARS.”

Saint Louis University became the Foundation's first school partner in 2010. Jane Mogavero, executive director of the Foundation, shared that SLU's School of Science and Engineering has become an exceptional model as they expanded their network to 12 more schools across the U.S.



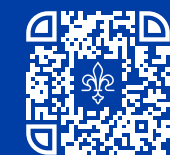
Ignite  
Innovation.

# PROPEL PROGRESS.

Your gift creates  
momentum in academia,  
research and outcomes.

The School of Science and Engineering nurtures students with dreams of changing the world — the doers, the makers and the problem solvers. Here, we ignite new ideas and change the tide for the world's most pressing challenges. More than that, we lead with a foundational purpose: the betterment of humanity.

With nine departments now under one roof, the School offers countless opportunities to support a cause close to your heart. Make a gift online at [giving.slu.edu/BeTheReason](https://giving.slu.edu/BeTheReason) or contact us to discuss opportunities to invest in our future.







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# Save THE DATE

**Sept. 12**

Join Dean Gregory E. Triplett, Ph.D., for a Virtual Alumni Town Hall at 6 p.m. and explore the successes in SLU's School of Science and Engineering.

**Sept. 26-28**

Join us for Homecoming and Family Weekend to witness all the excitement firsthand! Visit [slu.edu/alumni/events/hcfw](https://slu.edu/alumni/events/hcfw) for more details.



## Honors from the ADRP

The ASEE Diversity Recognition Program (ADRP) publicly recognizes engineering and engineering technology institutions that make significant, measurable progress in increasing diversity, inclusion and degree attainment outcomes within their programs.

In 2024, the School of Science and Engineering was honored with a Bronze Level recognition. The ADRP recognized the School for signing the ASEE Dean's Diversity Pledge, creating a plan that enhances access to engineering education and engaging in active implementation efforts. The Bronze Level status will be in effect for three years, showcasing our alignment with broadening participation in engineering.

