My appointment as Dean of Parks College started just a few months ago, on September 1st, but I have been embraced from my first day in the office by the large family of students, faculty, staff and alumni who constitute our vibrant community. I am grateful for the way in which you have accepted me as a new member of this family. It is a privilege, and an honor, to be selected to lead Parks College into the future. With your inspiration I intend to lead with energy, passion and urgency, work intelligently, and work hard.

The true meaning of the spirit of Parks College was revealed to me about a month after I started, during one of the Homecoming events. The revelation came when current students spoke from the heart on the impact the scholarships they were awarded had on their academic careers and personal lives. Their speeches moved me and the diverse audience of our constituents at that event immensely, and as a result they branded in my soul what it means to be a member of the Parks College community.

Since September we have started moving forward with a new vision for Parks College. We began a curriculum review conducted by research-active faculty and leading industry experts in each field; a strategic research review; a planned expansion of academic activities; and several other crucial initiatives on which we will report in the future.

I visited alumni in Seattle, Los Angeles and Houston; and have planned several similar trips spanning from coast to coast for this spring. Through these interactions I became more aware and have been inspired by our institution’s history and alumni, and I am awestruck by our true potential. Words cannot convey how impressed I am by the students, faculty, staff and alumni of Parks College.

During my own career I have developed a special interest in assembling interdisciplinary teams to perform cutting-edge research and then using the research outcomes to enhance the quality of our university curricula. This is a recipe for success that we will be closely following at Parks College.

In this issue of Parks Today you will find samples of our current activities and indications on how they contribute to our excellence in educating the future generations of Parks alumni who will become the leaders of tomorrow. We explore the innovative, world-changing research programs being led by six faculty members and describe how they will affect the quality of our educational programs. We also reconnect with accomplished alumni and check in on some of our current students.

As we go to press with this issue of Parks Today I am very pleased to announce that we have hired Professor Paul Paris, Ph.D., as Distinguished Professor of Mechanics. Professor Paris is a worldwide authority in the field of fracture mechanics, an eminent scholar, an outstanding educator and mentor for students and faculty. He is an excellent role model of how research should be used to enhance university curricula. Further details on this development will be included in future communications.

Thank you for your warm welcome to the Parks College family. We look forward to working with you in pushing new frontiers and exploring great opportunities.

Theodosios Alexander, Sc.D. 
Dean
MEET THE DEAN
An introduction to Theodosios Alexander, Sc.D., Parks College’s new Dean.

PARKS SPREADS ITS WINGS
New programs are taking flight in the Aviation Science Department.

SPECIAL RESEARCH REPORT
Highlighting six Parks College faculty members who are advancing their fields.

NEWS AND NOTES
- James Sebesta, S.J., Endowed Scholarship
- 2012 Homecoming
- Partnership with Harris-Stowe
- Boeing BOLD Scholars
- Engineers Without Borders
- Officer Commissioning Ceremony
- Tau Beta Epsilon

ALUMNI SPOTLIGHTS
- As a member of the NASA Curiosity rover team, Fernando Abilleira (Parks ’99, ’01) helped land an 8,463 pound spacecraft on the surface of Mars in 2012.
- Maj. Ladde Mayer (Parks ’60) reflects on his long and accomplished career.

ON CAMPUS
Two current Parks students, Gauri and Gaytri Nijsure, talk about their experiences at Saint Louis University.

RANCH CALL
- Class Notes
- Alumni Merit Award Winners
- Daniel Parks
- In Memoriam
NEW ENDOWED SCHOLARSHIP TO HELP WITH FLIGHT FEES HONORS FATHER SEBESTA

Established to help students cover costs associated with flight fees, the James Sebesta, S.J., Endowed Scholarship honors Jesuit and long-time aviation professor James Sebesta, S.J.

Sebesta and the new fund were celebrated at a Sept. 28 fundraising dinner to support Parks College scholarships.

“The evening with Father Jim was a most fitting tribute to one of our finest faculty members,” said Stephen Belt, Ph.D., Chair of the Department of Aviation Science.

Sebesta, who joined SLU and Parks College in 1994, has worked in aviation since the age of 14. As a Jesuit, he was assigned to Kaltag, Alaska, where he served at the flying operations base for the Jesuit Volunteer Corps and transported the bishop of the Fairbanks diocese.

CONDOOR EXPLORES NEW ENGINEERING FRONTIERS

Sridhar Condoor, Ph.D., Professor of Aerospace and Mechanical Engineering, was one of 72 educators nationwide selected to participate in the National Academy of Engineering’s Frontiers of Engineering Education symposium, Oct. 14-17 in Irvine, Calif.

“The Frontiers of Engineering Education program creates a unique venue for engineering faculty members to share and explore interesting and effective innovations in teaching and learning,” said NAE President Charles M. Vest.

Condoor also attended the 2012 Edison Awards, April 26 in New York City, to support the Kern Entrepreneurship Education Network (KEEN), a collaboration of 20 U.S. universities including Saint Louis University. KEEN received a Gold Award in the Collaborative Networks and Support category of the Living, Working and Learning Environments sector.

Class of ’62 Comes Home for 50-Year Reunion

The 1962 classes of Parks College and the Institute of Technology celebrated their 50-year reunion during SLU’s Homecoming in September.

For more photos from Homecoming 2012, visit parks.slu.edu/almuni.
Inventor and engineer Patrick P. Lee (Parks ’59) joined four others as distinguished inductees in the 2011-2012 Smurfit-Stone Entrepreneurial Alumni Hall of Fame chosen by the Center for Entrepreneurship at Saint Louis University.

Lee used his business savvy and leadership skills to found International Motion Control (IMC), a worldwide manufacturing conglomerate with a network of more than 300 independent distributors.

Lee sold the company in 2007, using the majority of the proceeds to create the Patrick P. Lee Foundation, which provides funding to organizations that support medical care and research, education, human and community services, and behavioral health. The foundation also supports Parks College scholarships annually and through a bequest of $2 million.

Now in its fifth year, the Entrepreneurial Hall of Fame recognizes SLU graduates who have contributed to society through entrepreneurial leadership and service to the community.

Saint Louis University has forged an academic partnership with Harris-Stowe State University, creating a new dual-degree Mathematics and Engineering program.

Students will be able to complete the requirements for a math degree at Harris-Stowe and continue at SLU for either two years with a major in interdisciplinary engineering or three years with a major in Mechanical or Computer Engineering, ultimately earning an engineering degree from SLU. After five years, students will graduate with two degrees.

Anthony Thompson, CEO of Kwame Building Group, joined Harris-Stowe President Albert Walker, Ph.D., and SLU President Lawrence Biondi, S.J., in signing the agreement. Thompson is supporting the program through the Kwame Foundation, which established a $100,000 endowed scholarship and continues to contribute $10,000 a year.

“This program addresses our state’s initiative to increase science, technology, engineering and math degrees; broadens the appeal of Harris-Stowe for local and minority students; and increases the number of diverse candidates at SLU,” Thompson said.

Three Civil Engineering students took top honors in the first annual Student Research Poster Competition at the Transportation Engineering Association of Metropolitan St. Louis (TEAM) Fair on Sept. 27. Shu Yang earned first place in the competition, while second place honors went to Sijia Lu and Shu Yang, and Greg Bouche captured third place. Yao-Jan Wu, Ph.D., advised the students.

A team from Parks College won first place in the Concrete Bowling Ball competition at the American Society of Civil Engineers (ASCE) Mid-Continent Student Conference, April 19-20 at the University of Nebraska-Lincoln. Also at the conference, James Buerck presented a technical paper on ethics and globalization. Civil Engineering Club faculty adviser Riyadh Hindi, Ph.D., led the students.
Boeing Selects BOLD Scholars

Ten Parks College students earned 2012-2013 scholarships in the Boeing Opportunity for Leadership Development (BOLD) program.

BOLD scholarships are presented to students who maintain a cumulative GPA of at least 3.2; major in either business, engineering, mathematics or computer science; and declare a secondary major, minor or certificate in another of those four areas.

Scholarship recipients also must have the potential to make a significant contribution to the University’s goal of providing a culturally, professionally and ethnically diverse learning environment. Several past recipients have gone on to become Boeing employees.

2012-2013 Boeing Bold Scholars
David Balassi, James Canning, Zlatomira Atanasova, Matthew Genova, Safi Islam, Mary Jennerjohn, Brendan McDermott, Annie Radville, Ross Santee and Christopher Faudree

Hughes Delivers Convocation Speech

Senior Ryan Hughes (Civil Engineering) inspired incoming students and their families at the annual SLU New Student Convocation and Family Welcome on Aug. 24 at Chaifetz Arena.

“College campuses are exciting places that offer plenty of opportunities,” he said. “But when you place a beautiful campus in the center of a vibrant city, create a mascot called a Billiken, mix in a diverse and passionate student body and build the school on the Jesuit principle of finding God in all things, you are faced with a multitude of exciting opportunities — the kinds of opportunities that can shape your SLU experience.”

Earning Their Wings

Parks Wings were presented to nearly 200 students, including 12 graduate students, during the Parks College pre-commencement Wings Ceremony on May 17.

The featured guest speaker was Lt. Gen. Ralph J. Jodice II, (Parks ’76), Commander, Allied Air Component Command Headquarters Izmir, Turkey, and Commander, 16th Air Expeditionary Task Force, U.S. Air Forces in Europe, Izmir, Turkey.
Summer Research Scholars
Fifteen students completed the Summer Undergraduate Research Experience (SURE) program for 2012. The 10-week program requires students to spend 40 hours each week completing an engineering and aviation research project, as well as seminars, discussions, tours and a final seminar-style presentation.

HELPING BUS DRIVERS STAY FOCUSED
A new safety device designed by Ginny Foster (Parks ’12) is helping drivers of Saint Louis University’s Billiken shuttle buses avoid cell phone distractions while they navigate city streets and highways.

Although federal, state and municipal laws ban the use of cell phones by drivers of public transit vehicles, the Phone Blox® device eliminates potential distractions by featuring an electromagnetic latching mechanism that locks when the ignition is disengaged.

“Phone Blox® provides drivers with a tool that helps them maintain focus on the road,” Foster said. “As a physical barrier between driver and cell phone, it only allows access to a cell phone after the vehicle is parked and ignition disengaged.”

The device has won several transportation industry awards.

CASR AWARDS CERTIFICATES
The Center for Aviation Safety Research awarded the first certificates of Aviation Safety for Manager to Patrick Buchanan of Spirit Jets LLC and E Todd Starr and Patrick Duenwald of Monsanto Co. These participants successfully completed more than 50 hours of professional development in aviation safety.

11 SECOND LIUTENANTS COMMISSIONED
At a May 18 officer commissioning ceremony, Air Force ROTC Detachment 207 commissioned 11 Second Lieutenants to serve as active duty officers in the U.S. Air Force. Five of the new officers will progress to pilot training in the coming year. The others were selected for aircraft maintenance, finance, security forces, space and missiles, and personnel officer positions.

Of the two SLU commissions, Brandon Gaines-Richcreek (Parks ’12) will attend pilot training at Laughlin Air Force Base in Texas, and Blake Bolda (Parks ’12) will attend Remotely Piloted Aircraft training at Randolph Air Force Base in Texas.

The ceremony featured speaker Lt. Gen. Ralph J. Jodice (Parks ’76), Commander of Allied Air Command in Izmir, Turkey, who also oversees the Southern European region for all air-related tasks.

DON’T MISS THE RAFFLE!
Fill out the envelope in the center of this issue for a chance to win a one-of-a-kind flight opportunity. To learn more, visit parks.slu.edu/alumni.

TAU BETA EPSILON COMES TO PARKS
Tau Beta Epsilon, the premier engineering honor society, now officially has a chapter at Parks College. TBE is a candidate for the Missouri Epsilon Chapter of The Tau Beta Pi Association. TBE members are graduate students, juniors in the top eighth of their class and seniors in the top fifth of their class, and are elected based on academic achievement and integrity. Recently, TBE held its inaugural Parks Social, where students of all engineering disciplines were invited to learn about Tau Beta Epsilon and network with other students and faculty at Parks. The SLU Chapter also tutors fellow students, mentors high school students and volunteers at SLU’s Campus Kitchen.

Welcoming New Faculty
Parks College added several new faculty and department chairs to its ranks in 2012:

Theodosios Alexander, Professor of Aerospace and Mechanical Engineering and Professor of Biomedical Engineering.

Jennifer Ashley, Instructor, Aviation Science Department

Stephen Belt, Ph.D., Aviation Science Department Chair and Associate Professor

Gary Bledsoe, Ph.D., Interim Department Chair and Associate Professor of Biomedical Engineering

Lt. Col. Aaron Dyke, Commander of Air Force ROTC, Detachment 207

Paul Paris, Ph.D., Distinguished Professor of Mechanics, Aerospace and Mechanical Engineering

Saul Robinson, Instructor, International Aviation Programs Coordinator, and Aviation Safety Manager

Scott Sell, Ph.D., Assistant Professor of Biomedical Engineering

Silviya Zustiak, Ph.D. will join Parks College on Jan 2, 2013, as Assistant Professor of Biomedical Engineering.
A Conversation with Theodosios Alexander

Meet the new Dean of SLU’s Parks College of Engineering, Aviation and Technology.
When he was five years old, Theodosios Alexander’s parents decided to build a new home in Athens, Greece. Young Theodosios watched intently as a man with a clipboard walked around the building site, meticulously measuring the land with a tape and furiously scribbling notes. Two weeks later, the man returned to discuss his drawings, which looked fascinating. Soon after that, a construction crew arrived and began to build the house while they kept checking what they were building against those drawings; which Theodosios had viewed with amazement.

“I asked my mother who that gentleman was and what he was doing; she replied he was a civil engineer,” recalled Alexander. “Next I asked what I needed to do to become a civil engineer. Mother told me I would have to go to a university and graduate with an engineering degree.”

Alexander, the son of a businessman, was five-and-a-half years old when he made the proclamation to his parents that he, too, would become an engineer.

In August 2012, after a two-year search, Saint Louis University announced that Theodosios Alexander, Sc.D., who had served as Chair of Energy Engineering at Queen Mary, University of London since 2006, had been named Dean of Parks College. He succeeds Interim Dean Krishnaswamy Ravindra, Ph.D.

“Dr. Alexander brings considerable experience as an administrator, scholar and researcher,” said Manoj Patankar, Ph.D., (Parks ’92) Vice President for Academic Affairs at SLU and Dean of Parks College from 2006–2010. “As a Parks graduate, I am proud that someone with such international renown will lead my alma mater.”

Alexander hit the ground running as Dean when he began on Sept. 1. We slowed him down long enough to ask a few questions.
Why did you leave Greece to pursue your undergraduate degree?

Education is highly valued by Greek people. Our historical roots have taught us that the way out of mediocrity is through a high-quality education. By the time I was 15, I had decided that I would be a marine engineer. Like many Greeks, I had grown to love ships and boats. At the time, the best marine engineering department in Europe was at Newcastle Upon Tyne University in Britain. My father took me to speak to people in Piraeus, the port of Athens, who were running shipping firms and ship-design offices. These meetings helped me decide exactly what I wanted to do.

This department at Newcastle University was very selective. About 15 freshmen started, and nine of us graduated. There were several research-active faculty members who had the most insightful ideas on what the world needed. They really shaped my education. I thrived in that environment and was very proud of my final project. The work for the final project was done in a big area where there were several rows of drawing boards. All of us would work several hours a day, and we would walk about to see what each of us was doing, share information and collaborate.

What was your experience like as a graduate student at the Massachusetts Institute of Technology?

For me, it was all about finding faculty members who were doing research that I was interested in. I was surprised to find out that these faculty members were already two years ahead of their latest research that was published. It was very exciting to be thrown into an environment where I could work so closely with people who I looked up to in engineering, and have the opportunity to contribute to their research.

Through this research and my studies I was able to find what makes me tick as an engineer, what I really loved to study. I had always been attracted to thermofluids, power and propulsion, and also to dynamics. For a long time I did not know if I would focus on vibrations or on power and propulsion. It wasn’t until after graduate school, about four months after I started my first job in industry, that this choice became clear.

When you graduated from MIT in 1981 there was a recession in the United States that is comparable to what we are experiencing today. How did you handle that situation?

I was offered a job as a marine engineer starting the day after I completed my last exam. The job was with a prestigious engineering-consulting firm in Washington, D.C., and 90 percent of their work was propulsion studies for the U.S. Navy. I was equipped with the technical competence to qualify for the position. I was offered the job because I knew two ways, the U.K. and the U.S. approach, to match a ship propeller with the vessel and its prime mover.

I worked for about a year as a marine engineer. Three months into the job, though, I was already doing my own research in the evenings. I wanted to investigate new things. I wanted to push the field forward, and it dawned on me at the time that the best place for me to do the research I wanted was back in the academic environment.

What type of research were you doing?

I was researching the performance of diesel engines with various fuels. To advance this research, I decided to go back for a Ph.D. degree at MIT. I wanted to do research in diesel engines, but instead I was being offered research assistantships and projects on the performance of gas turbines. Most people research one area or the other, but I ended up working on both. I pursued my passion for this research on the performance of diesel engines and gas turbines, and I am still doing so today.
What did you do after earning your Sc.D.?
After the defense of my dissertation in August 1987, I worked for a turbomachinery consultancy company in Woburn, Mass., for a few months; but I had made it clear this was a temporary arrangement while I was looking for an academic post. In January 1988 I moved from Boston to St. Louis to start in the department of Mechanical Engineering at Washington University. There I moved up through the academic ranks while also working on engineering projects for McDonnell Douglas and later the Boeing Company.

Why did you return to Europe in 2001?
I was attracted by the James Watt Chair of Thermodynamics at the University of Glasgow in Scotland. I loved St. Louis but couldn’t pass up what was considered to be the most prestigious chair of thermodynamics in the world.

At the University of Glasgow I developed two laboratories—in emerging energy technologies, and in power and propulsion. After about six years, as I was completing that work, I saw an opportunity at Queen Mary, University of London. Several people there were working in related energy fields, were good friends on a social basis, but were not collaborating on research. It was an energy research group waiting to be built, so I moved to London in February 2006, and we targeted that goal. Today, the group is doing extremely well and has very highly ranked research output. The engineering programs at Queen Mary are now ranked in the top 100 in the world, a ranking significantly attributed to the very high number of citations per research paper published.

Why did you come back to St. Louis?
St. Louis has become my family’s hometown. When this post came up, I applied and was fortunate to be selected. Becoming the Dean of Parks College is a challenging and a fantastic opportunity.

Tell me about your family.
My wife is English, but all three of my children were born in St. Louis. Natalia was born in 1988, Demetrios in 1990 and Karina in 1995. They are all-American kids, and they make me very proud to be their dad. We are inspired by our Greek heritage, but thrilled to be back in America, where we have strong roots and a shared history in the St. Louis community.

I know you will spend most of your time in McDonnell Douglas Hall, but what do you like to do when not working?
I like the St. Louis Symphony Orchestra. I like bicycling on the Great River Road in Illinois. I have an old 1987 Porsche 911 and was the president of the St. Louis Porsche Club in the early 1990s. I still have the same car, which came from St. Louis to Glasgow to London and now back to St. Louis. Porsches are not the most expensive or fastest cars around, but they are one of the better-engineered cars. If you study them, it is clear that they have been made for quick maintenance on the racetrack. You need to know what you are doing before you tear into them, but they are not complicated. They are an engineer’s dream.

What are the opportunities for Parks College?
The most important function of a university is to educate the society that supports its existence. We have a wonderful opportunity to do that here. Parks College has a long history of providing excellent educational experiences in aviation and engineering education. It is an outstanding teaching school, with brilliant faculty and staff, and a very strong alumni base. These people have brought us to where we are today.

At the same time, there is a desire to improve the research output. SLU has a strategic plan to build our engineering and aviation programs as part of the overall plan to become a top-50 university in the United States. I have a passion for building successful engineering research teams and for using their research output to improve the quality of our education, which is our ultimate goal.

How are engineering research programs changing?
Research has always been on new applications at the interface of disciplines. The
research funding opportunities that are available today occur at the intersection of engineering with areas like biology, physics, chemistry and the other sciences, as well as the art of medicine. This is a worldwide trend, and there is an abundance of engineering work we can do at the interface of these disciplines. We can build visionary, interdisciplinary teams set up to solve the engineering challenges of the future. Our plan is to improve Parks College’s research output by seeking out these collaborations with groups doing cutting-edge research in other disciplines.

“What are the benefits of this approach?”

First, we can channel this knowledge back into our classrooms. Research-led education enables us to illustrate the theoretical material with real and very current examples. I believe this approach will truly produce graduates ready to become leaders of tomorrow.

When our professors walk into a classroom to lecture, we will not just cover what is in the textbooks. For example, in addition to studying the math and physics of how engines work today, we can explain the generation of engine emissions, and how this impacts economics, politics and the environment. I believe this approach fits perfectly into the values of a Jesuit education.

“What is your current research focused on?”

Since my days at MIT I have continued to conduct research on both diesel engines and gas turbines. I also continue to work on the performance and development of airfoils for gas turbine engines. This research is also applicable to renewable energy such as wind turbines. I am starting a new program here at Parks to design to specification fuels of the future from renewable energy systems.

I am also conducting research on devices that will contribute to the health care of people with heart disease, which is the leading cause of death for both men and women in America. My ability to start this work in the field of health care came from my career-long interest in unsteady thermofluid dynamics of turbomachines. As I get more settled at Parks I will be continuing my research, and I plan on explaining more of the details of my work in future issues of Parks Today.

Will you teach any classes?

I will teach some classes, but it is most important for me to influence our younger faculty to begin connecting their research to the information they present to students. I will be very involved with curriculum development, and I will work hard to impart what I have learned over 30 years to the Parks College faculty. We want to leverage our collective efforts and provide true academic excellence that enhances the quality of our education programs.

How will you continue developing Parks’ unique expertise?

No single university can support every type of research activity. We must develop strategic visions about what the world needs and then build areas of research expertise that differentiate Parks College from the other engineering and aviation programs.

We will assemble world-class teams to obtain the necessary funding, conduct cutting-edge research, and then integrate the outputs of this globally leading research into the Parks College curricula.

Our Center for Aviation Safety Research, for example, is a world leader in its field. The center’s team can write winning research proposals and make a difference. Our strategy is to create a critical mass of interdisciplinary research groupings in several areas of excellence. Some researchers will be internal, some will be new hires, and some will be industry and academic partners. They will collaborate to address problems that are important to the future of society.

Also, in order to attract faculty members and researchers with international reputations in their fields, it is vital for Parks College to create new endowed and named professorships as well as an abundance of funded graduate student fellowships. This is where I will reach out to our great alumni and industry partners for their support.

Parks College has a long tradition of excellence in teaching. To continue this tradition and to add a higher level of research, we need to attract the brightest minds doing the most advanced research in their fields.
How important is it to continue building industry partnerships?
To continuously improve our curricula and produce the leaders of the future, we need to bring in people from industry to educate us on what is currently relevant in industry work. This ensures that our graduates’ degrees remain highly marketable and that our research is commercially relevant. This interaction also helps our industry partners understand the challenges we face. They are our close collaborators in this pursuit of excellence in education.

How do you feel about succeeding Dr. Patankar and Dr. Ravindra as the past Deans?
I am extremely fortunate to follow Dr. Patankar and Dr. Ravindra.

Dr. Patankar is a visionary in the aviation field. Aviation is an integral part of the history and of the future of Parks College. He has set us up on a very stable financial footing. Without the financial stability his past work has provided, it would be impossible for us to plan for the future.

Dr. Ravindra has done an outstanding job enhancing our educational programs and ensuring that the degrees of Parks College remain internationally relevant and marketable. He has maintained important close relationships with academia, industry and our alumni.

We cannot overlook Oliver Lafayette Parks and our school’s history of success.

From your very first day here as Dean you have been engaging with alumni. What are some of the impressions you’ve gained so far?
Traveling with our Director of Development to Los Angeles, Seattle and Houston, not to mention all of the regular meetings and Homecoming events here in St. Louis, I have gotten the chance to meet so many wonderful and passionate alumni who genuinely care about the future of Parks College. When you meet a Parks alum you can immediately tell he or she has the Parks spirit, and you can also identify the same spirit in our current students. Their passion and excitement for this school inspires me daily.

So far, when I present to alumni my vision for the future of Parks College and give them examples of the input I will have to the curriculum and research enhancement efforts, they seem to be extremely supportive and fired up. They want Parks to move forward. It is very clear that in order to take Parks forward and to the next level of excellence we need to bring improvements both in our teaching curriculum and our research. And they understand it. They are on board and agree with it. They are here to help us and we look forward to their support.

Parks is like a big family. Whether alumni graduated last year or 50 years ago, they are an integral part of our family and key to our future.
This global focus also establishes Parks College as a pioneer in addressing future challenges that include a predicted pilot shortage, a sharp increase in airline passenger volume and continued easing of international airspace restrictions.
With the launch of Parks College’s new Global Aviation Science program, SLU has become one of the first U.S. universities to introduce a professional pilot degree program that prepares graduates to fly anywhere in the world.

The innovative curriculum offers students the opportunity to gain a broad international cultural experience as they pursue a four-year pilot training degree.

Students will begin the first year of the transatlantic program on the University’s Madrid campus before completing the next three years of intensive flight training coursework in St. Louis. In the future, they will have the option of returning to Madrid for their fourth year to finish the program capstone courses and final flight training.

The program is targeting aspiring pilots from anywhere in the world, with an emphasis on students from Europe, the Middle East, North Africa and throughout the United States.

“Having this global preparation is particularly valuable to a professional pilot, who may take off in one country and land on a completely different continent,” said Taieb Gasmi, Ph.D., Aviation Department Chair, Madrid. “It will give our students a broad international preparation that is so highly valued today, given the globalization of the world.”

It also will expose students to the diverse languages and cultures of the more than 60 nationalities represented on SLU’s Madrid campus.

“Many pilots are attracted to the global aspect of the profession,” said Paul Vita, Ph.D., Director and Dean of SLU Madrid campus. “They already have the desire to learn other languages, to travel, to discover the world. I think young men and women will be very excited about immersing themselves in Spain, becoming bilingual and building on that credential.”

The program holds personal significance for Saul Robinson, instructor and international aviation programs coordinator. Like many aspiring young flyers, he knew he wanted to become a pilot in high school.

Because no aviation science degree existed in the United Kingdom, where he lived, a career adviser suggested he first pursue a science degree.

After studying physics at Imperial College in London, he decided the United States offered the best experience and overall value for pursuing his commercial pilot’s license. But he wishes more options had been available to him at the time.

Robinson views the new Global Aviation Science program as taking an important step toward the development of a single global standard for pilot training.

“There’s a need for piloting, a global profession, to be recognized under global standards,” he said. “There is currently no universal written or flight test that you can take that will prepare you to fly everywhere in the world.”

An important element of the program will involve connecting students with faculty mentors to ensure a seamless transition to the specific local regulations of their home country or chosen location.

“The experience we’re providing looks beyond the technical skills to shape the whole person,” Robinson said. “We want to give students a really strong cultural perspective and share best practices so they’re able to move the profession forward and become leaders of that profession.”

The program comes online amid predictions of a rising global demand and possible shortage of airline pilots. A recent Boeing report forecasts about 460,000 new pilots will be needed worldwide between now and 2031 as global economies expand and airlines take deliveries of new commercial jetliners.

“What’s exciting about our program is that it integrates pilot training within a broad liberal arts education that includes ethics, history, theology and philosophy courses,” Vita said.

“To be a wiser, more well-rounded person can only make you a better pilot, as well as a better member of the complex society that pilots participate in.”

Belt said the curriculum has been developed to address the current and future challenges of globalization.

“As in many of our programs across campus, we are really striving to capture those students who have a bigger vision, who dream bigger and ask bigger questions,” he said. “As a research institution, if we are going to engage in the crucial questions of our time, then I don’t know that there is anything more crucial in aviation than pilot qualification at the airline transport level.”
The future of aviation safety is being shaped on the campus of SLU, where the Center for Aviation Safety Research (CASR) resides.

Established by the U.S. Congress and funded by a $4.25 million grant from the Federal Aviation Administration, CASR exists to solve crucial aviation safety research questions and research next-generation maintenance and technology issues.

It also serves as a central resource for transfer of best practices across air transportation and other high-consequence industries such as health care, nuclear power and chemical industries.

Currently funded through 2014, the center’s interdisciplinary aviation safety research is unique among U.S. universities. With the FAA as its primary customer, CASR partners with organizations including NASA, the National Transportation Safety Board, the National Patient Safety Foundation, the Chemical Safety Board, more than 20 airlines and repair stations, and several hospitals. Two advisory groups—an internal group from SLU and an external group made up of FAA personnel and other safety experts—provide strategic guidance.

The center’s research feeds into the undergraduate and graduate curricula, ensuring that it stays on the leading edge of safety research.

CASR has an increasingly international reach. Jet Airways, an India-based international airline, recently tapped the center’s expertise to help implement a safety management system as mandated by the International Civil Aviation Organization, a United Nations agency.

“We helped Jet Airways with safety training on safety management systems, and we also did a safety culture assessment of their organization,” said CASR Program Director Damon Lercel. “We took two trips there and spent 3.5 weeks each time to travel to various Jet Airways facilities in India, conducting interviews, surveys and audits. Based on our findings, we tailored our training to help the organization fill the gaps in meeting the requirements.”

CASR has begun exploring potential opportunities to transfer the aviation safety processes and concepts to the health care industry.

“Statistically speaking, the aviation industry has a really impressive safety record, and we have a lot to offer to the broader community,” Belt said. “There’s value to taking what we have learned and sharing it with others so that we all become more confident in our quest for a safer environment.”
The purchase of an Unmanned Aircraft System (UAS) and Unmanned Aerial Vehicle (UAV) simulator will enable Parks College to explore the future potential of the emerging type of aircraft.

Through a partnership with Williams Aerospace, Parks College will research and train industry on technologies that improve national defense, scientific research, disaster relief, public safety and technological development.

The Williams Aerospace relationship includes a series of annual internship opportunities for aviation students to become immersed in unmanned aircraft research at the Williams facilities in Honolulu.

Aerospace Engineering student Jacob Schreck completed the first 12-week internship last summer, participating in the hands-on building and system integration of the UAV vehicle that Parks College will take receipt of by the end of 2012.

“The internship was fantastic,” Schreck said. “It provided exposure to a huge range of engineering experiences. I would walk out at the end of some days having worked on composite layups, flight dynamics models for simulation and UAV launcher designs—all in one day. Because Williams is a small company, they have a very hands-on approach to problems, with each person speaking from a different discipline of engineering or even from an operations or fabrication standpoint.”

The simulator will be integrated with Parks current Adacel Air Traffic Simulation, allowing CASR to conduct FAA research on unmanned vehicle integration into the national airspace system. Simlat Ltd. is providing Parks with a full-crew UAS Trainer—a highly advanced UAS training system. CASR will train operational and maintenance crews on unmanned aircraft systems design, maintenance and operations.

By acquiring the aircraft and simulator, Parks College can integrate unmanned aircraft systems into its broad range of degree and research programs with global implications.

“When you talk about unmanned aerial systems, you are talking about introducing leading-edge technology into the community in a very intimate way, because we all share the air space—even if we don’t realize it,” Belt said. “There are a tremendous number of questions in terms of functionality, safety and ethics, and it’s really important that we handle those questions competently, leveraging our extensive experience in aviation.”

“Air transportation facilitates the very globalization we’re experiencing in all walks of life. For us to begin entertaining questions of globalization in our programs makes perfect sense.”

— Stephen Belt, Ph.D., Chair, Aviation Science.
THE SKY IS NO LIMIT FOR
FERNANDO ABILLEIREIRA

Saint Louis University Parks College graduate helps land NASA’s $2.5 billion Curiosity rover on Mars.

At 10:32 p.m. PDT on Aug. 5, 2012, more than eight months after launching on a rocket from Cape Canaveral, NASA’s 8,463-pound Mars Science Laboratory spacecraft completed its journey through the void of space and successfully delivered the car-sized Curiosity rover to the surface of Mars. The precision of its landing was unprecedented in the history of space travel.

After traveling nearly 350 million miles, the Mars Science Laboratory roared into the thin Martian atmosphere at speeds topping 13,000 mph. Next, in the span of just seven minutes, it deployed a supersonic parachute, jettisoned a heat shield and fired retro rockets that slowed the vehicle to less than 2 mph. Then, a first-of-its-kind sky crane system gently lowered Curiosity’s wheels onto the surface of the Red Planet. The robotic spacecraft had been placed just one-and-a-half miles from the center of its target at the bottom of Gale Crater, between the crater’s wall and 3-mile-high mountain known as Mount Sharp.

“The vehicle performed flawlessly,” said Fernando Abilleira (Parks ’99, ’01), 35, trajectory lead and a member of NASA’s Jet Propulsion Laboratories Curiosity navigation team responsible for delivering the spacecraft to the optimal point on the top of the Martian atmosphere required to accurately land inside Gale Crater.

Abilleira’s team designed an innovative entry guidance system that allowed the Mars Science Laboratory to decide in real time, based on pre-loaded software, how to maneuver through the atmosphere.

“From atmospheric entry to landing, the vehicle went into six different spacecraft configurations and 76 pyrotechnic devices were fired,” said Abilleira. “If this complex sequence of events had not worked perfectly, the mission would have been over. There was no margin for error.”

The touchdown of Curiosity was the culmination of a $2.5 billion project that NASA began planning a dozen years ago. Abilleira joined the team in 2007 as a mission design engineer and trajectory analyst. As the trajectory lead during launch, cruise, approach and surface operations, one of his primary responsibilities was to design and optimize the launch period for this historic spacecraft, which, with its payload of scientific instruments, was five times heavier than any other previously delivered to Mars.

On the evening of Aug. 5, the mood in the JPL mission control room was tense but confident.

“We knew we had done everything we could to maximize the chances for success,” Abilleira said. “It was time to watch the spacecraft do its job. Fortunately, the entire entry, descent and landing sequence was executed like clockwork. It was amazing.”

The entry, descent and landing on the Martian surface may have happened as scripted, but not before the team gathered in the control room and endured what they have semi-affectionately called, “Curiosity’s seven minutes of terror.”

“The successful descent of the spacecraft from the top of the atmosphere into Gale Crater took about seven minutes,” explained...
Abilleira. “However, we didn’t get confirmation of landing until 14 minutes later due to the one-way light time delay.”

When data started returning from Mars and the first images from the cameras mounted on the rover’s platform began appearing on the large monitors in the mission control room, the dozens of people gathered in the crowded control rooms erupted in celebration. The most complex machine that NASA has ever sent to another planet had made a flawless landing.

“One of the biggest challenges we had was that the spacecraft was so complicated that no single person within the project could possibly know every single detail about how the vehicle would operate under every possible scenario,” Abilleira said. “More than 5,000 people had been working toward a common goal for over a decade. It was an incredible team effort and success for mankind. I will never forget that night.”

NASA’s scientists sent this mobile laboratory to a location inside Gale Crater, where they believe water existed billions of years ago. Curiosity is now examining rocks, soil and the atmosphere for signs that could indicate that the landing region had the conditions necessary to support life.

“We have data suggesting that water used to flow through that crater several billion years ago,” Abilleira said. “We are now analyzing the rocks and samples looking for carbon-based molecules — for the building blocks of life.”

The $2.5 billion cost for the mission, which was spread across about 12 years, was a direct investment in the U.S. economy, Abilleira explained.

“The total cost of this project to each person living in the United States was about $7—less than the price of a movie ticket,” he said. “NASA is one of the few federal agencies that actually generates a return in investment. Even the most conservative studies show that for each dollar invested on NASA, the government gets at least $1.50 in return. It creates jobs and stimulates the economy.”

As he transitions off Curiosity’s surface operations team, Abilleira has started working on the next generation of Mars landers to be launched in the second half of the decade. In November 2012, Abilleira was appointed as the Mission Design and Navigation Manager of the 2016 Mars Insight Lander.

He and his wife, Sarah, who is trained as a physical therapist and graduated from SLU’s Doisy College of Health Sciences in 2003, make their home in Simi Valley, Calif., a 35-minute drive from Pasadena. They keep busy with three sons: a 5 year old and 3-year-old twins.

“I think about my own kids and hope young people are inspired by this mission as an example of what they are capable of if they are determined and passionate,” Abilleira said. “It does not have to involve aerospace engineering or space. If you put your mind to something and work hard, anything is possible.”

For more information on Fernando and the Mars Rover mission, including additional photos and video, visit parks.slu.edu/alumni.
Meet the Parks Pioneers of World-Changing Research

Parks College of Engineering, Aviation and Technology faculty members are leading research programs to advance medical treatments and save lives, revolutionize transportation systems, help manufacturers innovate and create a more sustainable future.

From curing disease to preserving the world for the next generations, the global challenges of the 21st century will not be solved without achieving previously unprecedented levels of collaboration and innovation. At Saint Louis University’s Parks College, faculty members are leading dynamic interdisciplinary research projects that will make the world a better place while equipping young leaders of tomorrow with essential thinking and analysis skills.

“The most important function of a university is to educate and contribute to the society that supports its existence,” said Theodosios Alexander, Sc.D., the new Dean of Parks College. “We have a wonderful opportunity to improve our ability to do that through our research here.”

Parks Pioneers

Jessica Wagenseil, D.Sc., and her team are exploring ways to improve treatments for high blood pressure. Arif Malik, Ph.D., is consulting nature to develop new aircraft wings that mimic the flexibility of the wings found on birds. John Wooschlager, Ph.D., is planting seeds of sustainability that could help an already great city become even greater. Yao-Jan Wu, Ph.D., is exploring high-tech ways to ease traffic bottlenecks in St. Louis. Phillip Ligrani, Ph.D., helped develop an experimental wind tunnel that can be used to study super sonic flows. And, finally, Mark McQuilling, Ph.D., has joined forces with Jean Potvin, Ph.D., to develop better ways to drop parachutes with pinpoint accuracy.
The promise of better treatments—and possible cures—for serious vascular diseases drives the research activities of Jessica Wagenseil, D.Sc., and a team of students.

The team is testing the hypothesis that large artery stiffness may cause hypertension (or high blood pressure), a significant and growing disease problem in the developed world. Gathering experimental data such as blood pressure, blood flow and material properties of the artery wall, the team is using mathematical models to predict the outcome of specific medical interventions.

“We are trying to determine if changes in arterial stiffness precede hypertension and if that process is reversible, as well as looking at specific treatments that may target this increase in arterial stiffening,” Wagenseil said.

Funded by the National Institutes of Health, the project is being completed in collaboration with Robert Mecham, Ph.D., at the Washington University School of Medicine.

Supplementing the research, one undergraduate student earned a fellowship from the American Heart Association to study the potential effect of existing anti-hypertensive medications on arterial stiffness and to evaluate more effective treatments for high blood pressure.

Another NIH-funded project led by Wagenseil targets two developmental diseases that cause a narrowing of the aorta, the body’s largest artery. The team is examining potential strategies to delay or prevent the narrowing by altering blood pressure or blood flow in specific regions of the aorta during development, rather than having it surgically corrected after it has already occurred.

Wagenseil’s students appreciate the opportunity to contribute to real-world research projects that have significant implications on the future of disease management.

“I am able to use information from my research in the classes that I teach. In biomechanics, there is a whole chapter on vascular mechanics and I discuss results from experiments in my lab that show how mechanics of the vessel wall affect the function of the cardiovascular system,” she said. “The students like knowing a real world application of the material and of the relevance to improving human health.”
By studying the flexibility of wings found on natural creatures, Arif Malik, Ph.D., and a group of faculty and students are helping to influence the future of micro air vehicles (MAVs), an emerging class of unmanned flyers that range in size from that of an insect to a small bird.

Collaborating with Götz Bramesfeld, Ph.D., Assistant Professor of Aerospace and Mechanical Engineering, the team is designing computational models that will inspire innovative designs of small flying vehicles for use in a variety of military and civilian applications, including disaster assessments and agricultural surveillance.

“We’re trying to incorporate some of the flexibilities in the stiffness of these unconventional, smaller wings, in order to gain the benefits of nature, and improve on the design practices used for traditional aircraft vehicles,” said Malik. “We’re looking for novel applications, and we know that we can exploit different types of flexibilities in the wings so they provide optimal aerodynamic performance.”

The majority of the computer code used for these simulations has been developed at Parks by Thomas Combes, who will graduate with his M.S. in Engineering in December and has already presented results of the work at two conferences hosted by the American Institute of Aeronautics and Astronautics.

The team also is working closely with Haibo Dong, Ph.D., at the Micro Air Vehicle Research Center of Excellence at Wright State University to develop structural models that are validated with experiments conducted at that university.

Another student research group formed by Malik is developing new computer models to improve the ability to predict the quality of flat-rolled metals used in a variety of consumer products, such as appliances, car bodies and computer components.

Funded by a grant from the National Science Foundation, the research will support increasingly complex applications that demand thinner, more precise dimensions of sheet metal with consistent thickness uniformity and flatness. Sophisticated computer models also have the potential to help mill and metal producers reduce waste and save energy by improving the efficiency of rolls through higher speeds and increased automation.

Corporate supporters of the research include I2S in Hartford, Conn., where two of Malik’s graduate students spent part of last summer working on site to gain practical expertise to supplement the research.

A third student research group is working to improve the precision and cost-effectiveness of laser shock peening, an emerging technology that extends the life of precision metal components.

Together with the Air Force Research Laboratory at Wright-Patterson Air Force Base, the team is applying advanced simulation models to more accurately predict how to apply laser shock peening to components without the trial-and-error experimentation currently required. The goals are to reduce the cost of applying this technology to specialized aerospace components, and to broaden its potential uses in the automotive, construction and medical industries.

In Malik’s Computer Aided Engineering course he gives lectures detailing how students can apply their computational skills to advance research in diverse fields, including the aeroelasticity, laser peening, and metal-forming research that he and his graduate students conduct. “Early exposure and participation in research is one of the unique opportunities that Parks students can experience,” he said.
John Woolschlager, Ph.D. is working to influence the St. Louis urban landscape.

Through a grant from the U.S. Department of Housing and Urban Development, he is creating a series of alternative planning scenarios that will form the foundation of a regional growth plan. Woolschlager is collaborating with East-West Gateway Council of Governments to analyze data about housing, transportation, the environment, economic development and other factors influencing sustainability.

“We are looking into the future and asking important questions: Is this growth pattern economically sustainable? Is it environmentally sustainable? Does it address society’s needs in a sustainable way?” Woolschlager said.

The ultimate goal of the three-year project is to inspire communities to collaborate on problems that aren’t constrained by city borders.

“We hope this will be a catalyst that helps communities start working together toward a more sustainable region,” Woolschlager said.

“It could be the seed that starts the conversation that will ultimately change the region. St. Louis is already a great place to live. We want to make it even better.”

Insights that Woolschlager has gained from working on the project helped influence a Sustainable Land Development Engineering class that he co-taught with Sarah Coffin, an Associate Professor in SLU’s Urban Planning program, and Dan Hellmuth, a principal partner at Hellmuth + Bicknese Architects.

The project also has spurred a marked increase in interest about sustainable research among SLU faculty. Woolschlager recently led an interdisciplinary collaboration with 15 faculty colleagues to pursue a National Science Foundation grant to fund interdisciplinary, sustainability-related Ph.D. research.

SLU’s growing leadership in advancing sustainability is bringing recognition to the University from the Association for Advancement of Sustainability in Higher Education (AASHE), an organization that prospective students, faculty and administrators often consult to evaluate universities.

“Our active involvement in sustainability-related research strengthens our image as a university and improves our ability to attract and educate students about issues that are important to our future,” Woolschlager said.
By integrating innovative information technology strategies with traditional transportation engineering, **Yao-Jan Wu, Ph.D.**, is helping the Missouri Department of Transportation relieve traffic bottlenecks in the St. Louis region.

He is archiving real-time traffic data in his Smart Transportation Lab and devising a program to convert the data into a travel time information system that MoDOT can use to enact effective traffic management strategies. Currently a pilot study is being completed on highway I-64, the project scope will expand to include the entire St. Louis freeway network in 2013.

A second project for MoDOT involves using GIS-based crash data to identify ‘hot spots,’ or locations with high-potential accident risks. Wu is completing a statistical accident analysis to help MoDOT identify factors that contribute to crashes.

“My travel time estimation project allows me to teach students how the traffic data can be collected, either manually or automatically, and how we determine the performance of highways and arterial streets using up-to-date traffic sensing technologies,” Wu said. “I am able to use this work as examples in my Traffic Engineering class.”

Working with Metro Transit—St. Louis, Wu is analyzing several years of ridership data gathered from fare boxes to identify how the quality of transit data can be improved to more accurately reflect rider behavior on the region’s MetroLink light rail system and MetroBus vehicle fleet. Having this more accurate data will improve Metro’s ability to estimate the organization’s annual revenue and to plan future routes.

Wu also is advising students who are creating a data portal that will enable the public to access details about the planning simulation models that SLU is developing as part of the U.S. Department of Housing and Urban Development’s grant to facilitate a more sustainable future for St. Louis.

His research interests encompass the fields of traffic safety, intelligent transportation systems, large-scale network analyses and sustainable transportation systems.

“My role is to act as a bridge between IT and transportation engineering, connecting the two fields so we can do a better job of managing our transportation infrastructure,” he said.
Sitting in his office in McDonnell Douglas Hall, Phillip Ligrani, Ph.D., is accustomed to hearing a sudden, distinctive sound of gushing air. Far from annoying, it’s a tangible reminder of the world-class experimental facility he helped develop in Oliver Hall.

Using sophisticated wind tunnels to study high-speed (supersonic and transonic) flow, the facility is being expanded to serve the needs of corporate clients that want to leverage its capabilities to develop new and improved products, and to better understand flow phenomena that affect the performance of those products.

“Our experimental wind tunnel facility is quite innovative and unique,” Ligrani said. “There aren’t too many places in the world that can conduct accurate and reliable fluid flow measurements at transonic and supersonic speeds.”

He also is collaborating with Mark McQuilling, Ph.D., to undertake research supported by The Boeing Co. and Honeywell Corp. Ligrani’s internationally recognized expertise in the areas of gas turbine engines and aerodynamics, heat transfer augmentation, fractionation and microfluidics has earned him many invitations to present keynote papers at prestigious international conferences.

He recently shared his vision of the future of gas turbine technology as keynote speaker at the fourth International Symposium on Jet Propulsion and Power Engineering in Xi’an, China. Other recent invited and keynote presentations include the Turbine Engine Technology Symposium in Dayton, Ohio; the MOEMS-MEMS Conference on Micro- and Nano-Fabricated Electromechanical and Optical Components for the International Society for Optics and Photonics in San Francisco; the 11th Asian International Conference on Fluid Machinery and third Fluid Power Technology Exhibition in Chennai, India; and the International Gas Turbine Conference in Osaka, Japan, sponsored by the Gas Turbine Society of Japan.

In November of 2012, Ligrani presented an invited keynote plenary lecture at the 23rd International Symposium on Transport Phenomena, in Auckland, New Zealand. He is also actively collaborating with individuals from academic and industrial entities in Asia and Europe. Within China, he is a member of a Distinguished Technical Committee to provide guidance and advice for the development of gas turbine engines for utility power generation. Within Korea, collaborative activities are underway in his capacity as a Distinguished Advisory Professor at Inje University.

Attending and presenting at international conferences enables Ligrani to stay at the forefront of industry research and technology, which benefits his students as well as his collaborative research efforts with McQuilling.

“In both graduate and undergraduate courses, I can bring insight into the latest developments in a field—even for classic fields like fluid mechanics and heat transfer,” Ligrani said. “I can tell students where the state of technology is and where the boundaries are—what we don’t know, and where we need to go. And I can tell them what other people are interested in. That’s always intriguing stuff for a classroom.”
Mark McQuilling, Ph.D., is helping the U.S. Army predict exactly where cargo will land when it’s dropped from a plane.

Supported by funding from an Army grant since 2008, he is collaborating with Physics Professor Jean Potvin, Ph.D., to build parachute inflation models to assess the aerodynamic characteristics of various parachute designs and sizes of cargo payload.

Understanding the performance and behavior of airdrop systems is extremely valuable to the Army and Air Force, as military cargo is being released in more extreme locations across Afghanistan, Iraq and Pakistan. Given the increasing numbers of tsunamis, earthquakes and other natural disasters around the world, the research also benefits civilian and humanitarian operations.

“The goal of military airdrop is to safely deliver cargo from a moving air vehicle using parachutes, but the unsteady processes involved are not fully understood,” McQuilling said. “If we can help the Army figure out how to do their airdrops more efficiently, it can save fuel costs and extra parachutes while simplifying the process.”

McQuilling is also working with the Air Force Research Lab at Wright-Patterson Air Force Base to influence the future design of military aircraft airfoils—the curved surfaces such as wings and blades—to operate more effectively at high altitudes. He is studying a condition known as ‘separated flow,’ which can occur when the lower air density at high altitudes destabilizes the engine’s low-pressure turbines. This results in reduced power, increased fuel consumption, and additional wear and tear on an engine.

In the medical field, McQuilling collaborated with Ki Beom Kim, Ph.D., of the SLU Center for Advanced Dental Education to conduct the first scientific study evaluating the effectiveness of maxillomandibular advancement surgery, an invasive treatment to correct sleep apnea. They used CAT scans to build anatomically correct computational models of patients before and after treatment to study airflow changes in the throat passageway. He completed a similar study to evaluate the effects of the Rapid Maxillary Expansion (RME) device used to treat nasal obstruction.

McQuilling is working with a cardiologist from Washington University in St. Louis to study blood flow in the heart’s mitral valve. As people age, this valve begins to naturally leak. The research seeks to help cardiologists measure leaking volume more accurately.

McQuilling’s diverse research activities contribute both to his professional growth as well as to the development of his students. “I firmly believe that the best teachers are also actively engaged in research,” he said. “It’s that whole lifelong learning thing. I am able to use my research outputs as perfect examples to explain the ideas of thermodynamics and propulsion in my graduate and undergraduate lectures.” said McQuilling.
SAINT LOUIS UNIVERSITY’S CENTER FOR AVIATION SAFETY RESEARCH (CASR) serves as a central resource for the transfer of best practices across air transportation and other high-consequence industries.

CASN’S PROFESSIONAL DEVELOPMENT COURSES provide managers with valuable insight on how to achieve the highest level of safety, with classes including Safety Leadership and Ethics, Safety Management Systems for Managers, Managing Safety Culture Transformation, and Human-Technical Interface.

CASN’S 2013 SAFETY ACROSS HIGH-CONSEQUENCE INDUSTRIES CONFERENCE about “How to Grow a Stronger Safety Culture,” March 12-13, provides a unique forum for researchers and practitioners from aviation, health care and other high-consequence fields.

HAVE A GREEN SUMMER!
High School students can spend part of your summer on campus and discover what it means to be green.

During the 2013 Engineering and Aviation Summer Academy, students will focus on sustainability. Rising high school seniors can attend either session:

**June 9–13 or June 23–27**

During each session, students will spend five days and four nights on Saint Louis University’s campus, chaperoned by male and female counselors.

Tuition ($450) includes room and meals.

Applications are due **April 15**.

To apply or learn more, visit parks.slu.edu/summer-academy or call 314-977-8443.

To learn about other summer programs at SLU, visit summer.slu.edu. 

THE ACADEMY FEATURES:
+ Collaborative projects
+ Engineering laboratory experiments
+ Flights in a Diamond D-20 airplane
+ Hands-on activities in aerospace, mechanical, biomedical, civil, computer and electrical engineering
+ Campus tour
+ Access to SLU’s Simon Recreation Center, which features a rock-climbing wall, swimming pool, sand volleyball court and more

SCAN TO LEARN MORE!
GAYATRI BLENDS DISCIPLINES

After beginning her Saint Louis University tenure as a biomedical engineering pre-med student, Gayatri Nijsure had a moment of clarity while shadowing physicians the summer of her sophomore year. While watching an orthopedic spinal surgeon performing a spinal fusion surgery, she was more interested in the implants than the actual surgery.

“I also had the opportunity to hear my sister talk about her electrical engineering classes and realized I was interested in blending the two fields,” she said.

Gayatri decided to add an electrical engineering degree to her biomedical engineering program.

“I thought having two majors was going to be tough, but it has been a nice experience because the professors have allowed me to explore all my options and do everything I want to do,” she said.

She pursued her interest in spinal biomechanics by completing an independent research project to study the progression of degenerative disc disease. Gayatri advanced that work through an internship as part of Parks College’s Summer Undergraduate Research Experience program. She and a fellow student recently presented the research in Atlanta at the Biomedical Engineering Society conference.

Gayatri hopes to apply her academic training to the field of prosthetics, which is near to her heart because her dad has polio and wears a leg brace.

“Having biomedical engineering and electrical engineering degrees is a good combination for that field—whether it involves designing orthopedic prosthetics or programming chips that allow people to control the prosthetics,” she said.

The second major means that Gayatri will graduate in 2014, a year after her sister.

GAURI DISCOVERS AEROSPACE

It didn’t take long for Gauri Nijsure to find her niche in electrical engineering.

“I started doing the electrical engineering coursework and I really liked it,” she said. “Everything fell into place.”

Gauri has had several opportunities to supplement her classroom work with practical, hands-on experience. As part of the SAE Aero Design program, she and another student designed a data acquisition system (DAS) to measure take-off and landing distances on a remote-controlled airplane.

“We designed the DAS from the ground up, so it was a really neat experience because we got to see all the stages of how an electrical system gets built and then got to install it on the plane,” she said.

The project earned first place in the SAE Aero Design West competition and took third place at SAE Aero Design East.

For a NASA competition, Gauri was part of a team that designed the electronics bay for a rocket, integrating multiple devices such as an altimeter, GPS receiver, still-picture camera and data storage devices.

Gauri also participated in the Space Systems Research Lab, working on NASA’s COPPER cube satellite and helping to test a new space-based imaging system using a low-cost infrared camera. These experiences culminated in an electrical engineering internship opportunity last summer at Boeing in St. Louis, during which Gauri worked on the F-15 Eagle.

Based on her successful internship, Gauri’s post-graduation plans include finding a technical job in the aerospace industry while pursuing her graduate degree.

“I was unsure about what I wanted to do until I got opportunities to work on different aerospace projects,” she said. “I realized that I could do this for the rest of my life. Working on projects at SLU has given me a clearer direction about what I want to do.”

Twin sisters forge their own paths at Parks College.

Born a minute apart, Gauri and Gayatri Nijsure have always been close. At age 9, when their family moved from Mumbai, India, to suburban St. Louis, the sisters’ relationship grew even stronger as they adjusted to life in America.
CeleBratinG 50 years of fliGht

Maj. Ladde Mayer (Parks '60) has been honored twice by the FAA for his achievements as a pilot and a mechanic.

When Maj. Ladde Mayer was 2 years old, his mother brought him to a flight training school in Galesburg, Ill. World War II had just broken out, and his father was teaching college students to fly before they joined the U.S. Army Air Corps, which preceded the U.S. Air Force. This was Mayer's first exposure to a profession that ultimately would define an illustrious career spanning more than five decades.

During his teenage years, the family moved to southeast Arkansas, where his parents launched a farming and crop-dusting business that would one day employ Mayer as an aircraft mechanic.

He attended two colleges on music scholarships before deciding that flying and repairing planes would offer more rewarding career opportunities than playing the drums. Mayer's pursuit of an aviation school led him to Parks College in Cahokia, Ill. He immediately felt like he had found his niche.

“I just loved it,” he said. “It was 600 guys living mostly in World War II dormitories, with no girls, no social life. I think we had to take a minimum of 19 hours in a trimester.”

He completed Parks College's Aircraft Maintenance Engineering program and earned his Bachelor of Science degree in 1960, the same year he married Jeanie, his wife of 52 years. Shortly after graduating, Mayer began taking formal flight lessons from the son of the man who, two decades earlier, had taught his dad to fly.

**TAKING FLIGHT**

Since taking off on his first solo flight on July 6, 1961, Mayer has accumulated more than 3,000 flying hours and conducted more than 1,500 hours of flight instruction. His FAA ratings include ATP, MEI, CFII, AGI, IGI, SES and Commercial Glider.

Mayer’s professional resume includes serving as an aircraft maintenance engineer on the F-4 Phantom jet for McDonnell Aircraft, an aerospace engineer and electronics engineer for the Army Aviation Systems Command, and a pilot for the Civil Air Patrol.

He also served as a volunteer DC-3 and GS-1 co-pilot and mechanic for MissionAir, a Florida-based nonprofit that transports missionaries, medical supplies, food and clothing into disaster areas.

Mayer’s most daring journey took place in the summer of 1977, when he volunteered to deliver a single-engine fixed-gear airplane from Alton, Ill., to Guam. The 60-hour voyage included 45 hours of flight over the Pacific Ocean, during which Mayer battled strong vertigo, a failed magnetic compass, the fact that he had no ferry tank fuel gauge and a sputtering engine that quit as the ferry tank emptied.

“For several long, frightening seconds the engine would not restart,” Mayer remembered. “We were flying at about 3,000 feet, so at our weight we would have struck the ocean in about two minutes.”

As terrifying as that experience was, Mayer recalls many more times when he was inspired by the splendor of being airborne.

“I’ve seen some of the most beautiful sights when flying between cloud layers and it’s raining and there are all the different shades of white and gray and pink,” he said. “That is something you never forget.”

Mayer encountered a much less inspiring view as a volunteer pilot for the Civil Air Patrol during the 2010 Gulf oil spill. Flying at an altitude of just 500 to 1,000 feet, Mayer needed to maneuver the plane so a cameraman could survey and photograph the oil booms deployed to contain the spill.

“It was very risky, because the summer-time weather in that area changes quickly and can really get mean,” he said. “It was also unsettling because you couldn’t see the end of the oil—it extended beyond the horizon. A lot of it was as thick as peanut butter, and you had no idea how deep it was.”

**LIFETIME ACHIEVEMENT**

In recognition of more than 50 years of service as a pilot and mechanic, the Federal Aviation Administration recently honored Mayer with two prestigious awards: the Wright Brothers Master Pilot Award and the Charles Taylor Master Mechanic Award (named after the first aircraft mechanic).

Mayer and his wife live in the Birmingham suburb of Pelham, Ala., close to their three daughters and eight grandchildren, who make their homes in Florida, Georgia and Alabama. He remains active in the Central Alabama Senior Squadron of the Civil Air Patrol, serving as a mentor and instructor.

Last year was the first time Mayer visited Parks’ home on the campus of Saint Louis University.

“I was just awestruck and never more proud,” he said. “I hadn’t known how magnificent Parks looked as part of SLU’s campus.”

To see more photos of Mayer and to read more about his career, visit parks.slu.edu/alumni
P.W. D’Anna (Parks ’41) still volunteers at the National Air and Space Museum in Washington, D.C. He serves as chief judge for a local antique airplane association, and enjoys restoring and playing theater pipe organs.

John Antrim (Parks ’53) retired from General Electric Aircraft Engine Group in 1987 but still flies gliders and light sport aircraft.

Francis Babka (IT ’54) is retired from IBM and enjoys living in northern Virginia.

Roger Girard (IT ’66) retired from the U.S. Air Force with the rank of colonel after 26 years of service. He retired again in 2012 after 20 years working for Servicemaster, Aramark and the YMCA.

Michael Lawler (Parks ’68) has retired from Northrop Grumman Corp., where he served as Director of Contracts in the Aerospace Systems Division.

Larry Zetterlind (Parks ’69) has been chief pilot for Hartzell Propeller in Ohio for the past 15 years.

Capt. Pieter VandenBergh (Parks ’76) retired from active duty in the Navy in 2002 after 26 years in the cockpit, 10 deployments and a combat cruise as commanding officer. His awards include the Defense Superior Service Medal, Legion of Merit, Meritorious Service Medal, Strike/Flight Air Medal, Joint Service Commendation Medal, Navy Commendation Medal and Navy Achievement Medal, among others. He was also the 1996 recipient of the Senator Henry M. Jackson Award for inspirational leadership. Pieter works for L-3 Communications/Vertex Aerospace as the chief pilot flying the T-39 Sabreliner and AIMD/T-39 program manager.

Richard Hensley (Parks ’77) is a KC-46 Centerline Drogue System IPT Lead for Cobham Mission Equipment.

Dale Lauderback (Parks ’88) is director of OEM Sales for Monogram Systems, a Zodiac Aerospace company and is responsible for Boeing Commercial Airplanes, Boeing Defense Systems, and Russian Regional Jet the SSJ100. He lives in Long Beach, Calif. and is married with two grown children.

Maria Fernández (Parks ’89) is a deputy project manager of a national satellite program with EADS-CASA in Madrid.

Haris Papachristoforou (Parks ’89) is a pilot for Korean Air, flying the Boeing 747-8.

Sean Goding (Parks ’98) is an equity partner at the consumer product development firm of With the Grain in St. Louis. In addition, his historical preservation efforts were featured recently in the Smithsonian Institution exhibit, The Way We Worked. He and his wife, Lori, reside in Mascoutah, Ill.

Rich Rhinehart (Parks ’03) is studying at the University of St. Mary of the Lake, Mundelein Seminary. He is working toward a master’s degree in Divinity and ordination to the priesthood for the Archdiocese of Chicago.

John Keeley (Parks ’04) is the technical manager at AeroNavData in Columbia, Ill.

Robert Miller (Parks ’04) is an engineering supervisor at Swagelok Co. in Solon, Ohio.

Catherine Carty (Parks ’05) recently began a partnership with Adventures in Missions. She will embark on a year-
The Oliver Parks Alumni Merit Award is given each year to a Parks College graduate who exemplifies, to an outstanding degree in daily life, the example of Oliver L. Parks. The 2012 Oliver Parks Alumni Merit Award winner is Edward James “Jim” Dunne (Parks ’62). Dunne earned his master’s degree from the Air Force Institute of Technology (AFIT) in 1964 and his doctoral degree from University of Illinois in 1971. He retired from the Air Force after 20 years of service in 1982.

John “Jack” E. Groneck Jr. (IT ’58, Cook ’74), was honored with the Institute of Technology Alumni Merit Award. Groneck had an illustrious 39 year career with McDonnell Aircraft and McDonnell Douglas Corp., retiring in December, 1996.

To learn more about the careers of Dunne and Groneck and to nominate an alum for the 2013 awards please visit parks.slu.edu/alumni.
Because you give...

“financial assistance, such as the Dean’s Scholarship, has allowed me to walk in the footsteps of my role model, Gene Kranz (Parks ’54), as I work toward a degree in Aerospace Engineering.”

Rubianne Garcia
Aerospace Engineering
Parks College, Class of 2014

Giving really does change lives.

Though the amounts and the reasons may vary, there’s one thing all gifts have in common: Together they make a world of difference to Saint Louis University.

Make your gift online at parks.slu.edu/giftform or call Laura Wheeler at 314-977-8449 to discuss scholarship gifts.

If you’ve already made a gift or estate commitment to SLU, thank you.

Please visit giving.slu.edu/igive and tell us your reason for giving.