

# FLORIDA TECH

M A G A Z I N E

FALL 2024

## All Hands on Deck

Students Trade Backpacks for  
Life Jackets Aboard Marine  
Fieldwork Cruises





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Fall 2024 • Volume 33, Issue 2

## A Growing Fleet

Say "Hello!" to our new 2024 Piper Pilot 100i aircraft. Over the summer, Florida Tech welcomed eight new planes to its fleet, all flown in directly from Piper's manufacturing facility in Vero Beach, Florida, by our very own certified flight instructors. Equipped with the latest in avionics, these planes integrate new technologies into our flight training program.



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## A MESSAGE FROM THE PRESIDENT

Dear Florida Tech family,

I sometimes wonder what our founding president, Dr. Jerry Keuper, would think if he could see how far his “night school for missilemen” had come in 66 years—progress due in large part to partnerships with alumni, parents and friends like you. Consider some of our recent milestones:

- We proudly welcomed more than 9,800 students to campus this fall. That’s a 2 percent increase over last year, or 207 more students. Steady growth of students who we can ensure graduate is what we want—that’s the most sustainable kind of growth.
- A new economic impact study is helping us quantify Florida Tech’s value in exciting ways and better tell our story. An estimated \$1.6 billion in economic impact is generated annually from spending by the university and its students and alumni, confirming that our value goes well beyond our core mission to provide outstanding education (see coverage, page 8).
- As we formulate a new campus master plan, we’re designing new housing. Plans call for an impressively modern six-story residence hall to be located at the entrance to campus and support steady enrollment growth. Stay tuned for details.

These are just a few of the impactful developments at Florida Tech, and we hope you will engage with us over the coming academic year in new and meaningful ways.

I think President Keuper would indeed be proud of this vibrant and thriving university that is focused on the future and is evolving to serve new generations of students. We can all be proud as well.

Until next time ... Go Panthers!

Sincerely,

John Nicklow, Ph.D.  
President



## FLORIDA TECH MAGAZINE

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**FLORIDA TECH**  
FLORIDA'S STEM UNIVERSITY<sup>®</sup>

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# Alumna Joan Higginbotham

## Master Architect of Diverse Post-NASA Career

**JOAN HIGGINBOTHAM** '92 M.S., '96 M.S., one of just 355 people to ever fly on a space shuttle, has been an astronaut (obviously), a rocket scientist, an electrical engineer and a corporate leader. She is currently a business owner.

This exciting career path highlights another impressive skill: the ability to build a working life of remarkable and varied achievements.

She is master architect of a pathway that went, she freely admits, in unexpected directions.

"Almost everything that I planned for my life did not happen," Higginbotham said in an interview at Florida Tech, where she served as keynote speaker at the university's spring commencement ceremonies May 4 and was presented an honorary Doctor of Humane Letters by President John Nicklow.

Higginbotham is a two-time Florida Tech graduate, earning her master's degree in management in 1992 and a second master's degree in space systems in 1996. She earned a bachelor's degree in electrical engineering from Southern Illinois University at Carbondale. Each degree was a critical step along the way.

"I wanted the management degree because I had a technical undergraduate, and I wanted that business aspect," she said.

Similarly, on her way to becoming an astronaut, she earned the space systems degree. It was all about anticipation and preparation.

"I was prepared for wonderful opportunities that were presented to me, and with my education, a lot of



that attributed to what I learned at Florida Tech," Higginbotham said. "I was able to take advantage of those opportunities."

Those opportunities included an amazing 20-year run at NASA, including 13 days in space as part of space shuttle mission STS-116 to help build the International Space Station. Then, she went on to

a distinguished career in the private sector that included high-profile roles at Marathon Oil Corp., Lowe's Companies Inc., UTC Aerospace Systems and Collins Aerospace.

And in April 2022, she launched Joan Higginbotham Ad Astra, an aerospace consulting firm.

### ADVICE TO GRADUATES

Astronaut, engineer, rocket scientist, corporate leader and business owner Joan Higginbotham offered the keynote address at Florida Tech's spring 2024 graduation ceremonies in May. She provided the graduates sage advice. Here's a snapshot:

- » Find your "it," but don't fear change.
  - » "Don't be afraid to deviate from the roadmap when the right opportunity presents itself," she said.
  - » Surround yourself with people who uplift, inspire and challenge you.
  - » Always be open to the "amazing opportunities that life presents."
  - » "Embrace them enthusiastically, for they hold the potential to transform your lives in ways you cannot yet imagine."
  - » Avoid comparing yourself to others, as each of us "possesses unique talents, experiences and perspectives. Embrace your individuality."
  - » Don't be deterred by setbacks.
  - » "My pastor has a saying: 'A setback is a setup for a comeback.'"
- Higginbotham concluded, "Cherish each moment, learn from every experience and never lose sight of the incredible potential that resides within each and every one of you."

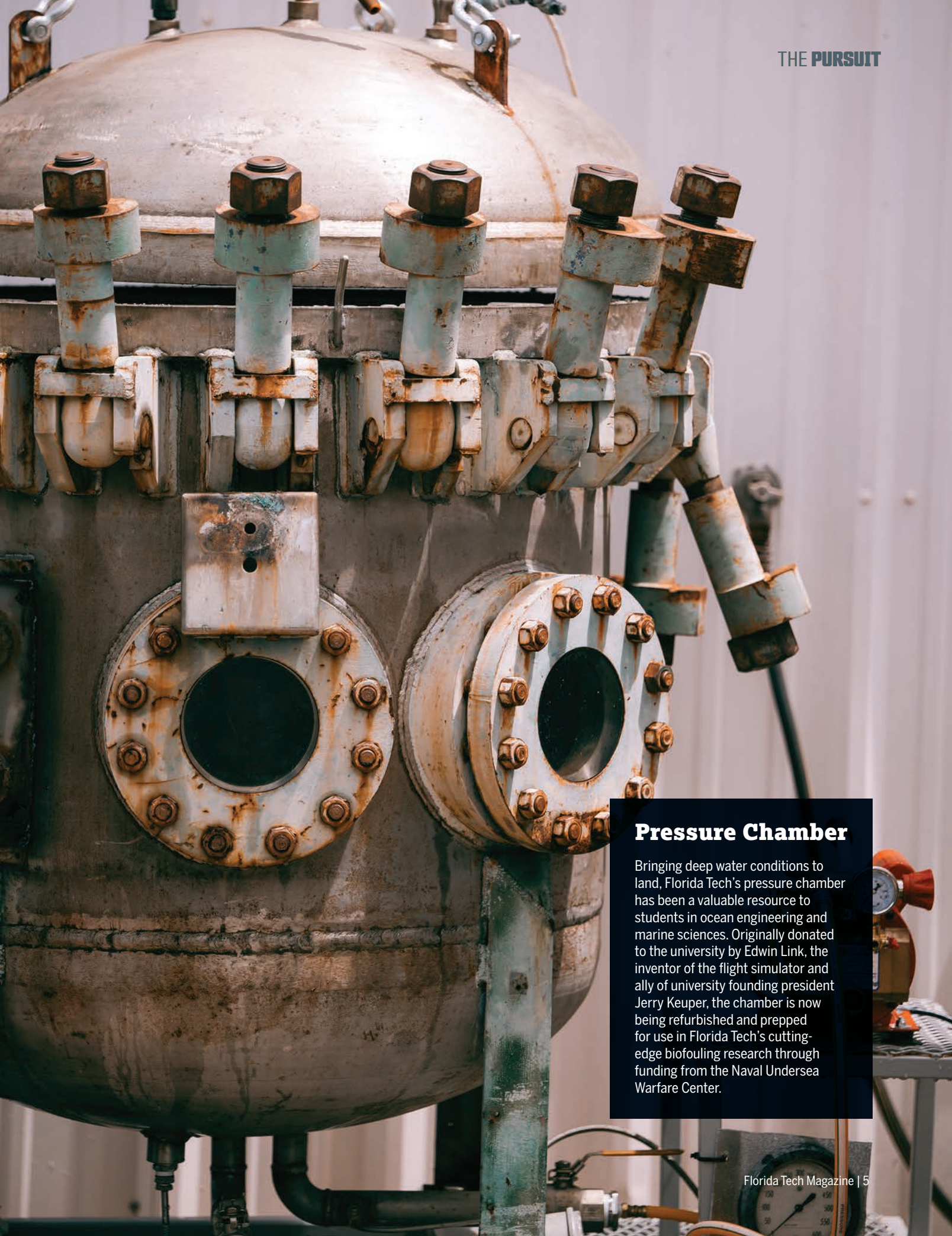


#### WATCH THE VIDEO

Higginbotham discusses her amazing career and how she overcame setbacks along the way during a precommencement interview with Florida Tech.







## Pressure Chamber

Bringing deep water conditions to land, Florida Tech's pressure chamber has been a valuable resource to students in ocean engineering and marine sciences. Originally donated to the university by Edwin Link, the inventor of the flight simulator and ally of university founding president Jerry Keuper, the chamber is now being refurbished and prepped for use in Florida Tech's cutting-edge biofouling research through funding from the Naval Undersea Warfare Center.





FAMILIAR FACES:

**Cat Nanney**

A SERIES CATCHING UP WITH THE CAMPUS FIGURES WHO MADE YOUR TIME AT FLORIDA TECH MEMORABLE

“Florida Tech students are made of something different. They have passions and dreams that go beyond their college experience, and being a part of that is truly an honor.”

—Cat Nanney

Known for her always-on smile, unrelenting enthusiasm and deep dedication to making students’ lives better, Cat Nanney has been making a positive difference at Florida Tech since 2009. She got her start in the registrar’s office, worked her way up through various roles in student activities and is currently Florida Tech’s dean of students. In this role, she serves as lead advisor for the Student Government Association, senior student conduct officer and the organizational wizard behind new student orientation and move-in.

**Tell us about your start at Florida Tech and what you do now.**

I first joined Florida Tech in 2009 in the registrar’s office. Within three months, the dean of students invited me to talk about a position in Student Affairs. My graduate assistantship was in student activities, so I met with him, and within two days, I had accepted a position in the division. Since then, I have remained in Student Affairs. It is what I have always wanted to do, and I absolutely love working and creating a safe, welcoming and healthy space for our students to become the best versions of their adult selves.

**How have you seen Florida Tech and its students evolve throughout the years?**

Our university has grown and is truly a force to be reckoned with. The changes in leadership over the years have taught me so much and have allowed me to grow and learn from so many different leaders and leadership styles. I will say, though, that the President Nicklow era has been my absolute favorite so far—he is exactly what our university needs, especially our students.

**What do you love about your job?**

I know I say it a lot, but it’s truly the students. Florida Tech students are made of something different. They have

passions and dreams that go beyond their college experience, and being a part of that is truly an honor. I also love creating and implementing all our fun activities and events for our campus community.

**How would you describe your relationship with the students? Are there any student success stories that resonate with you?**

I believe my relationship with the students is one of mutual respect and a lot of heart. Some students call me “Mom,” and I think that’s very fitting in some ways, too. Not only because I am, in fact, a proud mama to my girls, Charlie and Leighton, but also because I think of these students as more than just students at a university. I love getting to know our students individually and helping them in any way I can, even after graduation. If that’s being a mom to them, then I’ll happily take the title!

**What do you see in the future for you—personally or professionally?**

I see myself staying exactly where I am as long as Florida Tech will have me. I truly love student affairs and want to continue serving our students and campus community. Our students’ leadership and personal development will forever be my passion, and I hope to facilitate that in any way possible for as long as possible.

**Aerospace Engineering Student Thrives at Olympic House**

Victor Zaharia, an aerospace engineering senior, spent his summer interning at the Olympic House in Paris for the 2024 Olympics—representing Florida Tech! In his role, he applied his project management skills collaborating with the organization’s IT team to ensure flawless event execution, including television broadcasts and the Olympian Film Festival, a highlight of his experience.





## Florida Tech Joins Coalition to Boost Space Manufacturing

In an ambitious move to support the rapidly expanding space manufacturing sector, Florida Tech, University of Florida, Florida A&M University and Embry-Riddle Aeronautical University have joined forces to establish the Center for Science, Technology and Advanced Research in Space, or C-STARS. Researchers and students will collaborate with industry partners to advance the in-space production of unique medicines, electronics and bioenergy systems.

Importantly, the multisite center, including one site at Florida Tech, will lead workforce development programs to train the next generation of specialists in space technologies, sciences and exploration.

Faculty leading the effort include Provost John Z. Kiss, an accomplished space biologist, as well as biomedical engineering professor Kunal Mitra, chemical engineering associate professor James Brenner and associate professor Andrew Palmer, an expert in astrobiology.

The universities secured an \$80,000 Industry-University Cooperative Research Centers Program planning grant from the National Science Foundation in support of the C-STARS Initiative.

### Cheers, Panthers!

The university has launched the Florida Tech Founder's Edition of Space Coast Light Lager, a beer crafted in collaboration with local favorite Intracoastal Brewing Co. and offered exclusively at university events. Now, a toast:

## A Toast to Florida Tech

Here's to Florida Tech,  
Singular and bold

On the storied Space Coast,  
Where inspiration takes hold

With palm trees abundant  
And opportunities dense

A campus that got started  
With thirty-seven cents!

Here's to Florida Tech,  
Wonderous and bright

'Neath Melbourne's blue sky  
Where futures take flight

Growing ever so grand  
While staying true to its core

Our beloved Florida Tech,  
Best kept secret no more!



### Florida Tech, Groundswell Startups Announce Partnership

Two of the Space Coast's most innovative and entrepreneurial organizations have joined forces to supercharge the region's startup and business development ecosystem.

Florida Tech's Center for Advanced Manufacturing and Innovative Design (CAMID) and Groundswell Startups' Prototype Lab signed a one-year agreement in April. The mission, according to the agreement, is to "support action-oriented innovators scaling impactful businesses through community and collaboration" in Brevard County.

The synergy is strong. CAMID and the Prototype Lab both seek to empower people and companies through specialized expertise, access to cutting-edge equipment and technologies, mentoring and more.

The agreement allows for Florida Tech to send up to five students per semester to Groundswell Startups for 12-week internships. During this time, the students will learn about "prototyping, engineering for manufacturing, design and venture funding activities," according to the agreement, as well as the elements of venture funding.

"Like strapping boosters onto a rocket, CAMID and Groundswell will partner to power our entrepreneurial ecosystem to even greater heights," said Florida Tech President John Nicklow. "And with internships, mentoring and other interactions, I am excited about our students getting new experiences to deepen their learning and enhance their success."

# Analysis: Florida Tech Generates \$1.6 Billion Annual Economic Impact

Known for producing highly skilled, in-demand graduates who help fuel the evolving economy in the Sunshine State, Florida Tech is a powerhouse of economic activity and impact in Florida, according to a new analysis by the Regional Economic Consulting (REC) Group.

Among the key findings is that Florida Tech annually generates \$1.6 billion in economic impact from spending by the university and its students and alumni. As a result of that impact:

- Florida Tech’s economic activity creates 12,144 jobs.
- Florida Tech’s economic ripple effects produce \$512.6 million in total wages and salaries.
- Each graduating class of Florida Tech contributes \$1.1 billion to the economy of Florida over 30 years.

Additionally, economic activity through the university contributes \$60 million in taxes each year to the state of Florida and local governments.

“We have long known that Florida Tech provides the best and brightest graduates to important economic sectors in Florida and beyond,” said Florida Tech President John Nicklow. “Now, we know that in carrying out that essential function, we also contribute

substantially to the overall economy. This is exciting news, and we are proud of the many positive ways we impact the region and state.”

The 34-page study, commissioned by Florida Tech, examines the university’s annual impact on the Florida economy in multiple parts, primarily with a direct impact analysis of the university’s economic impacts and contributions through three key areas: capital and operational spending, current student expenditures and alumni earnings.

Overall, the report finds that Florida Tech is a “considerable contributor” to Florida’s economy and a critical asset to the region.

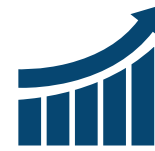
In addition to spotlighting Florida Tech’s economic impact, the study also forecasts a bright future for the important employment sectors supported by the university’s graduates. One critical area is the “professional, scientific, and technical services” field that encompasses several professions, including engineering, computer science, accounting and technical consulting.

“I have always believed in the profound impact Florida Tech has on the Space Coast,” said Lynda L. Weatherman, president and CEO of the

Economic Development Commission of Florida’s Space Coast. “This analysis and economic study definitively prove the significant and far-reaching influence of our local university, highlighting its critical role in driving economic growth, fostering innovation and strengthening our community.”

Both statewide and in Brevard County, jobs in engineering and aerospace manufacturing have grown steadily and will continue to do so. The report forecasts a whopping 112% growth in engineering and aerospace manufacturing jobs on the Space Coast by 2033 as part of 17% overall growth in the industry statewide by that time. Other growth sectors include jobs supported by billions of dollars in federal military spending for the 20 military bases in the state.

“The findings of Florida Tech’s economic impact report demonstrate the profound influence our universities have on the aerospace industry,” said Rob Long, president and CEO of Space Florida. “Equipping students with the necessary skills and knowledge is vital to growing our workforce and maintaining Florida’s leadership in the aerospace field.”



**\$1.6 BILLION**  
**ANNUAL**  
**ECONOMIC IMPACT**

*considering:*

- » EMPLOYMENT GROWTH
- » ECONOMIC OUTPUT
- » TAX REVENUE

ECONOMIC IMPACT AT A GLANCE	
2022–2023 (in millions)	
Total Spending	\$1,157.4
Jobs (Count)	12,144
Labor Income	\$512.6
State & Local Tax	\$60.0

**Scan for the complete analysis of Florida Tech’s economic impact**





# Florida Tech Awarded \$1M for Program to Educate Foster Youth

Dozens of young people who are aging out of foster care will be taught critical skills in advanced manufacturing and microelectronics and equipped to succeed in high-demand technical fields under a powerful new initiative at Florida Tech and its Center for Advanced Manufacturing and Innovating Design (CAMID).

The three-year program, “Explorations: Advanced Manufacturing and Microelectronics to Empower Youth Aging out of Foster Care,” was awarded nearly \$1 million in July from the National Science Foundation.

Participants between the ages of 13 and 21 will engage in workshops, mentorship programs and career-planning sessions designed to prepare them for employment or further education in STEM fields.

Adolescents across Central Florida are able to apply through Family Partnership, a Rockledge-based non-profit providing services including foster care and support.

“This initiative is important because it provides access to educational experiences, role models and success stories that can inspire this underrepresented group to pursue careers in STEM fields,” said **MARIFER SAGASTUME** ’18, ’19 MBA, co-principal investigator for the NSF project and the community manager at CAMID.

CAMID Director **JUAN AVENDANO**, ’11, ’13 M.S., ’20 Ph.D., is the principal investigator.

Organizations such as Larsen Motorsports, Solar Transport Systems and Groundswell Startups will partner with the project to provide hands-on learning and internships.

“This impactful program will equip participants with a growth mindset and marketable skills that we believe position them to achieve long-term economic stability and success,” Florida Tech President John Nicklow said.

**Faculty Transitions** Two long-time faculty members in the College of Engineering and Science are departing for new adventures.

## ASHOK PANDIT

The first master’s student to graduate in civil engineering. The first research grant for civil engineering. The first doctoral program in water resources engineering and the first graduate from that program. The first published conference and peer-reviewed papers in civil engineering.

For these myriad firsts, there was a singular force behind them: Ashok Pandit.

For 42 years the soft-spoken civil engineer worked at Florida Tech. He was the fourth faculty member hired into the civil engineering program.

Pandit retired on June 30.

He said he never envisioned becoming department head. It happened in 2018 and he remained in that role until his retirement.

“The opportunity to lead and develop these programs and faculty has been extremely



rewarding as I had the chance to work with many excellent faculty members,” Pandit said.

Career highlights include becoming a Fellow of the American Society of Civil Engineers and hiring 14 faculty members since 2018.

Read his full retirement announcement at [link.fit.edu/pandit-retirement](http://link.fit.edu/pandit-retirement).

## DAVID FLEMING

David Fleming, who spent 28 years in the college, is departing for an all-teaching instructor position in engineering at the University of Michigan in Ann Arbor.

Fleming arrived at Florida Tech in 1996 as an assistant professor of aerospace engineering.

He was later named associate professor and served as department head of aerospace, physics and space sciences.



## Nernas Named Edward H. Kalajian Professor



Chemistry professor Nasri Nesnas, a 22-year faculty member, has been named the Edward H. Kalajian Professor. Nesnas conducts cutting-edge research into the use of light-responsive molecules for brain mapping and novel approaches to fighting cancer.

The Edward H. Kalajian Endowed Professorship was established in 2017, when the decorated civil engineering professor retired after 46 years at Florida Tech. Gifts from his family, friends, colleagues and former students launched the endowment.

“I have always admired Professor Kalajian’s passion and enthusiasm, especially his impact on students’ success and the growth of our institution,” Nesnas said. “To follow in the footsteps of the first recipient, professor Paul Cosentino, is also a humbling experience, as he has made numerous contributions towards students’ educational experiences.”

## Deaton Recognized with Lifetime Achievement Award

The U.S. Navy Aerospace Experimental Psychology Society honored College of Aeronautics Dean John Deaton with its 2024 Capt. Paul R. Chatelier

Lifetime Achievement Award, recognizing his “pioneering contributions to aviation research, outstanding contributions as dean of the College of Aeronautics at Florida Tech and unwavering dedication to advancing human factors understanding.” Read more at [link.fit.edu/deaton-award](http://link.fit.edu/deaton-award).





**FLORIDA TECH**  
**SWIMMING**  
National Team

AT A GLANCE

## Akos Hajagos

**SPORT:** Swimming, Rowing

**POSITION:** IM/Butterfly

**MAJOR:** Business Administration

**HOMETOWN:** Budapest, Hungary

**CAREER HIGHLIGHTS:** Named First Team All-American in 200 Fly and Honorable Mention All-American in 400 IM; At the NCAA Division II Swimming and Diving Championships, finished runner-up and set a program record in the 200 IM (1:44.57) and finished third in the B Finals of the 400 IM (3:51.92); Earned First Team All-SSC; Finished the season with seven first-place finishes and fourteen top-three finishes

**NAMED:** Sunshine State Conference (SSC) Freshman of the Year

**FUN FACT:** He likes to jump out of planes on the weekends. Seriously, he's been skydiving more times than we can count. He is extremely adventurous.



# Flying Off of the Blocks

## Akos Hajagos Makes a Splash as a Freshman

By Jerry Durney

Often, an athlete needs a few years before reaching his or her full potential and blossoming into a top game-day talent.

Rare is the athlete who performs in the upper echelon from the moment he or she steps foot on campus.

During the 2023–2024 season—his first with Florida Tech—men’s swimmer Akos Hajagos made it clear to which category he belongs.

Hajagos was named Sunshine State Conference (SSC) Freshman of the Year following his debut season, in which he earned seven first-place finishes and 14 top-three performances, also breaking three program records. He concluded his campaign in March, earning second place in the 200-meter butterfly at the NCAA Division II National Championship in addition to All-America honors in the 400-meter individual medley.

While his impact on Florida Tech was immediate, Hajagos’ path to becoming a competitive swimmer was not always direct. Born in Budapest, Hungary, before living in Germany, Dubai and Czechia, Hajagos played a wide variety of sports as a child, from soccer to tennis to golf. He began swimming at age 9, and soon after, a brush with greatness inspired him.

“I decided, when I was about 10 or 11, to focus on swimming because when we lived in Dubai, they were hosting World Cups [for different sports] there every two months,” Hajagos says. “That really motivated me, to see all the big stars on the big stages. We saw Michael Phelps and Ryan Lochte swimming there. When I saw that ... I was like, ‘Yeah, I want to do this when I’m older.’”

The business administration student says Florida Tech’s academic diversity was “a really big pull” for him when he was looking to continue his education. But several other factors contributed to his decision, as well.

“Definitely, the weather, beautiful vegetation, palm trees and the botanical gardens are amazing,” Hajagos says. “The incredible architecture of the

buildings—everything seems to be super new. The pool is beautiful; I like that we get to swim outside year-round. So, just little things like that made my decision to come here.”

Florida Tech assistant coach Ben Klimczak had heard plenty about Hajagos and what he could become going into the 2023–2024 season. But as the team began to ramp up practices ahead of the season, Klimczak was blown away by what he already was.

“The challenge, as the season goes, is getting harder and harder. But even in September, those are pretty challenging practices,” Klimczak says. “And he’s just crushing them, while really talented athletes are struggling with these workouts. I’m watching him do stuff that a freshman in college, by all rights, should really struggle with. I’m giving him really difficult stuff, and he’s asking for more. He’s the kind of guy who loves hard work and does it faster than everyone else. That’s kind of when I knew he was—is—something special.”

Indeed, that dedication led Hajagos to some impressive results. He won the first race in his first meet as a Panther and scored the seventh most points of any individual swimmer at the 2024 SSC Championships, which earned him First Team All-SSC honors.

Every Florida Tech swimmer aims to compete at the NCAA Championships, and Hajagos became the third freshman Panther ever—and first in eight years—to do so.

He competed in the 200-meter individual medley and 400-meter individual medley, but it was his performance in the 200-meter butterfly that tied a bow on his incredible season.

Going into the week of competition in mid-March in Geneva, Ohio, Klimczak felt confident in Hajagos, who had already cut his time in the event from the conference championships just a few weeks prior.

“My first day back on deck with him [after the SSC Championships]—I’ve never seen someone mentally snap back

this fast from a huge meet,” Klimczak says. “It was in my mind the whole time that we had a chance to get him to the top five because I watched him train every day, and his paces were spot on to do something special.”

Hajagos posted a time of 1:44.57, finishing one-hundredth of a second ahead of third place. For the young man from Budapest who had grown up wanting to be like Michael Phelps, the realization of what he had just achieved and the emotions that followed came just as fast as he was.

“I was just happy about my time, honestly. Finishing second was just a bonus,” Hajagos says. “I could have been fourth or fifth easily. But when I saw that time, I took a couple of seconds to digest what just happened. And then, I got out and walked to Coach Ben. And then, I kind of realized how this is a big achievement.”

In that moment, Klimczak reminded Hajagos what he’d done to get there and celebrated what could be to come.

“He was in absolute disbelief,” Klimczak says. “He was in a daze; he was so happy—like he didn’t expect it. We all just gave him a giant hug, and he kept saying, ‘I can’t believe I just did that! How did we do that?’ over and over again. I’m like, ‘Because you’re you, man!’”

Instead of resting or basking in the glow of his swimming success when the season ended, Hajagos joined the Panther men’s rowing team after he learned of its Hungarian contingent. He ended his rowing season with a third-place finish in the M2x at the Dad Vail Regatta.

The biggest reward that rowing can offer him, Hajagos says, is the chance to learn again with his friends.

“Being at zero, a complete beginner. And also just the guys, you know. It’s a smaller team, so we can get to know each other better,” he says. “And I just love how it’s a different type of movement, different muscle groups, keeping active.”

When it comes to Hajagos, only one question remains: What’s next?

**RYAN WHITE**

# Artificial Intelligence: Math, Not Magic

Artificial intelligence (AI) has permeated our lives. Our phones unlock at the sight of our faces. We can have entire text conversations with ChatGPT. Amazon knows what I am looking for, and my email finishes my sentences with uncanny accuracy.

AI may seem magical, but these solutions are based on deep learning and neural networks (NNs), which only require a little calculus—and lots of data and computing power!

The first NNs, proposed in the 1960s, aimed to emulate human brains by perceiving stimuli (inputs), processing them with interconnected layers of “artificial neurons” and producing responses (outputs). For example, facial recognition on phones is trained to accept an input image and answers, “Is this person my owner?” If yes, it unlocks.

Inside an NN, each pair of neurons has a “knob” controlling how strongly a signal is passed from one to the next. “Training” an NN involves tweaking these knobs until the NN consistently maps a large training dataset of inputs to their desired outputs. This tweaking of millions or billions of knobs is guided by calculus to minimize errors in the outputs. Effective NNs learn to produce desired training outputs but also generalize to work with new inputs they encounter.

At Florida Tech’s NEural TransmissionS (NETS) Lab, we study deep learning and develop our own NNs. Concerningly, NNs make mistakes for unknown reasons, which makes high-stakes deployments risky. Much of our work focuses on these failure modes, assessing why they occur and what we can do about them.

Led by Ph.D. student **MACKENZIE MENI**, we developed a technique called PEEK that “peeks” into the inner workings of NNs to visualize what details they are focusing on. PEEK explains NN decisions and reveals data biases. Excitingly, PEEK can frequently discern the correct outputs

“

AI may seem magical, but these solutions are based on deep learning and neural networks (NNs), which only require a little calculus—and lots of data and computing power.

”

.....

Ryan White

*Assistant Professor,  
Department of Mathematics  
and Systems Engineering*

from the inner workings, even when the NN fails to produce them. Ongoing work, funded by the U.S. Army Engineer Research and Development Center (ERDC), aims to use these “corrected” outputs as a fail-safe to catch and correct errors on the fly.

The versatility of NNs allows us to collaborate across disciplines. We work regularly with aerospace and biomedical engineers.

With Ph.D. student **TRUPTI MAHENDRAKAR** ’21 M.S. of the Autonomy Lab, we developed vision and guidance algorithms for autonomous satellite swarms for the Air Force Research Laboratory (AFRL), with ongoing work on human-guided vision algorithms.

Ph.D. student **NEHRU ATTZS** ’16, ’19 M.S., is developing an algorithm to track satellite components in real time.

Ph.D. student **ARIANNA ISSITT** ’23 and I are currently summer faculty/graduate fellows at the AFRL, working on a project to send chaser satellites on inspection orbits around spacecraft, capturing images to build 3D reconstructions. We are designing optimal inspection orbits and deploying them on spaceflight computers.

Additionally, we collaborate with the Multiscale Cardiovascular Fluids Laboratory to develop NNs estimating blood flow dynamics within patient blood vessels noninvasively in real time. This can enable medical teams to make rapid diagnoses and treatment plans for cardiovascular disease patients.

The efforts of the NETS Lab aim to provide a deeper understanding of AI broadly speaking and design effective solutions for safety-critical applications in spaceflight and medicine.

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**RYAN WHITE** ’11 M.S., ’15 Ph.D., is an assistant professor in the department of mathematics and systems engineering and director of the NEural TransmissionS (NETS) Lab. He joined the Florida Tech faculty shortly after earning his Ph.D. in applied mathematics from the university.





# Students Building Robotic Manatee, Whale to Enhance Marine Research

Biomimetic, Remotely Operated Vehicles Will Study Animals Instead of Spooking Them

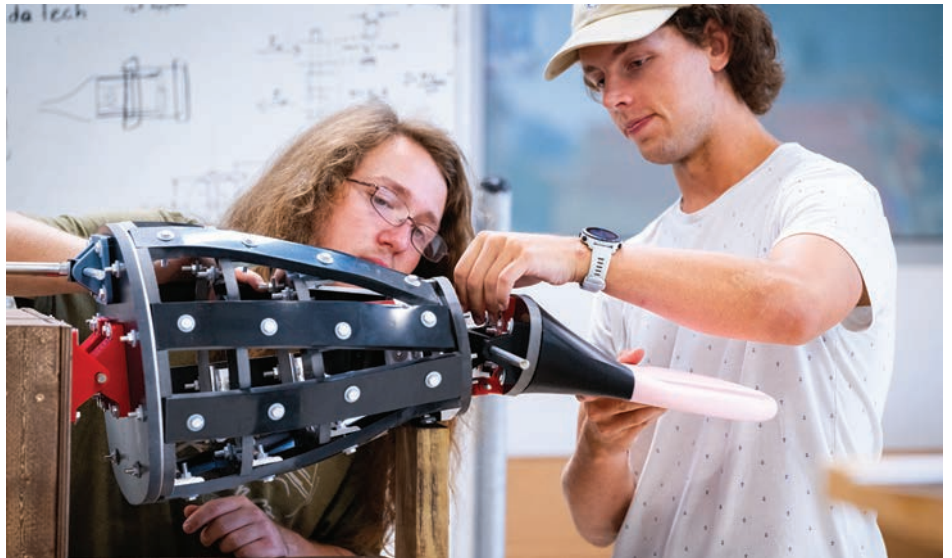
Huddled in Florida Tech's L3Harris Student Design Center, a group of students is working to change how wild manatees are studied. They want to observe through the eyes of marine life, so they're building the closest thing to it: a robotic manatee.

This mechanical manatee—which students have named *Mechanatee*—is a remotely operated vehicle (ROV) that will be built just like the real thing, starting with its tail and flippers. Ideally, replicating its anatomy will help create more realistic movement, as opposed to just placing a manatee's body onto a robot.

The ocean engineering seniors building the ROV hope a group of real manatees will accept it into their herd. If they do, it would provide an incredible opportunity to study the animals and the marine environment in a noninvasive way, said ocean engineering professor Stephen Wood.

Inspired by the West Indian manatee, *Mechanatee* is designed to be 5 feet long with a 3.5-foot tail and fluke (the paddle-like end of the manatee's tail). Embedded sensors will measure environmental factors, such as water salinity, temperature and depth, which senior Cannon Bogar said gives helpful context for understanding manatee behavior during surveillance.

Ideally, the ROV will wear a live camera underwater. The team wants to equip *Mechanatee* with a hydrophone as well, which detects acoustic signals underwater, to record manatees' sounds.



Seniors Cannon Bogar and Jackson Clendenin, along with the rest of the team, have assembled *Mechanatee*'s tail in the L3Harris Student Design Center.

According to Bogar, that would help in understanding, interpreting and even attempting to replicate manatee "language."

The build team's immediate goal, however, is to create a fully functional tail that can operate out of water. Once that is accomplished, they'll have a stronger foundation for engineering the rest of the body, senior Jackson Clendenin said.

The engineers began developing design ideas during their freshman year. It started as a fun idea to brainstorm after Wood's class, according to Clendenin. By their junior year, their ideas became a reality. Now, it's the team's senior design capstone project.

The *Mechanatee* project runs parallel to another of Wood's projects: designing and building a robotic whale. The whale initiative is led by graduate student Haylie Garman, who helped lead the original robotic manatee effort a few years ago. Using similar design concepts, the two robots will be designed to be biomimetic, which means they imitate biological processes found in nature.

Both could eventually be fully immersed in the marine environment, collecting data without interruption.

"We could use the spy robots to get closer to marine life in the wild without spiking their stress level and spooking them," Garman said.

The *Mechanatee* team's main goal for the summer was to create a tail that moves like a manatee's, primarily focusing on the tail's biomimetics.

The tail has two motors: one that moves the tail up and down, and another that turns it. With both points of motion, Clendenin said, the tail should move in a wave-like pattern, like a marine mammal swimming. Though the ROV's bones aren't an exact replication of an actual manatee's, its skeleton still closely mimics the animal's muscles.

Garman's team is focused on mimicking a whale's motion by developing a more exact musculature from the inside. Combining the deeper skeletal design with basic mechatronics, her team hopes to create even more realistic movement.

"We're kind of just using nature's blueprints, honestly," Garman said.

With both his undergraduate and graduate students hard at work, Wood is proud of his students' multiyear dedication to the project and said he's excited to keep involving students in research as early as freshman year.

"Everybody can come here and actually learn how to do the 3D printing, how to put mechanisms together, how to do the electronics," Wood said. "Give them the responsibilities ... and boy, they'll do amazing stuff."

The robotic whale project is led by Haylie Garman, AJ Saad and Wyatt Amarosa. The *Mechanatee* team is led by Cannon Bogar, Aidan Calenda, Jackson Clendenin, Laura Mace, Eden Stroman and Jacob Warner, who plan to present their ROV in the Northrop Grumman Engineering and Science Student Design Showcase in spring 2025.



## Researchers Seek Understanding of Early Life on Earth Following Chilean Expedition

In a discovery that may further our understanding of the early evolution of life on Earth, a research team, including associate professor Andrew Palmer and master's student Caitlyn Hubric, identified Chile's deepest and most northern cold seeps—openings in the ocean floor that emit gases and fluids—about 100 miles off the Chilean coast and thousands of feet below the surface.

This most terrestrial of discoveries may also yield insights that could benefit future space exploration, Palmer said.

Palmer, who runs the astrobiology and chemical ecology lab at Florida Tech, and Hubric, who has studied with him for the last three years, represented the university on Schmidt Ocean Institute's (SOI) expedition through the Atacama Trench. The trench is a nearly 5-mile-deep oceanic trench in the eastern Pacific Ocean that has remained at the same latitude for the last 150 million years, suggesting an extremely stable and potentially ancient ecosystem.

The trench's seeps, found at a depth of 2,836 meters (9,304 feet),

provide chemical energy for deep-sea animals living without sunlight, according to SOI. Seeps like this one can help astrobiologists understand how life developed on Earth and how those survival strategies and chemical conditions might sustain life on other planets.

Palmer and Hubric were members of the expedition's microbiology team and were specifically searching for biosignatures. That meant looking out for novel microbes and chemical signatures, like proteins or carbohydrates, which may have existed in the region for millions of years.

The benefits of their research extend beyond life on Earth. They could also shape future space exploration. A big part of why they're investigating water ecosystems is because of the popularity around Saturn's moon Enceladus and Jupiter's Europa, Hubric said. She said it's not a perfect analog, but it's close enough that they can look for patterns in how life's chemical processes might operate at these sites.

"We hope that some of the questions we answer here find will help



Master's student Caitlyn Hubric processes water in a ship-based lab during the research expedition.

us in future endeavors when we do finally go explore the solar system," Hubric said.

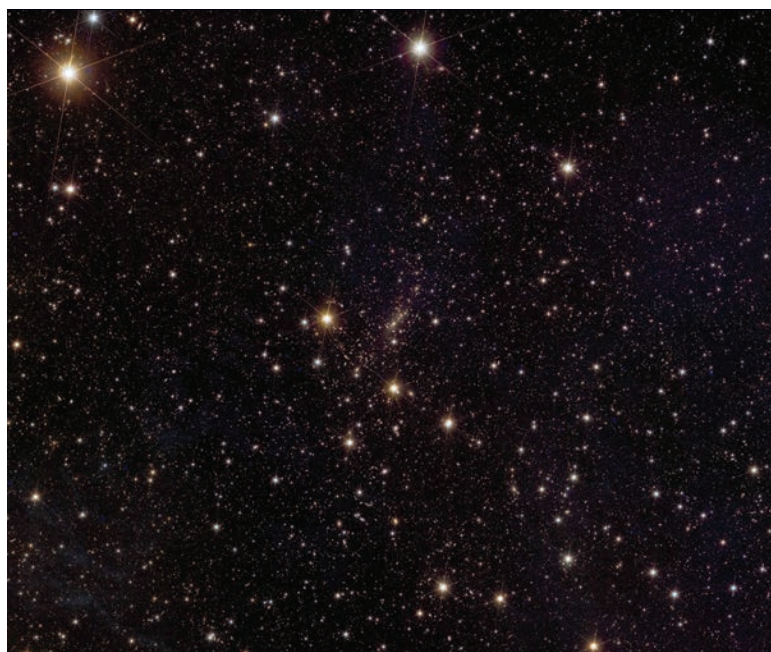
Back on campus after the expedition, which ran from May 24 to June 6, they've started working to solve those questions by both identifying molecules that guide the search for life and by understanding the limitations of the instruments that can detect metabolites, or early signatures of life, Palmer said.

"If [the instruments] can't successfully identify traces of life on Earth, where we know there's lots of life, how are they going to be successful in a place where it's less likely than

a needle in a haystack?" Palmer said. "It's the bigger question of, what do we need to do in order to be successful in the search for life?"

For Palmer and Hubric, research has only just begun. They'll test water and sediment samples and the filtrate that they'll remove from their water filters and investigate for microbes of interest. Searching for novel metabolisms will be an even more extensive process, Palmer said.

"It's weird doing something where you won't be able to see the results for weeks or months," Palmer said. "This is just the beginning."



Euclid's new image of galaxy cluster Abell 2390. Credit: ESA/Euclid/Euclid Consortium/NASA

### Space Snapshots

Astronomers and scientists, including Florida Tech professor and observational astrophysicist Eric Perlman, are examining a new batch of images released in May by the European Space Agency's Euclid space telescope, which launched from Cape Canaveral in summer 2023. The five new images feature views of varying sizes—from a star-forming region in the Milky Way galaxy to clusters of hundreds of galaxies. NASA predicts that by 2030, Euclid will create a cosmic map that covers almost a third of the sky, thanks to its field of view that is wider than both the Hubble Space Telescope and the James Webb Space Telescope.

"What these images do is to give us a view of both dark matter and dark energy—the term for the unknown source of the universe's expansion—that is much broader scale than anything we've ever seen," Perlman said. "This large-scale, 3D view will help us try to understand how dark energy has evolved, whether it has changed with time and what the relationship of dark energy and dark matter may be."

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**In both quantity and quality, this column features Prime Examples of what makes us Florida Tech.**

# PRIME EXAMPLES *of* CULTURE

A people’s culture comprises their customs, beliefs, social institutions and achievements. While it’s not biological, culture often originates from a specific locality, shaping our identities, our perspectives and how we develop—as individuals and as larger groups. A family. A workplace. A religion. A nation. Culture highlights both our uniqueness and our resemblance. When shared, culture has the power to break down our assumptions, broaden our perceptions and help us better understand—even change—the world.

Welcoming, embracing and exploring diverse backgrounds and communities is a fundamental component of Florida Tech’s own culture.

**Here are a few prime examples.**



## TRIPS (STUDYING) ABROAD



For six weeks this summer, 30 Florida Tech students participated in the university’s **20TH ANNUAL OXFORD STUDY ABROAD PROGRAM**. Studying J.R.R. Tolkien’s and C.S. Lewis’ works within the walls of their alma mater, attending Shakespearean plays in Oxford, London and Stratford and biking along the Thames, students earned six to eight credit hours while immersing themselves in the English culture.

In June, College of Psychology and Liberal Arts students and faculty joined the Bisk College of Business on its **ANNUAL STUDY ABROAD TRIP TO SPAIN**. The two-week adventure focused on the global aspects of conducting business in Spain and the broader European markets while visiting several vibrant Spanish cities and world-renowned companies. The trip was such a success, the two colleges have already begun planning their next joint study abroad venture to the Netherlands!





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## FUN-FACT FIGURES

102

COUNTRIES REPRESENTED BY OUR MELBOURNE CAMPUS STUDENT BODY

#9

NATIONAL UNIVERSITY WITH THE MOST INTERNATIONAL STUDENTS

*U.S. News & World Report*

1<sup>st</sup> EVER

RECIPIENT OF THE PRESTIGIOUS DAVID L. BOREN FELLOWSHIP

Valerie Robbins-Roth, an industrial organizational psychology Ph.D. candidate, is one of only 102 graduate students nationwide who received fellowships this year to add important international and language components to their educations by studying overseas in regions critical to U.S. interests. Robbins-Roth will be studying in Japan.

Read the full story »



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## CULTURAL CAMPUS CLUBS



1 Black in STEM

2 Black Student Union

3 Brazilian Student Association

4 Caribbean Student Association

5 Chinese Culture Club

6 Florida Tech's Mishpacha

7 Indian Student Association – Sanskriti

8 Korean Student Association

9 Latin American Student Association

10 National Society of Black Engineers

11 Omani Student Association

12 Rainbow Alliance

13 Society of Hispanic Professional Engineers

# Students Trade Backpacks for Life Jackets Aboard Marine Fieldwork Cruises

STUDENTS BUILD RESEARCH SKILLS ON THE OPEN OCEAN

By Madeline Taylor

**T**wenty feet below the ocean's surface, just west of Florida's Marquesas Keys, a mysterious box rests within an undocumented shipwreck. Senior Stephen Coster and his peers are clustered on the stern of the research vessel W.T. Hogarth with plans to take a closer look using a device called a side-scan sonar.

*continued on page 20*

Pictured at right: Students deployed Koda, a remotely-operated vehicle with a camera lens, while exploring the *USS Amesbury* wreck.









These students are on the second of three annual marine field project cruises this summer led by faculty in the university's department of ocean engineering and marine sciences (OEMS). They are surveying the site where, a year earlier, the box was discovered on the Florida Tech fieldwork cruise.

Even underwater, it is difficult to lift. What could be so heavy? Professor of ocean engineering Stephen Wood, who led this summer's first and third tours, posed that question to his students prior to departure. It could be lead, mercury or even gold, Wood says.

The immersive four-day trips, led by Wood and OEMS professors Robert Weaver and Austin Fox, involve discovery, as well as mystery, through surveying reefs and shipwreck sites near the remote Dry Tortugas National Park. Students get firsthand experience conducting fieldwork using scientific instruments while spending four days living aboard a research vessel, itself a powerful experience.

"You have all the challenges that come along with it: living on a boat, keeping yourself clean, making sure you don't hurt yourself out there," Coster says. "Then when problems arise, you're dealing with them with all you have on the boat. Can't get anything delivered to you. You just have to deal with it."

In just a few days, the team of green undergraduate students evolve into practicing researchers. From the empowerment of learning a new field technique to the anticipation of seeing the mysterious box through their own testing, they learn what life could look like after graduating.

## Troubleshooting on the fly

The W.T. Hogarth, a research vessel owned by the Florida Institute of Oceanography, sailed from St. Petersburg, Florida, to Key West, Florida, and on to Dry Tortugas National Park. It was home to 21 students studying ocean engineering (and one marine biology major) across the three tours this summer. The 78-foot boat came with satellite internet, cabin space to sleep 10 guests and a lab full of instruments.

About an hour after the second cruise departed, the team pulled out the first instrument: a conductivity, temperature and depth (CTD) rosette. The tool measures water stratification by finding the salinity and temperature of samples at different depths. The CTD is attached to a rosette, which is a metal frame that holds multiple sample bottles and often other sensors.



Top: Senior Stephen Coster deploys a magnetometer over the *USS Amesbury* wreck. Bottom left: Junior Natalie Spohn prepares a side-scan sonar for deployment. Bottom right: Students and teachers track imaging from a side-scan sonar in the Hogarth's lab.

Due to an issue with a communication cable, however, part of the machine couldn't function. Ready to troubleshoot, the students wasted no time in developing an on-the-spot solution. They strapped on hard hats and built a temporary system using the materials available on board, then watched as their handiwork was submerged twice.

It worked! They collected enough data samples to see the stratification while gaining confidence in their abilities to think on the fly, Fox says.

"When you come into a lab, everything's set up, and we've made sure it's

working," Fox says. "Often, getting to see that not everything works all the time when you go through that troubleshooting process is pretty cool."

## The mysterious box

The ocean engineers and their students first discovered the undocumented shipwreck and submerged box in 2023. Wood says the wreck was detected when he and Weaver ran a side-scan sonar over a reef and spotted a ship's mast.

Weaver descended to the site with a student and remembers spotting the box.



## ABOUT THE INSTRUMENTS

### SIDE-SCAN SONAR:

Side-scan sonars are used for underwater mapping. They emit sound waves to create high-resolution images from below the surface. When a sound wave hits an object, such as a wreck or wildlife, echoes bounce back to the instrument, which then processes them into images. Side-scan sonars are often used in search and recovery operations, environmental monitoring, seafloor mapping and underwater archaeology.

### MAGNETOMETER:

Magnetometers gauge the strength of the magnetic field in an area of interest. Acting like a compass, the device identifies disturbances in Earth's magnetic field, indicating a significant-enough level of iron content to change the magnetic field. It's often used in searches and surveys. The instrument has helped identify many major shipwrecks, as metal-hulled ships can be detected from meters away.

### SUB-BOTTOM PROFILER:

Sub-bottom profilers use sound to identify the thickness of the different layers below the ocean floor. A transducer will send a sound pulse that runs through the ocean floor. The time it takes for the pulse to bounce back through the layers helps scientists interpret the sediment. Often used by oil companies, the device aids in mapping seafloor geology, identifying hazards, like landslides and gas pathways, locating cultural heritage sights, assessing dredging and renewable energy project sites and helping understand sediment deposition patterns.

After struggling to lift it, he couldn't help thinking that it could be treasure.

"When I went to move it, I realized right then that this is significant. Like, there's something dense inside this," Weaver says.

After brushing off some of the fouling, Weaver says he found a lead terminal. He speculated it could be a ship's battery, but that was never confirmed.

This year, Weaver and Wood returned to the shipwreck site to give more students a look.

Fox, Weaver and graduate student Jolie Elliott, all of whom had the necessary science diver certifications, descended to the wreck. Coster stood watch on the Hogarth's stern, ready to jump in if necessary.

his first time on a research vessel, and he wanted to take good care of the device.

"I didn't want to let anything touch the deck of the boat because I didn't want it to get scratched or anything," Lochte says. "They were like, 'You have to be careful when you're pulling it out.' But how do we put it in? 'See how far back you can throw it.'"

"Clear to deploy," the captain called over the handheld radio.

"Deploying the fish," Coster responded, referring to the sonar. It was time for Lochte to throw it in.

With his classmates and Weaver handling the sonar's cable, Lochte tossed the device successfully into the ocean.

In the lab, students watched acoustic images of the seascape produced by the

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**“Scientists are learning how engineers can help, and engineers are learning how they can apply their stuff to the sciences.”**

—Austin Fox, OEMS faculty leader

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The remainder of the students snorkeled, watching the divers.

When the divers resurfaced, they were met with eager eyes. Was the mystery box still there?

It was, and the students could try to find it for themselves by deploying the sonar for the first time on this trip.

### Deploying the 'fish'

As the sun began to set, Weaver instructed his students to exchange flip-flops for sneakers and towels for life jackets. The side-scan sonar sat ready to visit the wreck.

Half of the students were in the ship's lab, where they made key operational decisions and watched the sonar's imaging. Everyone else was stationed on the back deck, where they were responsible for handling the instrument. That meant listening closely to radio calls—if they were directed to lift the instrument 3 meters, they needed to quickly abide, or else they risked damaging equipment.

As the boat motored up and down the wreck, both teams hustled to prepare the instrument for deployment. Senior William Lochte stood on the edge of the deck, anticipating the signal to throw the expensive sonar into the ocean. It was

sonar. All eyes were on the screen when a crisp image of the wreck appeared, thanks to the students' own survey.

"They're out there putting all that work in ... then, to be able to see the technology and what the technology enables you to see is pretty cool," Weaver says.

### Mixing the disciplines

While that concluded the treasure hunt for the second cruise, students continued to get their hands on new instruments. On the third day, the Hogarth arrived at the wreck of the 80-year-old Naval destroyer USS Amesbury for more underwater surveying.

There, they deployed the side-scan sonar, plus a magnetometer, to search for trace metals, a sub-bottom profiler to see the different layers of sediment below the ocean floor and a remotely operated vehicle (ROV) named *Koda* to get a close-up look at the wreck through its camera lens.

Everyone rotated between the lab, the deck and the bridge, where they learned the captain's role in relaying important information about the water ahead to researchers. The hourslong day of testing

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continued from page 21

included a simultaneous—ultimately, unsuccessful—effort to spot SpaceX's Starship, which launched from southern Texas in the middle of the day, in flight. (They ended up watching the livestream.)

As images from beneath the surface came in, Natalie Spohn, a marine biology junior, noticed something missing from the process: interpretation. Some of the data demanded more expertise than those on board had, Spohn says. While interpretation goes beyond the cruise's main goals, she says it highlights the importance of collaboration between engineers and scientists in the field.

"That's where science people come in," Spohn says. "I think that's why we need a combination. You need people who understand how [the instrument] works and how to get it to work and what it's doing, and then, people to actually interpret the results."

Scientists are often the people who deploy the instruments and interpret the results, Fox says. It's why he and Wood encourage more majors within their department to get involved: Everyone would benefit from the learning experience.

The cruise also creates an environment for students from different disciplines to share ideas. Fox says it's an icebreaker, enabling them to mix.



The group toured Fort Jefferson, which overlooks Dry Tortugas National Park. From left: Jolie Elliott, Austin Fox, Jacob Warner, Logan Fink, Natalie Spohn, William Lochte, Robert Weaver, David Armstrong and Stephen Coster.

## Scuba in Research

The roots of scuba diving lie in exploration. Though scuba is a popular recreational pastime, researchers continue to use it as a tool for discovery, whether as the main mode of data collection or to maintain oceanographic research tools.

In an age when advanced instruments can drive research, too, why not stay dry on land?

Stephen Wood, professor of ocean engineering, argues that no existing tools have the full capability of a human. He says the ability to grab items or quickly turn one's head are difficult to replicate in a remotely operated vehicle (ROV).

He also argues that while robots can collect and send

data, the ability to assess and interpret an environment through a human lens is essential.

"The human cannot leave [the research]," Wood says.

Robert van Woesik, professor of marine sciences, studies the dynamics of coral reefs around the world. He and his students analyze big datasets and scuba dive to examine and photograph coral assemblages, then return with information they can use to predict recovery from disturbances and future growth.

The ability to personally identify different species underwater is crucial to the understanding of coral reef dynamics, and van Woesik says that skill takes training.

"I think it's still worthwhile knowing the species composition of a reef underwater instead of just saying, 'Okay, we don't need scuba divers anymore. We just need photographs and ROVs,'" van Woesik says.

He says he learns the most when he's able to descend to a reef and see the seascape himself.

"I think there's something to be said to just go in the water and ask some questions," van Woesik says. "That's the valuable part of being able to scuba dive, getting amongst it to experience the reef, in tandem with analyzing photographs from around the world on the computer."

Austin Fox, assistant professor of marine sciences, often uses scuba for maintenance. In his study of the Indian River Lagoon, diving is essential for operating instruments and finding lost equipment.

"We spend a lot of time trying to figure out ways to do this stuff without diving... but there's just no replacement for it," Fox says. "We're collecting data with other tools, but the only way to use those other tools is by scuba diving."

Florida Tech scientific divers must attain a Science Diver certification through the American Academy of Underwater Sciences (AAUS). Any diver who plans to use compressed air or air



“You're living with them for 24 hours a day for a few days ... building those relationships,” Fox says. “Scientists are learning how engineers can help, and engineers are learning how they can apply their stuff to the sciences.”

There's also some personal growth from the students while at sea, Weaver says. In many cases, it's in their self-esteem.

“Yeah, they're learning a lot, but there's almost a little bit of maturity,” Weaver says. “There's this evolution.”

The cruise pushes students out of their comfort zones. Someone afraid of making a mistake could be responsible for handling an instrument. Or, as Lochte explains, they could be tasked with delivering messages on the radio—a daunting task for many.

“I didn't want to mess with the captain and the crew because they're doing something very important. ... If they mess up, everything messes up, and I don't want to interfere with what they're doing,” Lochte says.

With Weaver's encouragement, Lochte says, each radio call got easier.

“It helped, most likely, a good number of us get a little bit out of our shell,” Lochte says of using the radio. “Since we were on this boat doing stuff, even our word is valid to the captain.”

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**“It's great spending time with the professors. We have a good laugh. We have a lot of fun.”**

—Stephen Coster, senior

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## Time for fun

The students also learned that there's always time for a little fun, from fishing off the boat to plunging into the water from a rope swing to spotting constellations and Starlink satellites after dark. Students saw their professors as real people.

“When we're in class, we're serious. We're teaching,” Fox says. “[But] we have fun, too. We enjoy jumping off the boat, too. We enjoy goofing off.”

The professors even led an excursion to Fort Jefferson at Dry Tortugas National Park, a destination only accessible by boat.

“It's great spending time with the professors, you know? We have a good laugh. We have a lot of fun,” Coster says.

The marine field project cruise builds teamwork, collaboration and confidence. It's the kind of learning that can only come from a hands-on, immersive experience.

Lochte, for one, left his first time aboard a research vessel ready to get back on the water.

“It definitely cemented that I wanted to work out in the field,” Lochte says. “I'm not sure exactly what I want to do, but I would love to help out with research.”

And, as for that mysterious box?

“The mystery is still there,” Weaver confirms.

“I think it will forever remain a mystery box,” Fox says. “I think I know what it is, but sometimes, we need mystery in our lives.”



blends, for activity involving teaching or research, must be in accordance with AAUS — that includes use of surface-supplied air.

The benefits of scuba extend beyond the water — it's especially valuable for space exploration. Rick Addante, associate professor of psychology and biomedical engineering, studied astronaut cognition on the NASA Extreme Environment Mission Operations (NEEMO) 23 and NASA Neoteric eXploration Technologies (NXT) missions. Divers on the NEEMO 23 mission completed extravehicular activities 100 feet below water, mimicking a spacewalk, while living undersea for 10 days. The aquanauts worked for five hours at a time while

breathing surface-supplied air and were supported by teams of scuba divers, Addante says.

Scuba allows astronauts to simulate outer space scenarios on Earth in operational conditions that are analogous to the extremes of space, he says, namely, being under water. Understanding changing pressurization levels, managing risks to life and learning to stay calm in crisis are just a few core lessons in both scuba diving and space travel.

“You don't have another ‘space’ to practice in, so you have to find other ways to practice,” Addante says. “Scuba has provided the space program an excellent analog to prepare for success.”



# **FROM LAUNCH TO LEADERSHIP**

**BY ERIN PETERSON**





# Florida Tech offered one of the **FIRST MAJOR PROGRAMS FOR APPLIED BEHAVIOR ANALYSIS.**

Today, its ABA offerings are among the best in the world. And they've propelled alumni success in a diverse range of careers.

In the late 1990s, when Jose Martinez-Diaz launched one of the state's first-ever master's programs in applied behavior analysis (ABA) at Florida Tech, the path forward seemed particularly promising. Credible credentialing options in the field were sorely needed, and it was a field with tools that could truly transform lives.

The tools of ABA had shown distinctive strengths to support individuals with autism, but there were myriad ways the field's principles could be applied to sports, workplaces and even animal behavior.

Florida Tech's master's program in ABA officially launched in 1998, and in the quarter century since, applied behavior analysis has become an integral part of the institution. While it began as a master's program within the School of Psychology, it has grown to become an entire school today. The School of Behavior Analysis offers bachelor's-, master's- and Ph.D.-degree programs in ABA, as

well as multiple graduate certificate programs. There are both in-person and online options, and some 3,000 students are currently enrolled in one of the programs.

The opportunities are expansive: In-person students work directly with children or collaborate on research projects at The Scott Center for Autism Treatment. And Florida Tech's reputation in the field among researchers and practitioners is sterling, says David Wilder, head of the School of Behavior Analysis. "We're incredibly active in the field, speaking at conferences and appearing in journals," he says. "We have name recognition, and people know that we're among the best in this discipline."

The future for the school continues to look bright, in part because of ABA's valuable role in any number of the world's challenges, from politics to climate change. "Any change that

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“Any change that involves human behavior can benefit from a behavior analytic perspective. When we change human behavior, we can make an impact on important issues.”

Bryon Neff, Associate Professor, School of Behavior Analysis

continued from page 25

involves human behavior can benefit from a behavior analytic perspective,” says Bryon Neff, associate professor in the School of Behavior Analysis. “When we change human behavior, we can make an impact on important issues.”

To learn more about the importance and the impact of the field, we talked to alumni in diverse roles to understand how they’ve used ABA principles to inform their work.

### Use ABA to ... IMPROVE SAFETY

It was October 2021, and **REGGIE SEECHARAN** ’20 M.S., ’20 MBA, was scaling the corporate ladder at Amazon with lightning speed. After earning plaudits for leading safe and productive teams, his boss tapped him for a particularly difficult assignment: improving the safety record of an Oregon warehouse that ranked dead last among more than 100 sites across the country.

As Seecharan began mapping out a plan, he knew that integrating ABA principles could make a difference. “ABA is so focused on feedback,” he says. “We’re drilled to make sure that we’re delivering feedback in a way that’s timely, specific and impactful. I made sure I did these things early on.”

Not long after he arrived on site, Seecharan took action. He worked with the team that was already in place to define safe behaviors and leverage a recognition program to reward these actions. He created a group chat to escalate concerns quickly and identify gaps. And he drove accountability with mechanisms that ensured that problems that were identified were fixed promptly.

Within a matter of months, safety issues plummeted. “We saw a 31 percent reduction in recordable incidents and a 100 percent reduction in significant, serious events,” he says. “And a lot of that comes back to behavior analysis.”

### Use ABA to ... CRUSH A BASEBALL

It takes less than a half second for a 90-mile-an-hour fastball to go from a pitcher’s hand to home plate. That means that hitters have just milliseconds to identify what pitch is being thrown, where it might cross the plate and whether or not to swing at it.

For his master’s degree thesis, **JOSH FORD** ’21 used an ABA tool known as “stimulus prompts” to analyze how uniquely colored seams on a baseball might help hitters identify the spin and trajectory of a pitched ball more quickly — and ultimately give them an edge in the batter’s box. “Pitch recognition is just one aspect of hitting,” Ford says. “But this is a topic that has a lot of upside potential for further research.”



Reggie Seecharan

### Use ABA to ... RUN A SUCCESSFUL BUSINESS

**KARIN TORSIELLO** ’98, ’00 M.S., says she was “happy as a clam” working for the Behavioral Analysis Service Program in child welfare early in her career. She’d created a small side business, Behavior Basics, for private work that she did outside of the state contract that funded her work, though she had always intended to keep it as a sideline.

But when state funding got cut in 2008 and she and her colleagues had to wrap up operations in a matter of weeks, she found herself at a crossroads. She could find another job — or she could take her side business to the next level.

Within a week, she’d developed a game plan to go all-in on Behavior Basics. She and a few colleagues reached out to the agencies they’d had relationships with through their previous work, pitching a plan to run all of the same services through Behavior Basics.

Soon, she says, “we had contracts and budgets negotiated.” At a lightning-quick pace, she learned how to stay in compliance with state and federal guidelines, how to hire and how to grow.

Today, Torsiello leads a team of more than 70 employees at Behavior Basics, and the company specializes in working with individuals with conditions including autism spectrum disorders, bipolar disorder and attention deficit hyperactivity disorder. She’s particularly proud of the work the company has done to reduce the recidivism rate among perpetrators of child abuse.

As her company has grown, so have her ambitions: “Originally, ‘success’ was just paying the bills and paying myself a salary,” she says. “Then it was growing the team and serving more people. Now, we’re doing research, presenting our work, strengthening our team



Josh Ford



Karin Torsiello

continued on page 28





“  
He wanted  
this science  
to change the  
world. And  
he felt that  
exceptional  
education  
was the most  
effective way  
to make that  
happen.”

Danette Onstott

## A LIFE BUILT FOR IMPACT

The singular vision of Jose Martinez-Diaz (1950–2020) was instrumental in the development of Florida Tech’s School of Behavior Analysis and numerous applied behavior analysis (ABA) programs.

Jose Martinez-Diaz’s influence on the field of ABA rested not just in his vast knowledge of the science and interest in raising the bar in standards of services—it was also in his ability to persuade others that they, too, could be part of something special and something bigger through the study and practice of ABA.

“I had plans to go to Johns Hopkins for a Ph.D. in neuropsychology,” recalls Karin Torsiello, the owner of Behavior Basics. “But after I went to work with Jose for a summer when I was a student, he persuaded me to do the master’s program in ABA that he was starting at Florida Tech. He had so much energy, and whatever he said, I wanted to do. The ethics he instilled in me—the duty to do good work and to help people—is still with me today.”

Martinez-Diaz, who received his Ph.D. in clinical psychology at West Virginia, founded ABA Technologies Inc., to provide clinical services and high-quality training programs.

He was frustrated by the lack of high quality services clients were receiving, and by the lack of accessible resources to competently train many practitioners. Ultimately, he realized some of the most important work he could do was to drive higher standards in the field.

He did so through a partnership with Florida Tech, which led to the launch of Florida Tech’s master’s degree program in ABA. “He was always driving toward higher quality,” says his son, **BRANDON MARTINEZ-ONSTOTT** ’14 M.S., who uses ABA principles as a management consultant for ALULA.

The master’s program Jose helped launch was just the beginning. The single program has grown into Florida Tech’s School of Behavior Analysis.

Even after his death in 2020, today’s students still benefit from his energetic, insightful teaching, since many of his lectures are still shown as part of the online programming offered by Florida Tech. Many of his previous students have also dedicated themselves to teaching, and are teaching the next generation of researchers and practitioners through Florida Tech’s local and online programs.

His widow, Danette Onstott, says that Jose’s collaborations with Florida Tech was the work he was meant to do: “He wanted this science to change the world,” she says. “And he felt that exceptional education was the most effective way to make that happen.”



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and training students. I love being able to be involved with so many different things.”

## Use ABA to ... IMPROVE AUTISM CARE IN OTHER COUNTRIES

**AMANDA BUENO DOS SANTOS** '19 M.A. had always wanted to work with people who have autism. But the Brazil native admits she began to sour on the idea when she started her undergraduate education in her home state of Paraná. She realized that she was being taught outdated, if not outright harmful, ideas about autism care. ABA techniques, if they were considered at all, were taught inaccurately.

Her experience led her to work methodically with others to create and support legislation in her home state that required practitioners in the field to use evidence-based practices with their patients. When she enrolled in Florida Tech's

ABA master's program, she realized she could take her efforts even further.

With the support of leaders at Florida Tech and in the Paraná government, Bueno dos Santos helped push forward a multiyear partnership to provide high-quality online training materials for hundreds of professionals in Paraná who provide care for individuals with autism and other developmental disabilities. She wrote guidelines that are currently available on the Paraná Health Department website.

When the work finally all came together, Bueno dos Santos almost couldn't believe it was real. "I remember the moment that I first went to the website and clicked on the video with text that I wrote," she says, an emotion borne of relief and gratitude. "I realized: this is really happening. Even now, every time I go to the website, I cry."

Bueno dos Santos continues to advocate for laws that ensure the ethical treatment of people with autism. She helped draft a 75-page code of laws that clearly outlines these rules, including prohibiting the sale of unproven



Amanda Bueno dos Santos

## A Hub for Progress

*For 15 years, The Scott Center for Autism Treatment has fueled advances in the field — and provided meaningful support for more than 1,000 individuals and their families.*

For individuals with autism, The Scott Center for Autism Treatment offers some of the most robust and cutting-edge care in the country, with a significant focus on the tools of applied behavior analysis.

The 22,000-square-foot building, which opened in 2009 with the support of Ed and Cheryl Scott and former U.S. Senator Dave Weldon, contains individualized treatment rooms, specialized clinical areas, classrooms and research space.

"It's a state-of-the-art facility," says Scott Center director Kim Sloman. "All of our clinical spaces have adjoining observation rooms that allow parents, therapists, students and others to observe what we're doing."

Plus, with collaborations among researchers from the department of biomedical engineering and science, the College of Psychology and Liberal Arts, and the School of Behavior Analysis, researchers are bringing new expertise and insight to drive progress.

While The Scott Center itself serves about 200 families per year, with many children receiving 25 to 30 hours of care each week as part of its early intervention programming, Sloman says the center's most powerful work goes beyond direct treatment. "Our most impactful work is what we do to train the next generation of experts who will go out into the community and beyond to do treatment and intervention for more individuals," she says.





remedies. “No matter what Congresspeople or the president want to do, this code will protect people,” she says.

Now she is also part of ANPAC, a new Brazilian Association focused on creating ABA guidelines for practitioners and building savvy consumers. Her next goal? Establishing licensure law for behavior analysts and behavior technicians. “I had a chance to study at Florida Tech, and now I can give back to my country for the opportunities I had,” she says.

“When teams communicate better, they get along better, perform better and win more.”

Kaitlynn Gokey, Assistant Professor

## Use ABA to ... GIVE ESPORTS PLAYERS AN EDGE IN COMPETITION

Esports—multiplayer video games played competitively for spectators—is a \$1.38-billion-and-growing industry. Yet despite its massive economic impact, research to support its players and coaches “barely exists,” says Florida Tech assistant professor **KAITLYNN GOKEY** ’12 M.S., ’20 Ph.D.

That’s starting to change, thanks to research being done by Gokey and her doctoral students, James Riswick-Estelle, Candace Fay and Alyson Intihar. Among the topics of their research are effective communication skills in the intense, hours-long games in which players have little visual interaction with one another. “Players have to talk in a way that is clear, concise and on-topic,” she says.

To support this work, Gokey and her doctoral students help players set goals, collect data on communication behaviors, and provide training and feedback to help them understand key areas for improvement. The goal, says Gokey, is to use the tools of ABA to give players and coaches skills to achieve at the highest levels of competition. “When teams communicate better, they get along better, perform better and win more,” says Gokey.







**JOHN Z. KISS ON ...**

**FAVORITE  
SPACE BOOK:**

*Endurance: A Year in Space, A Lifetime of Discovery* by Scott Kelly, the distinguished shuttle astronaut and engineer.

**THREE TOP VALUES  
AS PROVOST:**

Teacher-scholar model; transparency; student success.

**RESILIENCE AND**

**FAILURE:** “You can talk about, ‘Oh, John Kiss, you got these awards, you got these awards, these publications and grants.’ But I’ve applied for grants and didn’t get them. I applied as an assistant professor for faculty jobs and didn’t get them. You don’t generally talk about that, but I think students need to hear it. You shouldn’t be embarrassed. That’s part of the process.”

**GOING TO MARS:** “We can build the big rockets. But the questions to go to Mars are all biological. Not just plant biology, but what are the effects of the high radiation on humans? What are the effects of microgravity and partial gravity on human physiology? How are we going to grow plants on Mars?”



# Meet Provost and Senior Vice President for Academic Affairs:

# JOHN Z. KISS

By Adam Lowenstein

In 1997, more than a quarter-century before John Z. Kiss would come to Melbourne as Florida Tech's new provost and senior vice president for academic affairs, the soft-spoken space biologist and passionate space fan found himself at a crowded restaurant table at Cocoa Beach's iconic Atlantic Ocean pier.

It may as well have been heaven.

Kiss, then an assistant professor at Miami University, and the school's vice president for research—a physicist and fan of both NASA and Kiss's research—had come from their Oxford, Ohio, campus. Kiss was assisting with training two mission specialists on his project ahead of space shuttle mission STS-84 that was soon headed to the Mir space station.

Jean-Francois Clervoy and Elena Kondakova would work on his experiment, which documented the effects of the space environment on the biological systems of plants. Kiss asked Clervoy if he'd be interested in getting dinner. The French astronaut said he would be and would call after going to the gym.

"My vice president is like, 'He's never going to call you. He's just being nice,'" Kiss recalls.

At 8 p.m. the phone rings. It's Clervoy. He tells Kiss that he's ready to go. That in fact "we" are ready to go.

"Do you mind if we bring the entire crew?"

Pause.

"I said, 'Oh no, no. That's fine,'" Kiss says.

And that's how the astronaut aficionado found himself surrounded by six astronauts, including the female pioneers Eileen Collins (the first American woman to command a shuttle mission) and Kondakova, the hero of the Soviet Union who held the record in that country for time in space by a woman.

"The one time I don't have a camera, I had three astronauts on my left and three on my right," Kiss says.

As Kiss embarks on his own journey at Florida Tech, he brings wonder about space and a hearty appreciation of its cultural trappings that have only grown since that memorable meal. (He also has an asteroid named after him.)

He brings a scientist's curiosity that has flourished since then, with the recognition, funding and awards that follow.

And he brings a fondness for the teacher-scholar model—which values experiential learning for students and a balance of research and teaching for faculty—that has allowed him to remain both an active space biologist and an impactful administrator.

"It's one of my favorite phrases," Kiss says of 'teacher-scholar.' "I think it has been really important in my career, and I think it fits in really well with what's going on at Florida Tech."

## AN INFLUENTIAL PROFESSOR

Like many kids, a young John Z. Kiss was interested in space. That interest blossomed during one of the early space industry's crowning moments: the Apollo 11 Moon landing televised on July 20, 1969.

"The landing on the moon was a phenomenal technological achievement," he says.

That interest remained, but as he worked toward his undergraduate biology degree at Georgetown, a new one was on the horizon. He had to do a research project to graduate and, working with a professor who was a plant biologist, Kiss ended up doing two different ones, both plant-related.

"I decided after I worked with him for a few years that I wanted to go to grad school," Kiss said. He did so at Rutgers, where he earned a Ph.D. in botany and plant physiology.

A postdoctoral research position followed at Ohio State University in the late 1980s and offered NASA-funded, ground-based research into the structural and functional aspects of gravity perception in plants.

"Ever since then, I've worked with NASA on ground-based and space flight research," Kiss said.

## TEACHER-SCHOLAR

Having conducted NASA-funded research, Kiss's next job now had the agency in the title: NASA research associate. For a year he held that role at the University of Colorado. Then in 1991 he landed his first faculty role as an assistant professor in the biology department at Hofstra University.

Two years later, he arrived at Miami University in Ohio and went on to teach undergraduate and graduate courses in

biology and botany at Miami University in Ohio for 19 years.

It was during this time he had the fateful Florida dinner with the astronauts and that his first plant experiment for space was carried by *Atlantis* to Mir. He would go on to serve as principal investigator for seven additional space experiments that, like his one, examined how plants react

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“ [Teacher-scholar is] one of my favorite phrases ... I think it fits in really well with what's going on at Florida Tech.”

—John Z. Kiss

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when exposed to different environmental stimuli.

Kiss was also increasingly involved in administrative matters. At Miami University he was chair of the botany department among other roles. And for his next job at the University of Mississippi, he was hired as dean of the graduate school. It was his most prominent leadership role to date—until four years later. In 2016, he was named dean of the College of Arts and Sciences at UNC Greensboro.

## INCLUSIVE APPROACH

As a higher education leader who straddles the classroom and the board room, Kiss knows well the value of seeking input from stakeholders, and in particular, faculty.

"I like to get faculty input on a lot of things rather than just me saying, 'Hey, guys. This is what we're doing.' I think faculty are more likely to like that approach."

Kiss is working with Chief Research Officer Hamid Rassoul to revive the Research Council, which he believes can be an important nexus between university and faculty for research endeavors.

Kiss is also excited about growing external research funding at Florida Tech and investing in new faculty.

## A MESSAGE FROM THE FLORIDA TECH ALUMNI ASSOCIATION

Hello Panthers!

Fall has arrived at Florida Tech, which means a fresh school year has started, and Panthers new and old have returned to campus.

When I reflect on my days as a Panther, I have fond memories of the athletic teams I participated in, intramural sports, my sorority sisters and, of course, the parties. But what stands out most are the relationships I made that I still cherish today.

Before coming to Florida Tech, I lived in Connecticut and didn't fully realize the vast world filled with different people and cultures that were out there. My first roommates were from Canada, Trinidad, Long Island, New York and, later, Bosnia.

My classes consisted of people from all over the world, and a group of us started having dinner parties, where we would each bring a dish from our culture to share. The college experience I had was much more than an excellent education. It included learning about the people who make up our beautiful world and how our differences make life that much more interesting. It also sparked my joy to travel to visit the friends I made during my years at Florida Tech.

I would be remiss if I didn't mention the faculty and staff of Florida Tech who made a huge impact on my life. Then and now, they are always available to

help students, always willing to assist and direct them throughout their college careers so they can reach their goals and succeed.

I appreciated their guidance as a student, and I appreciate their mentorship and friendship now. There is a reason why Florida Tech in 2024 was ranked sixth in the country for student experience among 400 other universities by *The Wall Street Journal*!

When I walk the campus today, I see new buildings and new experiences that cause me to stop and look in awe at how far we have come. Many of those changes have come because of the time, effort and donations of alumni who have given back to the university.

It is an honor to be the president of the Florida Tech Alumni Association. Remember, your experience with Florida Tech doesn't end at graduation; you're a Panther for life!

If you're interested in getting involved with the Florida Tech Alumni Association or want to attend one of our biannual meetings in person, please email us at [alumni@fit.edu](mailto:alumni@fit.edu) to reserve your place.



### YOUR ALUMNI ASSOCIATION OFFICERS

#### **Sherry Acanfora-Ruohomaki**

'93, '00, '05 M.S. | President | Melbourne, FL  
[sherry@facetscg.com](mailto:sherry@facetscg.com)

#### **Ameen Sarkees** '89

Vice President | Merritt Island, FL  
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#### **Warren Pittorie** '15, '18 M.S., '22 Ph.D.

Treasurer | Melbourne, FL  
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#### **John Robertson** '13

Secretary | San Juan Capistrano, CA  
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#### **Chris Fernando** '02

Member-at-Large | Raleigh, NC  
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#### **Fin Bonset** '96, '99 MSA

Past President | Indialantic, FL  
[fbonset@vhb.com](mailto:fbonset@vhb.com)



## Larry Pollack Alumni Terrace

The ceremonial ribbon cutting of the new Larry Pollack Alumni Terrace was held Aug. 13 in conjunction with the legacy student reception. This outdoor gathering space is located at the Folliard Alumni Center.

Scan to view the full event photo gallery:





## 1970s

**HARRY MCGINNIS** '71, '73 M.S., has been teaching for Liberty University Online since 2012 in its public health and MPP programs and transitioned to the Helms School of Government in 2017. He also volunteers at the Woodstock, Georgia, Police Department, writing grants to federal and state agencies and foundations.

**1 MARIAN DIONNE** '76, '90 M.S., and her partner, **GENE ANGUS** '76, visited Scotland during summer and ran into fellow Florida Tech alum Lt. Col. **LOREN PEELE** '85 M.S. with his wife when they were all placed in the same tour group.

## 1980s

**2 RON DUBOIS** '82, '82, '87 M.S., recently celebrated

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**alumnotes@fit.edu**

37 years of marriage, two beautiful daughters and 50 years of world experience.

**3 MARVIN GIBSON** '82 is celebrating retirement from his multiple careers in the military, manufacturing and intelligence sectors. He is now living in the southwest Virginia Appalachia region with his wife, Sabrina, and enjoys hiking, biking, swimming and surfing.

**4 PAUL CECALA** '85 A.S., '85, published his second book, *Take Control of Your Job Search: A Workbook of All the Tools Needed for a Successful Job Hunt*, which hit the Top 10

Best Sellers list in its category for three weeks on Amazon.

**5 LARRY POLLACK** '85 M.S. showed off his Panther Pride while visiting The Cape of Good Hope in South Africa in March.

**RETIRED COL. JOSEPH WALDEN** '88 MBA, '89 M.S., was honored with the 2024 Pros to Know Award by Supply & Demand Chain Executive. This award recognizes outstanding executives whose accomplishments offer a roadmap for other leaders looking to leverage the supply chain for competitive advantage.

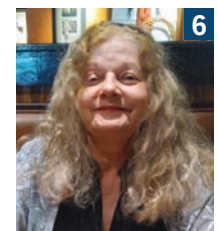
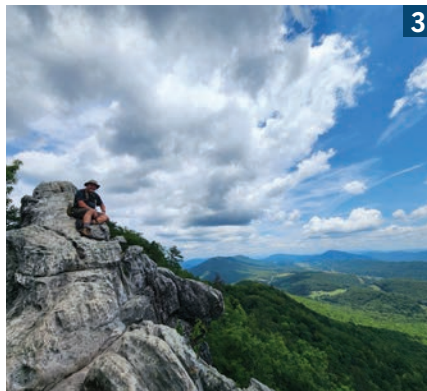
## 1990s

**6 JACQUELINE RESLER MALTRY** '90 MBA is a teacher at Schiller International University, educating students across five continents utilizing the same information that she gained as a student at Florida Tech. Her students lovingly call her their "American mom."

**7 OKSANA (FUNG) WALL** '93, '95 M.S., is celebrating her daughter, Carys Wall, becoming a Florida Tech Panther in fall 2024. Carys will study marine biology.

**8 DANIEL KESSLER** '95 Psy.D. is the co-owner of a group of telehealth psychology practices, Veritas Psychology Partners, and practices in Florida virtually from Minnesota.

*continued on page 36*



Location, location, location! For **LUCY FREEMAN** '21, the adage proved to be true.

“I knew I wanted to do aerospace engineering, and when the postcard arrived my senior year of high school, I researched the university and discovered it’s right on the Space Coast, surrounded by defense companies,” Freeman says. “I was also a Disney kid growing up and loved the beach, so the location, for me, was exciting.”

Through her connections at Florida Tech as a student, Freeman secured a job after graduation at Piper Aircraft, where she is now a liaison engineer II.

Within this role, Freeman works to modernize aircraft designs through CAD modeling, assists in building planes while they’re in the factory and tests them to ensure structural integrity.

“Working for Piper, I’ve had even more exposure to Florida Tech since graduation,” Freeman says. “Our location in Vero Beach is right down the road from campus, and I’ve been able to reconnect with all of the other 20-plus alumni who work here.”

In summer 2023, Florida Tech announced an exciting partnership with Piper Aircraft to purchase eight new 2024 Pilot 100i airplanes to add to its fleet.

The \$3.2 million future-facing acquisition will bring the number of aircraft in the fleet up to 46 planes, almost all of them made by Piper Aircraft.

The first four planes arrived at Florida Tech in May, and Freeman was part of the project, designing the planes’ surfaces and wings.

“Seeing the Florida Tech airplanes leave our headquarters in Vero Beach was satisfying, since I had worked on all their components, from the fuselages to flight testing,” Freeman says. “I was piloting one of the planes before it was delivered to Florida Tech, making sure it was ready, and I looked out at the wings and was like “Dang, I did that!”

Freeman’s next high-flying adventure with Piper Aircraft will take her across the United States, flying about 2,400 statute miles in four days and competing in the Air Race Classic. The event is an all-women-piloted competition that starts in Carbondale, Illinois, and ends in Loveland, Colorado.

The women who fly in this event range from ages 17 to 90 and come from diverse professional backgrounds, such as students, teachers, doctors and air traffic controllers.

Piper Aircraft is supporting Freeman and Carly Shukiar, the team’s pilot in command who also happens to be Florida Tech’s fleet sales manager, by sponsoring their plane, Patty Mae.

“The Air Race Classic helps to continue encouraging women’s involvement in aviation,” Freeman says. “I’m excited to meet all of the women from different parts of the country competing and doing difficult things in aviation.”

When asked what advice she would give to current Florida Tech students, she says, “Take it all in but know that you don’t have to be the best at absolutely everything that you’re doing. You can—and will—do it.”



SPOTLIGHT ON

# Lucy Freeman

**FLORIDA TECH CONNECTION:** '21 B.S. Aerospace Engineering

**IDEAL CELEBRITY DINNER GUEST (ALIVE OR DEAD):** Amelia Earhart

**FUN FACT:** I’m also a commercial pilot

**SUPERHERO YOU’D BE:** Scarlet Witch

**YOUR MOST LISTENED-TO PODCAST:** “Rise and Run”

**FAVORITE MUSIC GENRE:** Alternative rock

—Erin Alvarado

continued from page 33

## 2000s

**9 KATE CIEMBRONOWICZ** '00 is working offshore building the first United States offshore wind farm. Her role in this project is client representative. A such, she installs monopiles, power cables and wind turbines. Ciembronowicz also was a part of the South Fork Wind project that is providing power to Long Island, New York.

**10 MARCIA ALVARADO** '04 is the creative mind behind The Alvarado Experience, a fashion, architecture and lifestyle blog. As an accomplished engineer, professional model, activist and relentless dreamer, she is unafraid to conquer new heights. Her passion for both architecture/engineering and modeling is vividly expressed through her unique sense of style and fashion. Alvarado’s innovative approach drives her to expand the possibilities in androgynous fashion, lifestyle and experiences, consistently pushing the boundaries of societal norms.

**CASSANDRA “CASSIE” (MOLL) GONYER** '08 teaches high school science for Brevard Virtual School while living in Daytona Beach, Florida. She is also running for Volusia County School Board, District 2, and looks forward to the primary election in fall.

## 2010s

**11 NATALIE (HOMA) BURGETT** '11 M.S. and her husband, Paul, recently welcomed their Panther Cub, Alexander.

**12 PAUL REGENCIA** '11, '13 M.S., is on the software design team for various systems, supporting the Artemis missions. He and his wife, Caitlin Regencia, celebrated the fifth birthday of their son, Andrew, Oct. 31, 2023.





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**13 PATRICE BIVINS** '13 MPA, '15 MBA, is writing a memoir about her life story and the creation of her nonprofit organization, Valley Arts and Entertainment Inc., which raises money for scholarships for music students in Huntsville, Alabama.

**JESSEBELLE PICHARDO** '14, '17 M.A., has returned to Florida Tech to pursue her third degree from the university as a doctoral candidate in clinical psychology through the Psy.D. program.

**14 PREETI SALI** '15 M.S. and **NIRAJ PATEL** '15 M.S. welcomed Panther Cub, Hritvi, on Dec. 2, 2023.

She says life is all about giggles and diapers now!

**15 ARIANA (TATE) LAFLAMME** '16 and **IAN LAFLAMME** '16 were married in April in Providence, Rhode Island. The pair met four years after graduation on a blind date thanks to another Florida Tech alum.

**FATIMA GALES** '19 M.S. has been accepted to Liberty University's business administration Ph.D. program, focusing on supply chain and logistics.

*continued on page 36*

## FLORIDA TECH ATHLETICS

### CALLING ALL ATHLETICS ALUMNI!

Help us update our athletics alumni database and identify candidates for the "Where They Are Now" section of [floridatechsports.com](http://floridatechsports.com). Complete the form »



### Welcomed a Panther Cub?

Contact us for a free infant T-shirt, bib or onesie. Then, send a photo of your cub in his/her Panther swag with an AlumNote about yourself, and it may appear in the magazine.

For details: [alumni@fit.edu](mailto:alumni@fit.edu)

What happens when you combine plant sciences, biotechnology and perfume?

Answer: Sawai Fragrances USA, a leader in the Indian fragrance market, spearheaded by CEO **PURVI JAIN-BAFNA** '15 M.S.

The company was created in 1965 by Jain-Bafna's grandfather, Sawailal Jain, in Kannauj, India, fondly known as the country's "perfume city."

After completing her undergraduate degree at the University of Mumbai, Jain-Bafna's love of STEM led her to enroll at Florida Tech, which intrigued her with its lab courses and student research opportunities.

"While in school, pursuing the perfume business with my family wasn't something that I planned," she explains. "But during my studies at Florida Tech, I started to realize the connection between the perfumery space and the science of plant molecules, which can help create flavor components."

Jain-Bafna gained a vast knowledge of these topics after working in associate professor Andrew Palmer's laboratory.

"The lab I worked in was located in the biotech wing," she says. "I think having the exposure to that world and gaining that knowledge while I was a student showed me that I could pursue something similar for my career."

Jain-Bafna advises students, "Explore outside your field! There's so much that Florida Tech has to offer that you may find yourself going down a different, and even more exciting, path."

Inspired, Jain-Bafna moved back to India after completing her master's in biotechnology at Florida Tech and spent the next eight years learning the art of perfumery alongside her family.

During this time, she became Sawai Fragrances USA's master perfumer, combining her love for fragrance chemistry and knowledge of science.

Traditionally, perfumeries in India pass the same recipes down for generations, but Jain-Bafna's new lab skills and nose for science helped set the company apart from the competition by creating brand-new formulas.

In July 2022 she was promoted to CEO and moved to New York City to start managing the business side of the company.

Within this role, she oversees a team of 40 employees located throughout the United States, India and the United Kingdom, overseeing social media, logistics, marketing, brand management and warehouse operations.

Over the last six decades, the company has expanded its services to include private labeling, essential oils, ambers, sanitizers and personal and home-care products, as well as launching two consumer-facing brands: Eze Perfumes and Merve Perfumes.

"In the beginning, I was in a very creative role with the company," Jain-Bafna says. "Now, as CEO, it's more about running the brand all the way from a different continent. I think that challenge makes my role even more exciting!"

—Erin Alvarado



#### SPOTLIGHT ON

## Purvi Jain-Bafna

**FLORIDA TECH CONNECTION:** '15 M.S. Biological Science Biotechnology

**FAVORITE SCENTS:** Stellar Times from Louis Vuitton, Narciso Rodriguez for Her and Jasmin Rouge by Tom Ford

**MORNING PERSON OR NIGHT OWL:** Night owl

**TOP MOVIES:** "The Blind Side" and "The Proposal"

**FAVORITE WAY TO RELAX:** Walking to the waterfront and looking at the New York City skyline with my husband and a cup of coffee

continued from page 35

**16 KIRSTEN GLANTZ-NEVINS** '19 M.S. welcomed her newest Panther Cub, Emmitt, in May. He joined his big sister, Evelyn, age 3.

## 2020s

**17 ZACHARY BEHLOK** '21 A.S., '22 A.A., '22, was nominated for 2024 Teacher of the Year by TeachKind, the humane education division of People for the Ethical Treatment of Animals (PETA).

**DELANEY (HARDBOWER) SLATON** '21 accepted a new position as an environmental engineering specialist III with the Florida Department of Environmental Protection. She works in the Resilient Florida Program to help prepare communities for the impacts of sea level rise, intensified storms and flooding.

**MICHAEL DUNIEC** '22 M.S. has finished authoring *Crypto and Bitcoin: A Millionaire Mindset for Opportunity*, a book that encapsulates his journey with bitcoin mining since its early days in 2011, when it was valued at just 70 cents, to its current valuation, exceeding \$76,000.

**18 JAMES ROBBINS** '23 has accepted a position in an independent branch of the United States Department of Treasury with the Office of the Comptroller of the Currency as an assistant national bank examiner and will move to Lubbock, Texas.

**19 HARSHITHA SAMUDRALA** '23 M.S. is working as a software engineer trainee, as she eagerly looks for a role as a software engineer.

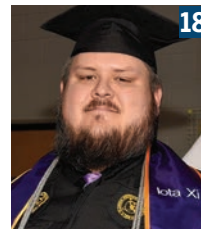
**20 KRISTEN BECKER** '24 Ph.D. is an engineering specialist with the Florida Department of Environmental Protection in the Office of Resilience and Coastal Protection. Her work involves modeling platforms to determine 30-year erosion



projections on the coastal system throughout Florida, slope stability and storm erosion model studies, and reviewing documents for inlet/beach management.

**21 COLLIN DUKE '24** has joined the National Test Pilot School in Mojave, California, as a graduate assistant, where he will complete the master's in flight test engineering program and professional course. As part of the professional course, he will fly various demonstrations and data flights in 11 different aircraft.

**SAMAN SABETI '24** M.S. received an amazing job offer that increased her previous salary by double within one day of finishing her master's degree at Florida Tech. She credits all her professional success to her education from Florida Tech.



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## IN MEMORIAM

**JERRY SANSON** '72 M.S. passed away in Rockledge, Florida, March 6 at age 76. Sanson had recently retired after working 45 years as a government relations consultant. He loved to sail and the environment, helping to establish the first Earth Day in Brevard County.

**TIMOTHY ANDREW YALE** '87 passed away Feb. 8 at his home in Millers Creek, North Carolina, at age 63 after a courageous battle against pancreatic cancer.

**BARBARA HUTH** '88 passed away May 15 in Crestview, Florida. Huth worked at Florida Tech in the '80s as part of the printing department.

**SEAN HENVILLE** '90 passed away in March at age 54. Henville had a distinguished

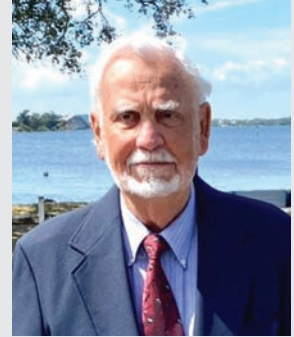
aviation career, with over 10,000 hours of flight experience. He will also be remembered for his large impact on the Caribbean travel industry and proud Nevisian heritage.

**SÉBASTIEN CARREAU** '01 passed away May 2. Carreau will be remembered for his unwavering dedication serving various airports and clients as an airport planner for over 20 years.

**ANENE L. NNOLIM**, past director of both Florida Tech's Patuxent extended studies site in Maryland and its Spaceport site in Titusville and currently an adjunct faculty member in the Bisk College of Business, passed away July 25. He was 74. Nnolim came to Florida Tech in 2009.

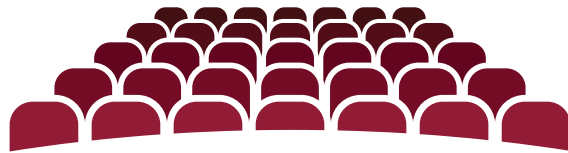
## Kenneth Crooks

It is with sadness we report the passing of **KENNETH ELMER CROOKS**, the beloved and influential professor and administrator in the College of Aeronautics whose classes in aviation law and ethics—and caring demeanor—helped shape the lives and careers of future deans, professors and pilots over his 22 years at Florida Tech. Col. Crooks, a peerless pilot and retired U.S. Air Force officer, passed away peacefully on July 28 at his Melbourne home at age 92.



"He was a pioneer in aviation, a treasure in education, and the loving and inspirational foundation of four generations of family," said son Kerry Crooks.

For the full obituary, please visit [link.fit.edu/crooks-in-memoriam](http://link.fit.edu/crooks-in-memoriam).



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# Home Court Advantage

By Erin Alvarado

**PEDRO BELTRAN** '92, Ph.D., is chief scientific officer at BridgeBio Oncology Therapeutics (BBOT), a clinical-stage biotechnology company that focuses on treating cancers by inhibiting driver oncogenes.

“This can be a very frustrating, time-consuming, 24/7 job. There's just no way around it,” Beltran says. “But when you see somebody battling cancer with multiple lung tumors, even after six lines of therapy and no more options, and they take your medicine, which results in their tumors shrinking, or they disappear completely ... there's nothing more exciting, fulfilling and motivating than that!”

Beltran's passion for DNA has always been in his DNA, even at a young age growing up in Lima, Peru.

Inspired by the DNA revolution that started in the '60s, Beltran knew he needed to look outside of his home country to pursue his love of DNA and turn it into a career.

With the help of his father, Beltran discovered Florida Tech through its ELS Language Center.

“When I graduated from high school, I didn't speak any English because the school I attended in Lima was German,” Beltran says. “My father's work had him traveling back and forth from Peru to Miami a lot, so he researched nearby language institutes to help me learn English and found Florida Tech.”

After moving to Melbourne, Florida, and attending the university's language program for six months, Beltran couldn't imagine pursuing his education anywhere but Florida Tech.

“I loved the community and the friends I had made, so I decided to apply,” Beltran says. “I was already living on campus and, at the same time, starting to get some exposure to the genetic engineering programs the university had to offer.”

Once enrolled at Florida Tech, Beltran felt confident in his desired career path after spending two summers in now emeritus faculty member Alan Leonard's lab.

“His patience and dedication to training students in the lab and then performing molecular biology experiments with us kept me engaged and convinced me that I have made the right decision,” Beltran says.

After completing his education at Florida Tech and receiving a bachelor's degree in molecular biology, Beltran knew he wanted to make a difference with his education and pursue medicine creation.

Under Leonard's guidance, Beltran started applying for grad schools and was selected to attend the University of Texas MD Anderson Cancer Center in Houston. There, he completed his Ph.D. in cancer biology in the laboratory of professor Isaiah J. Fidler, chairman of the cell biology department.

Beltran then found himself back in Florida at the University of Miami, where he completed his postdoctoral fellowship focusing on molecular and cellular pharmacology with John Bixby.

“My goal was and still is to make medicines for people with serious diseases,” he says. “So, everything that I do is based on that North Star.”

In his current role, Beltran manages a team of scientists who create, design and test molecules that will be turned into medicines and delivered to clinics that help cancer patients. This process, developing a new treatment from beginning to end, can take more than 10 years and cost upward of \$1 billion dollars, he says.

“An important part of this process is to mentor the next generation of scientists that will continue adding pieces to our knowledge, ensuring



**FLORIDA TECH CONNECTION:**

'92 B.S. molecular biology

**FAVORITE ACTIVITY TO RELAX:**

Running

**NOSTALGIC DISH FROM YOUR HOME**

**COUNTRY:** Lomo saltado (A stir-fry typically served with steak, rice, onions, tomatoes and French fries.)

the creation of better medicines in the future,” Beltran says.

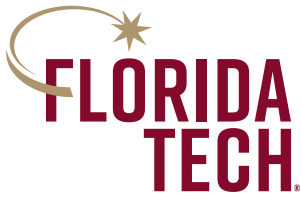
BBOT's main focus is driver-oncogenes, genes that can drive tumor growth on their own. BBOT is focused on the most important oncogenes: RAS and PIK3CA.

Because 35% of all cancers are driven by RAS, it is the most mutated oncogene in human cancer.

Beltran and his team are very excited about one of their novel projects, BBO-10203, creating a small molecule that breaks the interaction between RAS and PIK3CA. He expects BBO-10203 to start phase 1 clinical trials later this year.

Beltran has authored more than 10 Investigational New Drug Applications and 40-plus peer-reviewed manuscripts and abstracts, has spoken at multiple national and international conferences and holds various patents that describe novel ways to treat malignant diseases.

In 2022, Beltran was honored with Florida Tech's Outstanding Alumni Award for Science from the College of Engineering and Science.



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# THE BIG, FUN, ALUMNI SURVEY

**IT'S BACK! THE 2024 BIG, FUN FLORIDA TECH ALUMNI SURVEY IS LIVE.**

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\*All participants may enter to win a Florida Tech prize pack worth \$250!