



Pursuit

University of Central Florida
College of Sciences
2019-2020



PURSUIT

2019-2020

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A MESSAGE FROM THE INTERIM DEAN

This past academic year was remarkable for the College of Sciences. We welcomed Dr. Alexander Cartwright as the new president of UCF, and wished a bittersweet farewell as COS Dean Michael Johnson, Ph.D., moved into his new role as interim provost and vice president of Academic Affairs. And of course we cannot forget the coronavirus pandemic, which impacted every aspect of our professional and personal lives.

In spite of it all, our faculty, staff and students achieved incredible things this year. Some of the highlights include:

- **UCF Planetary Sciences** faculty played a critical role in expanding our understanding of the cosmos through alliances with NASA, SpaceX, Blue Origin and United Launch Alliance.
- The **UCF Marine Turtle Research Group** continues its 40+-year legacy of monitoring sea turtle nests in the Archie Carr National Wildlife Refuge.
- **UCF Coastal** established noteworthy partnerships, including the newly established Econfina River State Park research facility in the Florida panhandle. This is Florida's first partnership between a public university and a state park.
- **UCF RESTORES** continues to change lives for the better, with 70% of veterans, activity duty military and first responders reporting improvement of post-traumatic stress disorder symptoms. The clinic adapted its model during the lockdown to offer telehealth services and a video mental wellness series.
- UCF is a leader in **data science**, establishing the nation's first data mining program in the 1990s. We have a multidisciplinary coordinated effort to push the frontiers of this discipline, including starting some of the nation's first integrated data analytics degree programs.
- **Sociology faculty** partnered with the Brevard County Sheriff's Office to improve their identification of strangulation victims and better prosecute those responsible. Their work yielded multiple positive outcomes, including an increase of felony over misdemeanor battery charges.

The '19-'20 academic year brought challenges no one anticipated, but it has not slowed down our COS Knights. If anything, it has showcased the resilience, innovation and dedication that our faculty, staff and students bring every day to their work and research.

Charge on COS Knights!

A handwritten signature in black ink that reads "Tosha Dupras". The signature is fluid and cursive.

Tosha Dupras, Ph.D.

Interim Dean, UCF College of Sciences

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LEADING THE CHARGE

This past year brought several leadership changes. The new leadership lineup ensures uninterrupted success as we emerge from remote instruction and quarantine and into a new chapter for UCF.

Alexander Cartwright, Ph.D.

New Role: University President

Previous Role: Chancellor, University of Missouri



Cartwright is a first-generation college student who earned a GED and attended community college before receiving his Ph.D. and becoming an internationally recognized scholar in optics. His prior leadership roles include chancellor at the University of Missouri, where he raised \$1.3 billion for the university.

Michael Johnson, Ph.D.

New Role: Interim Provost & Vice President for Academic Affairs

Previous Role: Dean, UCF College of Sciences



Johnson brings 30 years of experience at UCF to the role of interim provost, including roles as a physics professor, associate dean and senior advisor to the provost. He took the role of dean of College of Sciences in 2011.

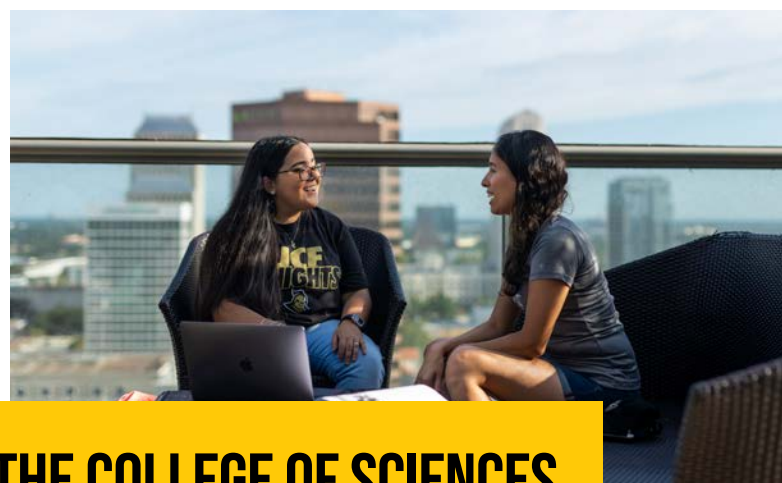
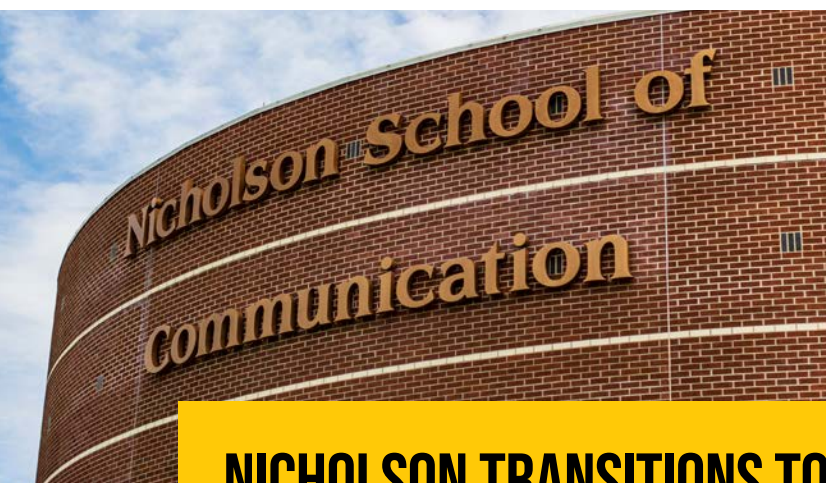
Tosha Dupras, Ph.D.

New Role: Interim Dean, UCF College of Sciences

Previous Role: Associate Dean, UCF College of Sciences



A professor of anthropology, Dupras' leadership roles include chair of the Department of Anthropology and associate dean in the College of Sciences. Her past recognitions include UCF Women Making History in 2016; the UCF College of Sciences Excellence in Undergraduate Teaching Award (three times!); and a three-year appointment as an associate research scientist at the American Museum of Natural History.



NICHOLSON TRANSITIONS TO THE COLLEGE OF SCIENCES

On July 1, 2020, the Nicholson School of Communication and Media moved its reporting structure completely under the College of Sciences. Programs like film, digital media and the downtown campus' Florida Interactive Entertainment Academy (FIEA) previously fell under the College of Arts and Humanities (CAH).

“We are grateful for the leadership and expertise CAH poured into developing these world-class programs, and look forward to producing industry leaders through Nicholson’s programs,” says COS Interim Dean Tosha Dupras.

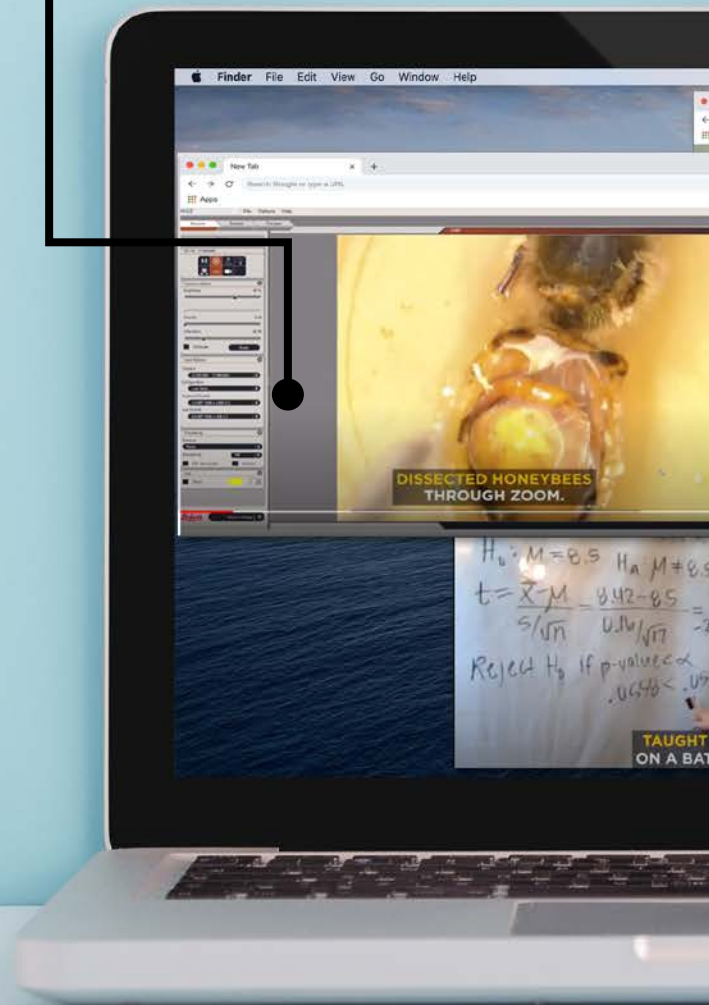
KNIGHTS RISE TO PANDEMIC CHALLENGE

Students, faculty and staff had no idea at the beginning of the Spring semester just how great an interruption they were facing come March. As the global coronavirus pandemic gained strength, UCF leadership made the decision in March to switch to remote instruction and work. Video conferencing quickly emerged as the best way to keep students learning. Faculty adapted their classes, and everything from bee dissections to mapping a dig site went online.

It was a heavy lift on short notice, but Knights always rise to the challenge.

ZOOMING IN

Studying under the Arboretum Director, Patrick Bohlen, Ph.D., aspiring biologists got a close-up look at bees, thanks to a dissection via scope camera broadcast on Zoom.



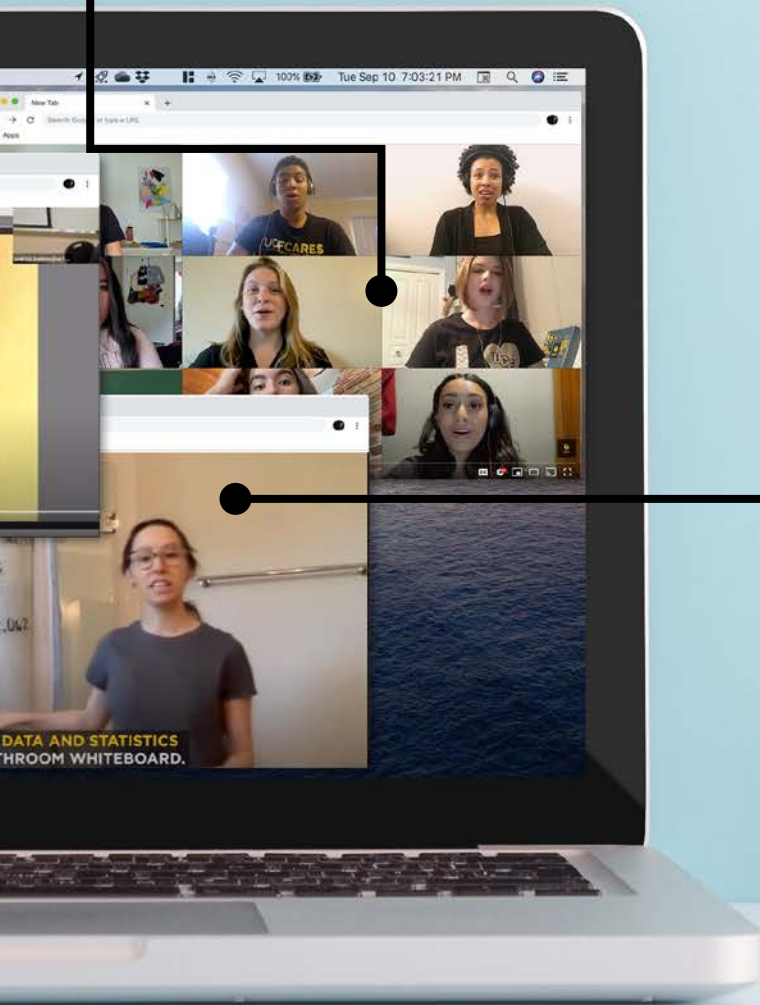


ONE VOICE

One of the greatest challenges of the pandemic was separation from friends, co-workers and the physical campuses that hold so many memories. (Read: Weeks without seeing the Reflecting Pond). We found creative ways to bridge that distance and reinforce our identity as Knights, including a special virtual performance of our “Alma Mater” by current and past members of UCF choruses.

CREATIVE SOLUTIONS

Lagging Wi-fi and lack of a physical audience weren't the only problems with remote teaching. Faculty were also tested to convert their living rooms and, in some instances bathrooms, into classrooms. Instructor Brittany Durrani taught her statistics classes using a shower door as a whiteboard!



UCF COASTAL

UCF Coastal notched several victories in its second year, including a new research station at **Econfina River State Park**.

THE FUTURE OF COASTAL

A first-of-its-kind agreement between a university and a Florida state park centers on a new research facility that will open exciting opportunities for UCF students and faculty. Located in Econfina River State Park, in rural Taylor County, this former restaurant will be renovated to serve as a research station for exploring the surrounding ecosystem. It will also provide a base for several undergraduate field courses that will be invaluable to students by providing them hands-on opportunities to conduct field research.

Econfina's ecosystem, which spans coastal seagrasses to upland pine forest, is relatively pristine and free of pollution thanks to state and federal environmental protections, along with the remote location. Its low-lying ground is also an excellent model for coastlines around the world threatened by rising sea levels.

A big focus of the project will be community involvement, including area residents, in basic research and outreach. "It's critical that the knowledge gained through research is transferred back to the people in easy-to-understand language," said Graham Worthy, Ph.D., director of UCF Coastal.

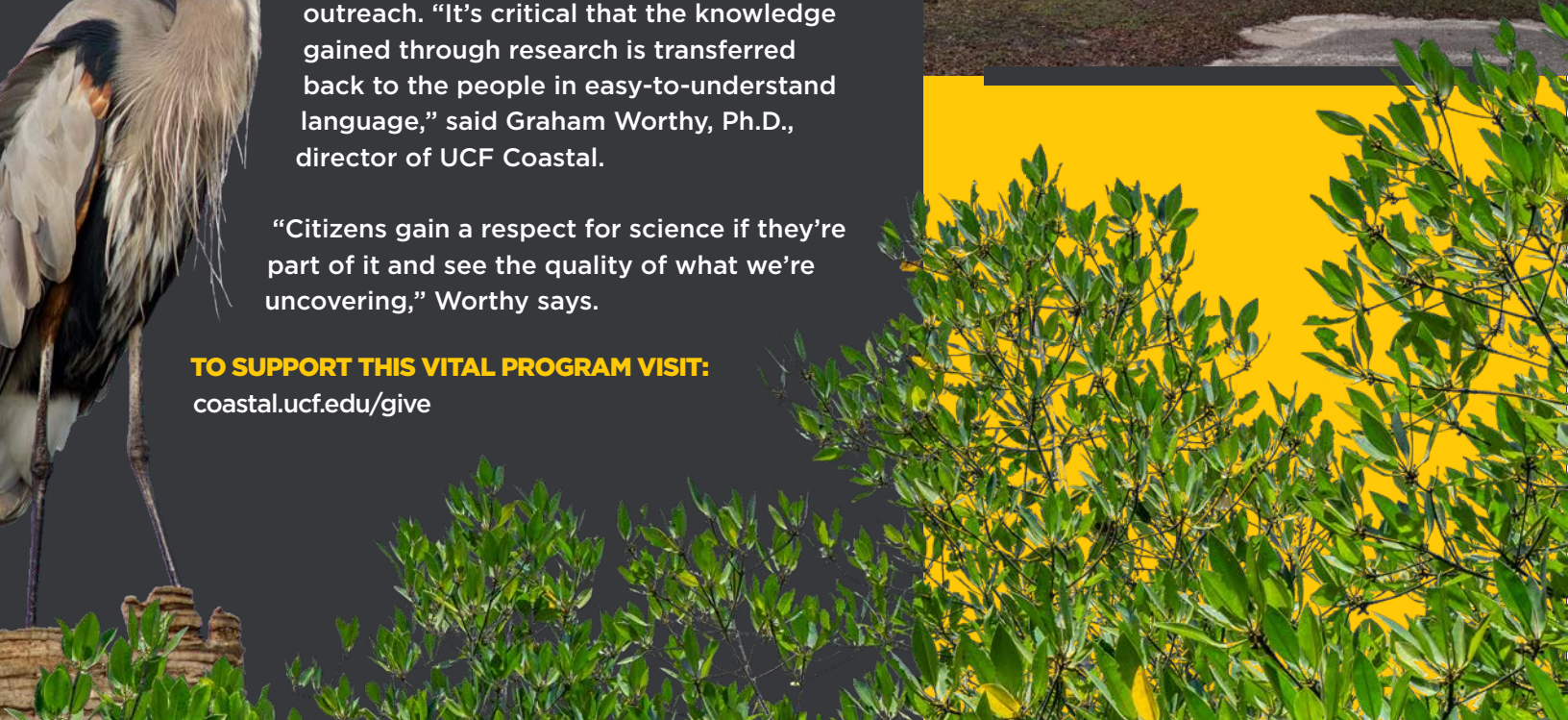
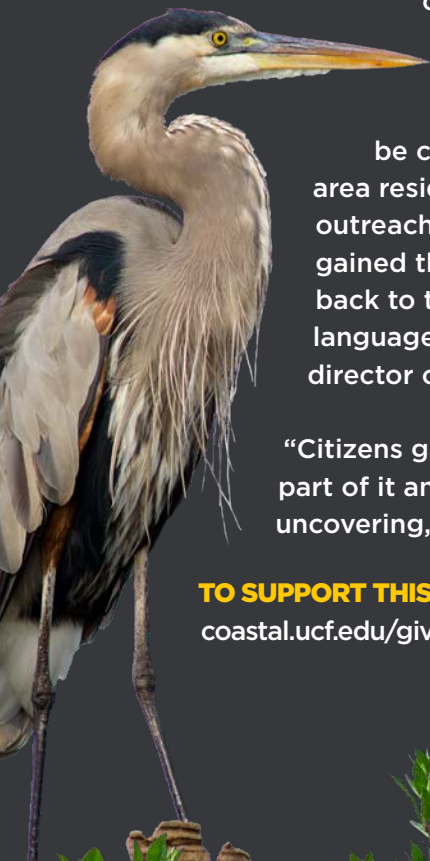
"Citizens gain a respect for science if they're part of it and see the quality of what we're uncovering," Worthy says.

TO SUPPORT THIS VITAL PROGRAM VISIT:
coastal.ucf.edu/give

"Research undertaken at this unique site will help us better understand the threats to coastlines that so many states and nations face. Our findings will help solve some of the biggest challenges to our coasts and bring us national prominence."

GRAHAM WORTHY, PH.D.

UCF Coastal Director and Chair of the Department of Biology.



UCF COASTAL ADVISORY BOARD

UCF Coastal has established an advisory board of passionate supporters. Our board members bring years of advocacy in land and water conservation and generous philanthropy in our coastal communities.

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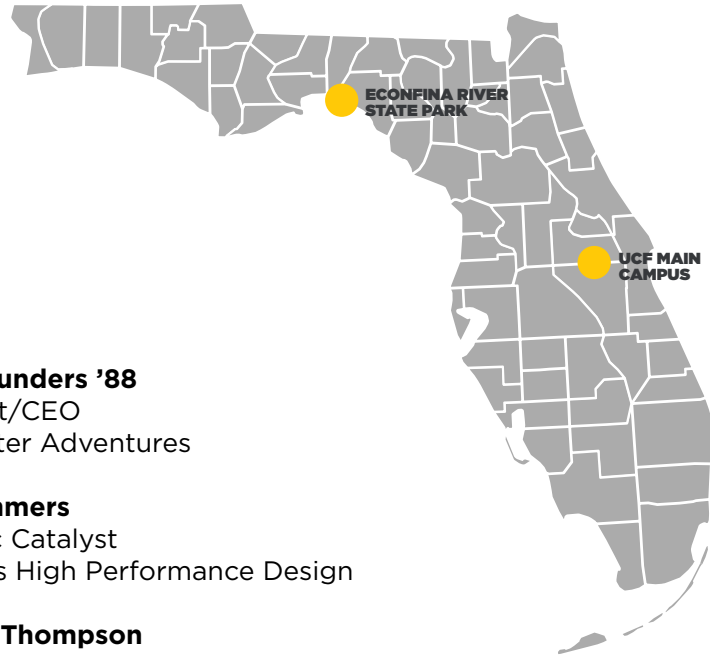
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Graham Worthy, Ph.D.

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Pegasus Professor and Chair,
Department of Biology



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Kristy Lewis, Ph.D.

Assistant Professor, Department of Biology, College of Sciences

KNIGHT AT THE MUSEUM

A SCIENCE SPEAKER SERIES



SOCIAL MEDIA PRESENTATION GAINS FOLLOWERS

A new event debuted this fall through a partnership between the College of Sciences and the Orlando Science Museum. Dubbed “Knight at the Museum,” this free event showcased the fascinating exhibits at the downtown museum and the expertise behind UCF Coastal.

Guest speaker Claire Connolly Knox, Ph.D., shared the results of her research into the role social media plays during disaster. Using case examples from studying hurricanes Sandy, Irma and Michael, Knox showed how Twitter, Facebook and Instagram can predict both citizen behavior and how first responders can use that data in real time to save lives.

The pandemic shelved a second Knight at the Museum planned for the Spring semester, but the success of the original all but guarantees a continuation of the series.

**FOR MORE INFORMATION ON
UPCOMING EVENTS VISIT:**

ucfalumni.com/events



**COLLEGE OF SCIENCES
ALUMNI BOARD**

We're invested in our students for the long haul. Our Alumni Board supplies valuable advice on how to attract other COS graduates, design extracurricular programs for current students and market our college to the broader community.

If you're interested in joining the College of Sciences Alumni board, contact:

sciences@ucfalumni.com

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A SHOCKING DISCOVERY

It's not every day you get a call from the Guinness Book of World Records, but then it's not every day you record the highest-ever voltage generated by an electric eel, or any creature for that matter. Biology Associate Professor Will Crampton, Ph.D., can claim both as a result of his Amazonian research.

The record-shattering 860-volt eel was discovered during an expedition to the Tapajós River of Brazil. The voltage of most home and business outlets today is 120 volts.

This is the first new species of electric eel since Carl Linnaeus described *Electrophorus electricus* more than 250 years ago. The new species that produces the record voltage is named *Electrophorus voltae* after the Italian scientist Alessandro Volta, inventor of the electric battery.

“When I measured the Tapajós eel I immediately knew something was unusual,” says Crampton, an expert on electric fish and one of the lead authors on the Nature Communications paper.

News of the discovery spread fast worldwide. Crampton was soon contacted by the Guinness Book of World Records to confirm the record voltage. The previously reported maximum voltage was about 600 volts. *Electrophorus voltae* was officially recognized as both “most electric fish” and “most electric animal” by the organization.



Discovering this record-breaking eel was unexpected. It began while Crampton was filming an episode of National Geographic’s Monster Fish with host Zeb Hogan in 2014 when a photographer was shocked by a large eel that had emerged from a hole in the river bank. While shocks from electric eels are unpleasant, they’re not deadly. However, this one left the photographer pale and shaky.

The magnitude of the shock was a clue that the eels in this part of the Amazon jungle are different, and a test proved that suspicion. Crampton began the process of measuring the voltage by stretching out the fish on a non-conductive plastic tarp and placing electrodes on its tail and snout. These electrodes were connected to a voltage-measuring oscilloscope. Because electric eels are air-breathing fish, being out of the water for a few moments does not harm them.

Crampton speculates the unusually high voltage of *Electrophorus voltae* may be related to the low electrolyte content of the rivers it inhabits, but he says that’s for future research.

One of the biggest takeaways, Crampton says, is the discovery of the two new species after more than 250 years of scientific discovery and research in the Amazon.

“It’s a testament to how important it is to preserve the Amazon’s incredible biodiversity,” Crampton says. “We’re still in the pioneering phase of uncovering what’s out there.”

TO SUPPORT THE BIOLOGY DEPARTMENT
sciences.ucf.edu/biology/give

An Intelligent Investment

UCF students pursuing careers in intelligence will continue to receive competitive advantages thanks to renewed federal funding for UCF's Intelligence Community Center for Academic Excellence (ICCAE).

The resources are particularly helpful for minority students, who are historically underrepresented in intelligence careers. ICCAE Director **Tom Dolan, Ph.D.**, anticipates investing the second round of funding into more scholarships and growing the internship program.

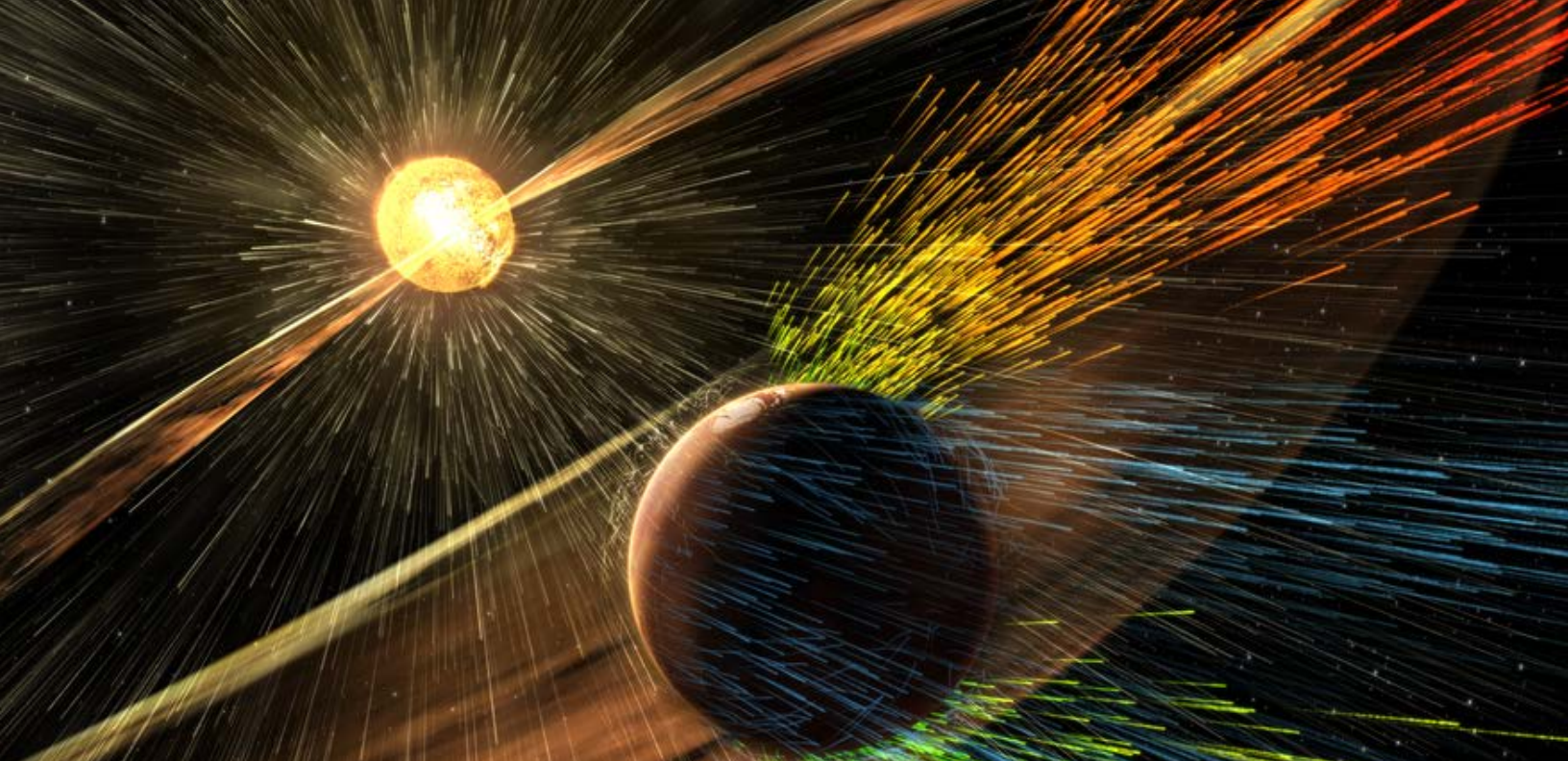


"We want the makeup of the intelligence community to more closely resemble America's demographics," Dolan says. "It should be informed by a wider base of understanding."

While the Hollywood image of intelligence brings up images of fast cars and shaken martinis, the available careers are far broader and varied than spycraft. While the CIA and FBI are obvious employers, each military branch, the Department of Defense, the National Security Agency and even the Department of Energy has an intelligence sector. Educating students about those jobs and helping them find work is the purpose of ICCAE.

"I have a strong commitment to seeing students succeed after college, and this is a really great tool to help people do that," Dolan says.

TO LEARN MORE ABOUT ICCAE VISIT:
sciences.ucf.edu/politics/iccae



STELLAR

P E R F O R M A N C E

New research into the streams of gases emitted by stars — called stellar winds — comes not out of its typical home in physics but mathematics.

Bhimsen Shivamoggi, Ph.D., spent three years applying his knowledge of algorithms to the question of why rapidly spinning protostars are not destroyed by their own massive centrifugal force. Shivamoggi’s idealized model is based on a key assumption of co-rotation between the stellar wind and its star, which was vindicated by recent observations made by the Parker Solar Probe.

That probe is named after Gene Parker, Ph.D., now an emeritus professor at the University of Chicago. Parker was the first to propose what’s now called solar winds in a groundbreaking paper in 1958. Shivamoggi first met Parker at an astrophysics meeting in Alpbach, Austria ten years ago. This encounter pushed Shivamoggi to try to advance the frontiers on a major astrophysics problem initiated by Parker.

“I feel so privileged to be a recipient of Parker’s benevolent mentorship,” Shivamoggi says.

Shivamoggi’s research gives an analytical formulation and uses the analogy of a rocket or jet engine’s afterburner to explain why rapidly spinning protostars are not broken up by their own massive centrifugal force. His paper was published in the journal *Physics of Plasmas*, and appeared as an editor’s pick for 2020.

While Shivamoggi is happy to further scientific understanding of stellar winds, it’s the opportunity to pay a tribute to his mentor, Parker, that means the most.

“It’s my personal gift to Parker,” Shivamoggi says.

TO SUPPORT MATHEMATICS STUDENTS AND PROGRAMS VISIT:
sciences.ucf.edu/math/give

LIFE AFTER DEATH

Studying Mummies at UCF

Associate Lecturer of Anthropology **Sandra Wheeler, Ph.D.**, has been teaching at the University of Central Florida since 2010, with a specialty in bioarchaeology. Her course, called Mummies: Life After Death (ANT 4027), is a big hit among anthropology and non-anthropology majors alike.



College of Sciences: How did the idea for this course come about?



Wheeler: “I study human remains from archaeological contexts as a biological anthropologist. My focus of research is in Egypt, which naturally lends itself to encountering mummies. When I

was thinking about what course would be interesting to take as an undergrad, mummies was an easy choice. But not just mummies; I wanted to talk about how we as anthropologists approach the study of mummies, and why different cultures decide to preserve their dead, and how they do that. We find preservation of the body or mummification all over the world, and it is one of the oldest patterns of intentional body disposal. I wanted to combine this idea of a global survey of different mummies found around the world with how we can use anthropological and scientific techniques to find out how cultures from around the world interacted (or interact) with their dead.”

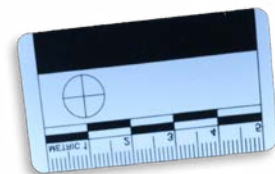
College of Sciences: How has the anthropological study of mummies evolved and changed throughout the years?

Wheeler: “Ethics has definitely changed; it guides us in terms of the type of analyses we can do. We’ve seen major positive changes towards ethical responsibilities of researchers in the past couple of decades, though more work needs to be done. We are seeing a less colonialist approach, and more respect for artifacts and bodies stemming from a culture’s ancestry. There are a lot more opportunities for open

dialogue with local populations, where anthropologists can engage with them and ask questions like, “Well what do you want to know about your ancestors?” or “What can we help you find out about your ancestors?”

College of Sciences: What are the uses and misuses of mummies?

Wheeler: “We actually have a whole module in the course on the uses and misuses of mummies. People used to use mummy fragments as paper, as medicine, people ingested them and used them in paint; the list goes on and on. I love anthropology because we get to engage with and try to understand the different beliefs of different culture groups. However, when you put some things into perspective, such as something as strange as endocannibalism (eating people within your community), you are able to look at it through a different perspective. This class can provoke different perspectives among students about death and about the uses of the mummified or preserved human body.”



TOUCHING HISTORY

The ‘DAM Mummy Hand’ comes from an early Christian cemetery in the Dakhleh Oasis, Egypt. The individual was naturally mummified and an oxidized ring can still be seen on one of the fingers. This image was taken as part of the analyses undertaken by the biological anthropologists (aka Bone Team) of the Dakhleh Oasis Project.

College of Sciences: How widely practiced is mummification in 2019?

Wheeler: “In modern times there are still cultures around the world that practice mummification or preservation of the body. Those bodies live in their houses with them until their families can afford funerals. Many cultures see funerals as the most important part of your life because it ushers you into the next phase. It is this bigger idea that transcends cultures and connects us as humans to the physical body.”

College of Sciences: What can students look forward to learning in this course?

Wheeler: “What I have found in teaching this course is that initially students feel discomfort in learning the processes of decomposition. But then comes the understanding of how different cultures deal with death and have different rituals and ceremonies surrounding it. This gives students an alternative perspective on something as powerful as death. Grief is universal and we all experience it — even primates and other mammals. So having a broader understanding on such a topic is sometimes a comfort to students in this course and what many students enjoy about the class.”

College of Sciences: What is your personal favorite part of teaching this course?

Wheeler: “I really enjoy the intersection of anthropology and science as applied to the human experience of death. As anthropologists we are uniquely positioned to ask good questions about the process of body preservation and culturally why these bodies are preserved. What I enjoy most is showing the diversity in the human experience in dealing with purposely and naturally preserved bodies.



ROMAN KELLIS

This wrapped, Roman period mummy was excavated from the Dakhleh Oasis, Egypt. This image was taken as part of the excavations and analyses undertaken by the biological anthropologists (aka Bone Team) of the Dakhleh Oasis Project.

Preservation of the body happens all over the world, not just Egypt, and I like to see student’s reactions when they realize this. This class is a great opportunity to have controversial discussions surrounding ethics, open dialogue with local communities and what the responsibilities of scientists and anthropologists are in the handling of mummies. We also do a mummification experiment using apple slices at the end of the course, and that is always a pleasure for me to read and engage with students.”

College of Sciences: Any other common misconceptions that pop up?

Wheeler: “So everyone is under the impression that the ancient Egyptians are the ones that came up with the process of mummification but actually, it dates back to ancient South America. That is the one misconception I debunk the most. If you have any other questions, come check the course out!”

TO SUPPORT CLASSES LIKE THIS VISIT:
sciences.ucf.edu/anthropology/give





Celebrated Author Brings Presidential Insight

Presidential historian **Jon Meacham** provided perspective on today's White House using the lens

of the past at a presentation in January called "The Art of Leadership: Lessons from the American Presidency."

Meacham, a Pulitzer Prize winner, started broadly, noting the presidency is a reflection of the American population.

"The presidency is in many ways a manifestation of all of us," he said.

Meacham next detailed four characteristics that exemplify a presidency: curiosity; honesty; humility; and empathy. He backed up these characteristics with different sketches of presidents, including Thomas Jefferson, John F. Kennedy and George H.W. Bush.

When asked how he came to pursue a career as a presidential historian, Meacham stated, "For me, history

was always a tactile thing." When discussing public figures he has met, Meacham named longtime U.S. Rep. John Lewis as an individual "as wholly good as a human being can be."

When asked how presidents bring out the best in the American people, Meacham stated that those presidents do so "contrary to pre-existing notions." He related this back to President Lyndon B. Johnson advocating for the Civil Rights Act "to his political peril." He stated these presidents "understood public sentiment."

Meacham then compared the legacy of today's presidents to those further back in the nation's history. He explained that it often takes around 25 years for stories of presidents to move from journalism to history. Nonetheless, the public's view of a president can change due to the politics of the present, as history can be revisionist. To exemplify this, Meacham ended his presentation with the statement "At best, if facts change we can change our minds."

The lecture was generously provided by the **LESTER N. MANDELL DISTINGUISHED LECTURE SERIES**, and hosted by the Office of Global Perspectives and International Initiatives.

FOR MORE INFORMATION:
ucfglobalperspectives.org






NATIONAL CENTER FOR FORENSIC SCIENCE DATABASES

TV would have you think forensics work solves cases in 30 minutes, but the real world works a little differently. A lot of crime solving happens in the lab, and that's where the National Center for Forensic Science excels. The databases created by NCFS cover a wide spectrum of evidence collected at crime scenes, and help investigators put the pieces together.

**TO SUPPORT THE NATIONAL
CENTER FOR FORENSIC SCIENCE:**
ucffoundation.org/ncfs

TIRE DATABASE



Recording tire marks is a tried-and-true method of forensic investigators, but a new database in the works could reboot a tire's contribution to crime solving. Still in development, the tire database would compile the chemical profiles of burned rubber. Forensic investigators could then collect the evidence from a skid mark and compare it against the "fingerprint" of other tires in the system.

Y-STR DATABASE

Short repeating sequences of the DNA component bases are found at specific locations on the Y-chromosome, which is unique to men. These inherited groups of short tandem repeats (STR) on the Y chromosome form an identifying profile or haplotype, that occurs with different probabilities within different populations and ethnic groups. This Y-STR database holds more than 29,000 identifying combinations.

CREDIT CARD SKIMMER

Tracking skimmer locations and characteristics in a database opens the possibility of connecting associated cases and identifying the responsible individuals. In partnership with the U.S. Secret Service, state and local law enforcement, NCFS is building a skimmer database with the potential to attack the problem on a national scale.



SHINING A OPEN LIGHT ON GOVERNMENT

An experiment in promoting open government was recently launched by the **Nicholson School of Communication and Media** - and if the project meets with good results in Winter Park, it could be expanded to other Central Florida cities.

A new grant-funded website - WinterParkSunshine.org - was set up by the school's journalism program to help inform citizens of publicly available data and augment the region's media, which is becoming increasingly stretched thin by new approaches to covering news.

The website includes, among other items, easy-to-access city commission minutes, voting and financial records, grants, contracts, salaries, public works, campaign contributions and financial-disclosure statements.

This project is overseen by **Richard Brunson**, senior instructor in UCF's Nicholson School; **Alex Glover**, a Winter Park website developer; and Nicholson graduate research assistants **Raby Tall '15**, **Lindsay Manganiello** and **Lillian Hernández Caraballo**.

In addition to the editorial side of this project, Nicholson lecturer **Erica Kight** will lead the research of the project, which will include surveys with Winter Park residents and users of the site to determine how useful it is to them and how much of an impact the site is having.

"The Nicholson School holds as the first point of its mission to promote 'Free inquiry, free speech and the free flow of information and ideas,'" Brunson says. "That's exactly what this project is about."



The WinterParkSunshine.org team: Rick Brunson, project director and associate instructor of journalism; Alex Glover, website developer; and graduate research assistants Raby Tall and Lindsay Manganiello.



TO SUPPORT PROJECTS LIKE THIS VISIT:
ucffoundation.org/nicholsonschool

OPENING DOORS IN PHYSICS

When Taylor Douglas fell in love with physics and began to pursue it in college, she started to feel like an outsider.

Most of her classmates were men — and white. After earning her bachelor's degree at Rowan University in New Jersey, she applied to several institutions to pursue a master's degree, something only 6% of underrepresented students nationwide attain in the field of physics.

Every program other than UCF passed on her.

“Without the Bridge Program I would not be in academia right now,” she says.

The American Physical Society created the Bridge Program in 2015 to help increase diversity in the field by encouraging and supporting underrepresented students pursue doctoral degrees in physics. UCF was among the first universities to adopt the program that year.

Eduardo Mucciolo, chair of the Department of Physics, says the program has been instrumental in increasing the number of underrepresented graduate students in physics across the nation. In 2015, there were almost no Black students pursuing advanced degrees in physics at UCF, he says. Since then, at least a dozen students have enrolled through the Bridge program.

“Our commitment to inclusion and diversity is quite strong and we have been recognized for it,” Mucciolo says. “Only about 5% of physics faculty in the nation are African American or Hispanic. We are eager to change that statistic, because diversity means better science.”

Douglas, who is in the second year of her master's degree program, plans on pursuing her doctorate in physics and neuroscience and eventually move on to work at a national lab focusing on disease studies. “I am hoping to make an impact on the field with new and accessible curative therapies, as well as preventative care,” she says.

TO SUPPORT PHYSICS STUDENTS VISIT:
sciences.ucf.edu/physics/give





UNIVERSITY OF CENTRAL FLORIDA **BIG DATA SYMPOSIUM**

The career applications of data science were brought to life in real and applicable ways at the 2020 Big Data Analytics Symposium.

Featuring employers ready-to-hire, an alumni panel and guest speakers from industry leaders like Disney and Addition Financial, students, faculty and staff all benefited from the packed agenda.

The morning opened with Microsoft scholars sharing their research using cloud-computing resources, which segued into a keynote address from Disney’s Director of Data Integration Teddy Benson. Also sharing advice was Addition Financial President and CEO, Kevin Miller.

An alumni panel featuring a range of business leaders — including several recent graduates — identified ways to succeed in the data science industry. That was welcome advice for students networking with recruiters representing employers with a high demand for ambitious new data scientists.

Sponsoring an event is an excellent way to get your company and brand in front of hundreds of potential customers — as well as tap into a pool of talented students. To learn more about sponsorship opportunities within the College of Sciences, contact Kathryn Matta at Kathryn.Matta@ucf.edu.

BIG DATA SYMPOSIUM 2020 SPONSORS:

- Addition Financial
- Darden
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- Employment Technologies
- Intego Group
- Orlando Utilities Commission
- Playfair Data, LLC
- Walt Disney World

**JOIN US FOR NEXT
YEAR’S CONFERENCE:**
sciences.ucf.edu/bigdata

Rebuilding Families



Kimberly Renk, Ph.D., is rebuilding families by taking psychology off the couch and into disadvantaged Orlando communities.



Working with children is a lifelong passion for Renk. She feeds that passion by providing parenting programs and child-parent psychotherapy to parents who lose custody of their children. She's one of a team of advocates who volunteer through Florida's Early Childhood Court to help parents regain custody of their children.

Her work at UCF includes leading the Understanding Young Children and Families research clinic and laboratory, which explores how families with children aged 0-5 are impacted by intergenerational trauma. That work easily translates to her consultant role with the child welfare agency Embrace Families and the Ninth Judicial Circuit's Early Childhood Court.

In both places, Renk advocates for better understanding of young children who don't have the means to fully communicate about their traumatic experiences.

The early months are always rough and filled with raw emotion, but reuniting families and setting them up for future success is incredibly rewarding, Renk says. More importantly, Renk understands that interrupting a cycle of abuse in this generation will probably have a ripple effect on generations to come.

"When you see a parent who previously showed little affection scoop up their kids spontaneously, it's a beautiful thing," Renk says. "They're on a path to greatness, and I can't think of anything better."

TO SUPPORT PROJECTS LIKE THIS VISIT:
sciences.ucf.edu/psychology/give



LIFE-SAVING Research

New, potentially life-saving research from the Department of Sociology is reshaping the way law enforcement approaches domestic violence.

Specifically, an associate professor and doctoral students are working alongside investigators with the Brevard County Sheriff's Office to identify signs of strangulation and collect valuable forensic medical evidence to corroborate the potentially lethal attacks. The risk of homicide increases 750% for women after they experience non-fatal strangulation, according to a 2008 study published in the *Journal of Emergency Medicine*.

UCF research is improving those odds in Brevard County by helping investigators identify forensic evidence of strangulation with greater accuracy.

"Strangulation is typically thought of as a method of murder, but that is not always



the case. Strangulation is often used as a means of controlling an intimate partner and if it happens once, it is likely to happen again," explains Associate Professor **Amy Reckdenwald, Ph.D.** "This is when it becomes a dangerous pattern that can lead to death. We need to learn how to identify victims and prosecute offenders before it is too late."

Compared to pre-project prosecution data from 2011-2013, criminal prosecution of strangulation cases in Brevard County from Nov. 1, 2015-Oct. 31, 2016 increased almost 52%. Also, more cases were likely to be charged with the felony charge of domestic battery by strangulation than the misdemeanor domestic battery.

The Brevard County Sheriff's Office plans to continue training investigators for the foreseeable future.

"The positive outcomes of the project show that something can be done to prevent non-fatal strangulation and hold offenders accountable," said Reckdenwald. "This program should be implemented in every police agency in Florida."

TO SUPPORT PROJECTS LIKE THIS VISIT:
sciences.ucf.edu/sociology/give



 **68%**

Victims of domestic violence experiencing non-fatal strangulation

 **50%**

Victims of strangulation lacking any kind of visible injury from attack



School of Politics, Security, and International Affairs

ALUMNI SPOTLIGHTS

Pursuit of Excellence Drives Student



As the daughter of two immigrants from Guatemala and Venezuela, **Carla Garcia '20** has always been passionate about

understanding perspectives different from her own. It's what inspired her to pursue political science at UCF, and she has excelled in her scholarly pursuits not just at UCF, but nationally.

Her outstanding accomplishments as a political science major have been recognized by a series of highly selective national awards and fellowships and prepared her way to start her doctoral studies at MIT in August 2020, where she wants to study the effect of economic factors on global politics.

Garcia was one of 11 awardees nationally to be selected by the National Science Foundation for an NSF Graduate Research Fellowship in Political

Science. Garcia's remarkable achievements have also been recognized by the American Political Science Association's Minority Fellowship, which is another highly selective national award.

UCF gave Garcia the tools needed to explore her field with confidence. Exposure to a multifaceted career in international affairs during a summer spent in D.C. and the opportunity to work in an undergraduate research lab at Michigan State University is what Garcia points to as her inspiration to pursue her Ph.D.

"During my time in D.C. I was exposed to a number of different jobs in the field of international affairs which gave me a greater understanding of my field," says Garcia. "The chance I had to participate in undergraduate research reaffirmed that I want to be able to apply my knowledge to research level thinking."



Knight Nabs Top Journalism Prize



International reporting by political science alumnus **Michael Schwartz '03**

recently earned him one of journalism's top awards, and his journey to this moment started, in part, with a desire to stay close to home.

Schwartz had originally thought he would pursue a career as a diplomat. But after his first embassy internship, he realized it was not what he wanted to do. Schwartz found freedom in journalism and a connection at the New York Times bureau in Moscow led him to a research position. Gradually he worked his way up to landing a job writing for one of the biggest names in the news business. Along the course of his career, Schwartz was nominated two other times for a Pulitzer.

Schwartz won the Pulitzer Prize alongside his New York Times colleagues Dionne Searcey and David

Kirkpatrick for investigating Russia's proxy wars. The poisoning of former Russian spy Sergei V. Skripal in 2018 prompted Schwartz to begin digging into Russia's methods of silencing traitors and spies. His work revealed a team of Russian assassins working across Europe.

Schwartz calls winning the storied prize "wild and indescribable" but a validation of pursuing your dreams. Listen to your professors, and find mentors willing to train you, Schwartz says.

For now, Schwartz is covering one of the biggest stories of the century with the global pandemic. But he looks forward to someday returning to reporting on Russian spies.

TO SUPPORT THE SCHOOL VISIT:
sciences.ucf.edu/politics/give

FUNDING FUTURE SCIENTISTS

Three students with big ambitions to curb the dwindling sea turtle population will benefit from a new scholarship started by the National Save the Sea Turtle Foundation. The scholarship awards three senior-year undergraduate students \$10,000 each in support of tuition, books and academic fees. It is meant to alleviate financial stress so students can focus on their research and post-graduation plans. In addition, the scholarship provides funding for general use in support of the Marine Turtle Research Group's (MTRG) ongoing research.

The foundation chose to partner with UCF in recognition of the work conducted by Kate Mansfield, Ph.D., who leads MTRG. Mansfield is a marine scientist and sea turtle biologist on the forefront of using satellite technology to track the movement of baby turtles.

"UCF's sea turtle program combines experience with innovation, resulting in a world-class lab" says Larry Wood, Ph.D., research coordinator for the Foundation. "I'm glad that we are able to give back to such an amazing academic community through this scholarship."

This year's recipients are Monica Reusche, Jennifer Rote and Christine Sarkis.



SANDY STORIES

Team members from the UCF Marine Turtle Research Group collect data about sea turtles, which nest along Central Florida's eastern coastline. Credit: Rebecca Smith (UCF MTEG, FL MTP-186)



NESTING NUMBERS 2019

10,813 **LOGGERHEAD NESTS**

15,784 **GREEN TURTLE NESTS**

36 **LEATHERBACK NESTS**

1 **KEMPS RIDLEY NESTS**



**TO SUPPORT STUDENT RESEARCH AND
THE UCF MARINE TURTLE RESEARCH GROUP:**
sciences.ucf.edu/mtrg -or- ucffoundation.org/turtles

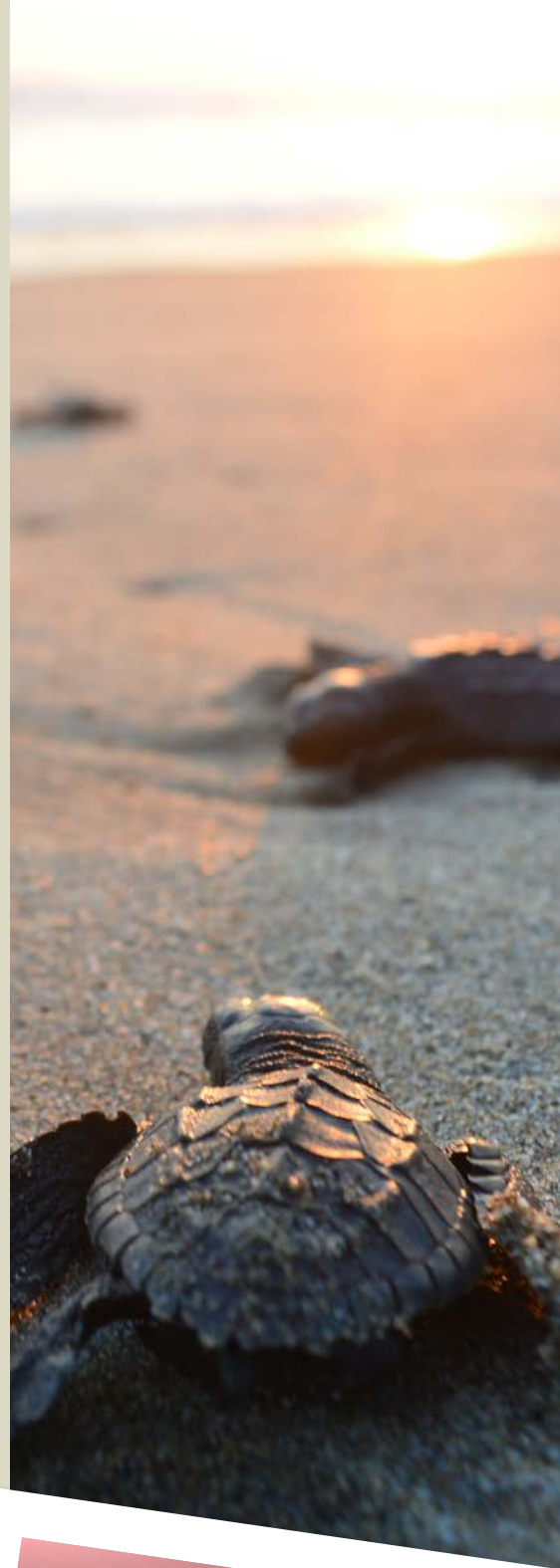
PANDEMIC DOESN'T SLOW SEA TURTLES

While the pandemic continues to spread uncertainty, it hasn't interrupted sea turtles from their annual nesting trek.

The Marine Turtle Research Group worked with government officials for permission to continue monitoring the endangered and threatened sea turtles in East-Central Florida this year under existing federal and county contracts. By making changes to their operations, including social distancing and face masks, the team was granted UCF authorization to continue its daily morning surveys, but its in-water netting operations have been suspended.

Contrary to popular belief, COVID-19 does not draw more turtles to the beach, says Erin Seney, Ph.D. But because the beaches were largely empty early in the season, there may have been fewer nesting turtles disturbed by human activities and artificial lighting, which would have conserved individual females' energy and reduced disorientations caused by lights.

"We are seeing some great nesting numbers so far, but it's too early in the season to know if the turtles will break any records," Seney says. "All three of our primary species started nesting on the early side of their normal arrival window, and we are seeing above average levels of nesting from leatherbacks and loggerheads already. Abundant food at the turtles' foraging grounds and a mild winter likely contributed to the early start to the season."



THANK YOU TO THE MOORE FAMILY

Mark '99 and Lisa Moore established the Moore Turtle Tags Endowed Fund to provide the most basic and critical need for the UCF Sea Turtle Research program - turtle marking tags.



UCF RESTORES

COMMUNITY IMPACT

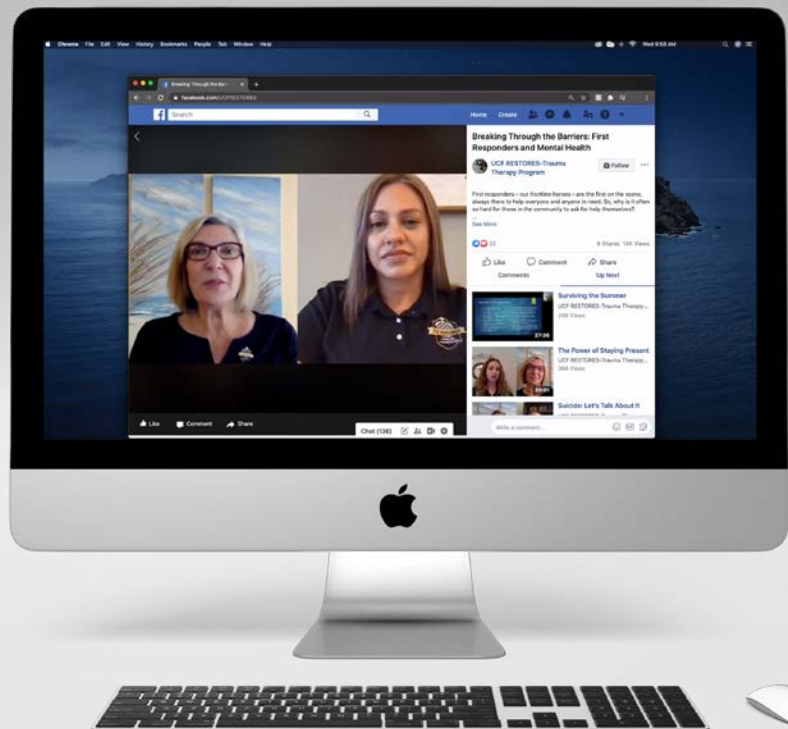
UCF RESTORES boasts some of the best experts in trauma and recovery in the country, with an emphasis on helping first responders, veterans and active duty service members live with post-traumatic stress disorder (PTSD). The coping techniques they counsel have broad applications, though.

With that in mind, the UCF RESTORES staff launched a weekly live session on Facebook addressing some of the issues spawned by quarantine and isolation, including depression, sleeplessness and anxiety. The sessions were pre-recorded, but staff were on hand during video premieres on social media to answer questions. Some of the topics covered included: unhealthy drinking habits; the importance of proper sleep hygiene; relaxation techniques; and leaning on social support in trying times.

“These are skills we think people should have under any circumstances,” says Deborah Beidel, Ph.D., director of UCF RESTORES.

UCF RESTORES launched a similar series to help people affected by Hurricane Michael’s devastating landfall on the Florida Panhandle in 2018.

FOR MORE INFORMATION ON UCF RESTORES VISIT:
ucffoundation.org/restores





PTSD THERAPY RECEIVES \$1M BOOST

The UCF RESTORES Clinic was recently awarded \$1 million from the U.S. Army to continue development of its own virtual-reality software to treat active-duty service members, military veterans and first responders who experience post-traumatic stress disorder.

“This funding will allow us to develop new tools to further improve the treatment outcome for PTSD,” says Deborah Beidel, Ph.D., director of the clinic. “To provide the highest level of care - based on the most rigorous science - is not just our goal, but our commitment to everyone whose life has been changed by trauma.”

More than 750 service members, veterans, first responders, survivors of sexual assault and mass shootings have received treatment at the clinic. The clinic uses virtual reality to deliver treatment through a technique known as exposure therapy to simulate a patient’s traumatic experience and help reduce the anxiety a patient associates with the experience.

After PTSD treatments, 66% percent of military personnel and 76% percent of civilians no longer meet the diagnostic criteria for continuing treatment, a success rate that is higher than more conventional therapies.

UPWARD TRAJECTORY

History was made in Summer 2020 when Americans were launched into space from U.S. soil for the first time in almost a decade. UCF had its fingerprints all over the Space X flight, from the alumni designing and controlling the mission to the experiments aboard the private spacecraft.

“It is great to once again have the ability to launch astronauts from the U.S., using U.S. rockets,” says Tracy Becker ’16 Ph.D., a planetary scientist and group lead at the Southwest Research Institute. “This launch is generating renewed excitement about the U.S. Space Program, and that is very important to me as a scientist. I want everyone to be just as inspired and excited by the technological achievements of our country and the resulting prospects for future space exploration as I am.”

In 2019 alone, UCF’s Planetary Sciences Group landed more than \$2 million in grants from NASA and the National

Science Foundation to fund their exploration of the universe. Some of the highlights over the last year include:

- NASA funded two projects focused on returning to the moon. One explores the impact of dust behavior on test sensors in microgravity. The second tests a laser-based sensor designed to measure the density and particle size of dust and rocks ejected from a lunar landing.
- The New Horizons spacecraft continued its trajectory past Pluto, now clocking in after 20 years at 4.1 billion miles from Earth. One of the recent discoveries made the cover of the journal *Science*: a rock named Ultimate Thule is the most distant object ever recorded.
- In addition to celebrating its first year under the UCF umbrella, the Arecibo Observatory landed a \$19 million grant from NASA. The grant funds continued monitoring of near-Earth objects that pose a threat or could serve as candidates for future space missions.



FLORIDA PHENOMENON

Floridians looking up in the early morning or evening sky on a launch day might spy a startling cloud pattern. This amazing phenomena is produced following the separation of the rocket boosters; one is propelling the spacecraft into orbit and the other is falling back down to Earth.

PUT A RING ON IT

Saturn's rings make it one of the most instantly recognizable planets, but the exact composition of those rings remains a topic of study.

The most recent information came from the Cassini spacecraft. Data from the probe revealed the rings are made from icy particles ranging in size from marbles to a small car, and they have three distinct textures: clumpy, smooth and streaky. The data also shows that tiny moons exist within the rings and interact with surrounding particles.

The findings were published in *Science* and co-authored by Josh Colwell, Ph.D., and his former student, Richard Jerousek, Ph.D., both of whom are affiliated with the Florida Space Institute.

TO SUPPORT THE PLANETARY SCIENCES PROGRAM:

ucffoundation.org/robinson-observatory



GOING UP

Eleven students discovered the community impact drones can generate during a 10-day trip to Central America in 2019.

Students split their time in Belize between helping the citizens of Hopkins Village map their water system and boosting the tourism industry on a nearby island. The UCF Participatory Geographic Information Systems (GIS) study abroad class was sponsored by Citizen Science GIS, which is led by Sociology Associate Professor Timothy Hawthorne, Ph.D.

The first leg of the trip took students to the village of around 3,000 people, where a recently upgraded water system had yet to be mapped. Using a mobile mapping application called Esri's Collector for ArcGIS, the location of more than nine miles of pipelines and 550 water meters were recorded.

"The data collection in Hopkins was a truly enlightening experience as it allowed us to make a connection between GIS methodologies and their real-world applications. Also, having conversations with local residents during this process led me to a deeper understanding of the culture in Belize and how it compares to my own culture," says Larissa Gehringer, Burnett Honors College and biology undergraduate student.



The second project saw students head out on the Caribbean Sea on a 45-minute boat ride off the mainland of Belize to South Water Caye, a small island located on the edge of the Belize Barrier Reef. Students worked with local guides, boat captains and resort managers to update the island's snorkel and kayak map for tourists. The fieldwork included some students in kayaks with iPads and GPS units mapping points, while snorkeling students took notes and surveyed key points of interest underwater along the reef.

"Collecting data through snorkeling enabled us to get information for the people leading the operations in South Water Caye. We used the data that we gathered to create maps for visitors to view and interact with. Plus, we had the opportunity to see some amazing coral reefs and colorful fish!" says Ilan Gritzman, UCF public administration undergraduate student.

In addition to their research, UCF students also hosted a youth education outreach program in Hopkins Village. Nearly 25 children participated in hands-on mapping and drone activities. The highlight of the education program was when the youth earned their pilot wings flying Parrot Mambo mini-drones.

"A class like this shows the power of collaboration, and what can happen even when students and communities are just learning these new technologies for the first time," Hawthorne says.



FOR MORE INFORMATION AND TO SUPPORT THE PROGRAM:
ucffoundation.org/citizen-science-gis

HIGH-LEVEL OVERVIEW

South Water Caye is the site of a tourism survey by UCF students.





INSPIRING THE NEXT GENERATION

A big part of college is choosing a path for your life, but there's a lot of uncertainty when you head out for your destination. Mentors represent someone who has already made the journey, and they erase a lot of the insecurity through sharing the stories that shaped their careers.

The Nicholson School of Communication and Media recognizes the power of mentors, and annually connects students with alumni in their prospective fields. Over the '19-'20 school year, more than 100 students paired with industry leaders and NSCM alumni from 12 states and two countries, Scotland and Japan. The mentors represented multiple industries ranging from game design studios to movie studios and TV networks.

"At the Nicholson School, we work hard to prepare our students to excel in industry. We truly appreciate when alumni donate their time and talents to help students learn how to connect what they learn in the classroom to industry," says NSCM Director Robert Littlefield, Ph.D.



NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA ALUMNI BOARD LEADERSHIP

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Michael Weiss '14MA
Communications Chair

Andy Zunz '14
Member-at-Large

TO APPLY TO BE A MENTOR VISIT:
ucfalumni.com/nscmmentor



DISTINGUISHED ALUMNI AWARDS

In November 2019, the College of Sciences Alumni Chapter hosted the fifth annual Distinguished Alumni Awards. One awardee is chosen from each department and school within the college based on distinguished professional achievement, exceptional community service in support of the university and a reflection of the college's mission.

ANTHROPOLOGY

Brittany Walter '12MA, PhD
Forensic Anthropologist at Defense POW/MIA Accounting Agency

BIOLOGY

Lourdes Diaz-McAgy, '99
CEO at Total Nutrition Technology & Artemis Warehouse and Distribution

CHEMISTRY

Brenda Prenitzer '95 '99PhD
CEO and Founder at NanoSpective

MATHEMATICS

Donald Marks '73 '78MS
Retired from Hilltop Wood Creations

NICHOLSON SCHOOL OF COMMUNICATION & MEDIA

Julie Anderson '84 '89MA
Editor in Chief at South Florida Sun Sentinel and Orlando Sentinel at Tribune Publishing Company

PHYSICS

Richard Neiberger '71, MD, PhD
Retired Emeritus Professor of Pediatrics, Pediatric Nephrology Specialist at University of Florida College of Medicine

POLITICAL SCIENCE

Eric Worden '89 '93MBA '95MS
Researcher, Software & Systems Architect at Lockheed Martin

PSYCHOLOGY

Andre Garcia '08 '16MBA, PhD
Principal Manager of Strategy and Business Development and Principal Systems Engineer for advanced programs at Collins Aerospace

SOCIOLOGY

Zach Grimland '07, JD
Attorney at Grimland Law, PLLC

STATISTICS

Donna Lockhart '03, MBA
Sales Channel Planning & Development Director at Walt Disney World

GROWING GARDENS UCF ARBORETUM GROWING STUDENTS

In Fall 2019, the UCF Arboretum joined a small group of universities throughout North America to implement the Learning by Leading™ (LxL) program developed by the University of California, Davis Arboretum and Public Garden. The LxL program is based on the notion that students learn best by leading. The program is designed to develop student leaders through a stepwise, hands-on leadership ladder that begins with students serving as a volunteer or intern and grows into a paid leadership role as a team co-coordinator. Current LxL teams focus on four key program areas:

GARDEN DESIGN

The Bee Campus USA team designs, installs and manages our campus pollinator gardens as well as supports our official Bee Campus USA designation by leading volunteer and community outreach events, developing educational garden signs and collecting data required for annual reporting. This team also assists with apiary maintenance, and our famous summer honey harvests.

The Urban Horticulture team designs, installs and manages gardens specifically to support the Arboretum Park Master Plan that was unveiled last year. Currently, this team helps to oversee the development and maintenance

of the Arboretum Park which includes a few remaining landscapes and tree specimens installed by the original Arboretum Director, Dr. Hank Whittier. As the LxL program grows this team will help design landscapes across campus. The newest landscape “Whittier’s Walk” was designed by our students in two phases. Phase I was installed in Fall 2019 to honor Dr. Whittier. In summer 2020 the team finalized the design for Phase II and planted it with a small student staff. Currently this team is finalizing the design for “The Hostess,” a camellia garden that will be planted at the entrance to the Arboretum Park leading to the greenhouse and community farm and garden.

GREENHOUSE AND NURSERY

The Greenhouse and Nursery team is responsible for the Arboretum greenhouse, which includes seeding, propagating and growing plants for our LxL landscapes and campus plant sales. This team oversees the organization and maintenance of the greenhouse plant material as well as leading the planning of an onsite nursery to increase our capacity to grow, store and sell plants.

COMMUNITY FARM AND GARDEN

The Community Farm and Garden team is responsible for planning, planting, maintaining and harvesting of the Arboretum Community Farm and Garden. This team oversees the majority of Arboretum volunteers and provides a continued source of healthy, free, organically grown food to UCF students, staff and surrounding community.

EXPANSION

The Arboretum plans to add five additional LxL teams in the future as the program grows. The new teams include Social Media, Marketing and Arboretum Ambassadors to build connections with the surrounding community, as well as land management, urban forestry and stormwater teams to engage our students with the UCF Natural Resources team and support our campus restoration and conservation goals.

**TO GET INVOLVED AND SUPPORT
THE UCF ARBORETUM:**
arboretum.ucf.edu





HUMAN ON A CHIP

UCF received a \$3.8 million milestone-based grant from the National Institute of Health (NIH) to better understand how overdosing on opiates works, their impact on multiple organs and the effect of drugs used to treat overdoses, including potential toxicity of organs.

The research hopes to stem a crisis that claimed 67,367 overdose deaths in 2018, according to the Centers for Disease Control. **James Hickman, Ph.D.**, a professor in the Department of Chemistry and UCF's NanoScience Technology Center, is the lead scientist on the proposal.

He's developed a human-on-a-chip in vitro system that mimics multiple human organs, and will allow testing that doesn't harm patients or animals. He developed the system at UCF in collaboration with Michael Shuler, Ph.D., at Cornell University. UCF has licensed the technology to Hesperos, a company Hickman co-founded and where he serves as chief scientist.



"We are grateful to have funding to support research in an area that represents such a large and growing need," Hickman says. "Our interconnected human-on-a-chip system provides a non-invasive way to emulate the response of compounds among all 'organ' compartments, and to concurrently predict potential toxicity and efficacy of drugs, including opioids and opioid antagonists such as Narcan."

UCF's award is one of 375 grants across 41 states made by the National Institutes of Health in the fiscal year 2019 to apply scientific solutions to reverse the national opioid crisis.

TO SUPPORT PROJECTS LIKE THIS VISIT:
sciences.ucf.edu/chemistry/give

REMEMBERING

Lou Frey, Jr.

Champion of civic education and former Congressman Lou Frey, Jr., the namesake of UCF's Lou Frey Institute, passed away in October 2019 in Winter Springs. He was 85.

Frey leaves a long legacy of service to the U.S. and Central Florida; he had a hand in both establishing Kennedy Space Center as the home of the space shuttle program and appealing to President Richard Nixon to turn over McCoy Air Force Base to the city of Orlando. That base would later become Orlando International Airport.

The UCF connection started with Frey's donation of his congressional archives to UCF in 2002 to create the Lou Frey Institute of Politics and Government. The institute promotes the development of enlightened, responsible and actively engaged citizens through experiential learning and civic education. That mission was boosted through a partnership with former U.S. Sen. Bob Graham to create the Florida Joint Center for Citizenship, which is housed in the Lou Frey Institute.

Frey was an attorney by trade, holding positions as assistant county solicitor for Orange County and counsel for the Florida Turnpike Authority before running for office as a Republican. His tenure representing Central Florida extended five consecutive terms before retiring undefeated in 1979. He also ran for U.S. Senate and Florida governor.

His political influence continued long after leaving office, including stints as a committee member on the presidential campaigns of Gerald Ford, Bob Dole and George W. Bush. Senior Fellow Doug Dobson, Ph.D., says



Frey was never happier than when he was surrounded by a group of students or teachers. His lectures extended beyond the surface level of “how government works” to include the mental and physical toll of running for office and the demands of life in the public eye. The result was one of the strongest civic education programs in the U.S, which, in turn, is producing students equipped for politics, Dobson says.

“Lou felt an incredible commitment to educating future public servants and passing along his experiences,” Dobson says. “That was part of his life’s mission.”

The Lou Frey Institute continues to uphold Frey’s legacy through its work in K-12 schools, having just launched a new resource series, Civics in Real Life, and expanding its Civics360.org educational platform. Frey believed that civics could make a difference, and the Institute shares that vision.

TO SUPPORT THE LOU FREY INSTITUTE:
loufreyinstitute.org

COLLEGE OF SCIENCES

The quality of our faculty and staff is the foundation of our academic mission. Each one of these individuals adds expertise that enhances the college's strengths in our disciplines across the physical, natural and social sciences.

2019-2020 FACULTY & STAFF

86

Professors

75

Associate Professors

76

Assistant Professors

83

Instructors & Lecturers

234

Staff

574

Student Staff

2019-2020 NEW FACULTY

BIOLOGY



Melinda Donnelly, Ph.D.

Research Assistant Professor

Estuarine ecology and restoration, with a focus on wetlands and shoreline habitats, in order to improve conservation and management of critical habitats.



Robert Fitak, Ph.D.

Assistant Professor

An integrated approach, using a variety of genomic, statistical, behavioral and experimental techniques to both characterize the traits of different species and conserve the biodiversity in which they persist.

CHEMISTRY



Kangsang Lee, Ph.D.

Assistant Professor

Catalysis, synthetic method development and synthesis of natural products and materials.



Christopher Randles, Ph.D.

Visiting Assistant Professor

Chemistry education research. Problem-solving research; the use of multiple literacies in learning sciences through the K-16 curriculum.



Erin Saitta, Ph.D.

Assistant Professor

The extent to which professional development interventions such as learning communities, teaching simulations and peer teaching observations elicit change in instructor attitudes, beliefs and practices.

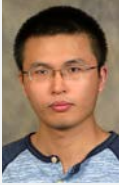
MATHEMATICS



Robert Jenkins, Ph.D.

Assistant Professor

Integrable Systems, Nonlinear Dispersive PDE, Random Matrix Theory, Orthogonal Polynomials and their relation to combinatorics and probability.



Yukun Li, Ph.D.

Assistant Professor

Continuous and discontinuous finite element methods; numerical solutions of stochastic ordinary and partial differential equations; adaptive methods and fast solvers.

NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA



Michael Stawser, Ph.D.

Assistant Professor

Instructional and organizational communication.

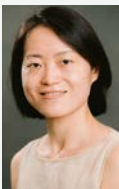
PHYSICS



Kerri Donaldson-Hanna, Ph.D.

Assistant Professor

Formation and evolution of airless bodies.



Li Fang, Ph.D.

Assistant Professor

Photo-induced charge dynamics in atomic, molecular and plasma systems at their natural time scales using ultrafast lasers.



Theodora Karalidi, Ph.D.

Assistant Professor

Explanatory and brown dwarf atmospheres, mapping exoatmospheres, spectropolarimetry.

PSYCHOLOGY



Vikki Gaskin-Butler, Ph.D.

Visiting Clinical Associate Professor, Psychology Clinic Director

Spiritual, psychological and physical well-being in adolescents and adults.

SOCIOLOGY



Alison Cares, Ph.D.

Associate Professor

Intimate Partner Violence; Campus Sexual Violence; Teaching About Victimization; Program and Policy Evaluation; Criminal Economic Sanctions.



Bhoomi Thakore, Ph.D.

Assistant Professor

Structural inequality; Race and gender in the media; Qualitative methods; Interventions research (racial and gender diversity in STEM careers).



Jacqueline Woerner, Ph.D.

Assistant Professor

Violence victimization and perpetration, interpersonal relationships, substance use, risk-taking behavior.

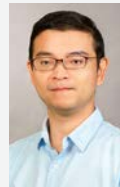
STATISTICS & DATA SCIENCE



Liansheng "Larry" Tang, Ph.D.

Associate Professor

Statistical methods in diagnostic accuracy, statistics in forensics and biometrics, clinical trial design, statistics in criminology.



Rui Xie, Ph.D.

Assistant Professor

The development of statistical sketching and sampling methods for large-scale streaming dependent data.

UCF RESTORES



David Rozek, Ph.D.

Assistant Professor

Cognitive and behavioral interventions for post-traumatic stress disorder (PTSD), suicidal thoughts and behaviors, and depression.

UCF COLLEGE OF SCIENCES FAST FACTS 2019-2020

2020 Priorities

- 1** Improve student success: progression, retention, graduation and careers.
- 2** Enhance student learning: innovation, experimentation and evaluation.
- 3** Strengthen research and research funding.
- 4** Shape nationally competitive Ph.D. programs and professionally useful master's programs.
- 5** Increase fundraising—both annual giving and major gifts.
- 6** Foster internationalization efforts in appropriate departments.
- 7** Build a culture of diversity and inclusiveness for faculty and students.
- 8** Promote faculty career success and satisfaction.

2019-2020 Degree Programs

20

Bachelor's

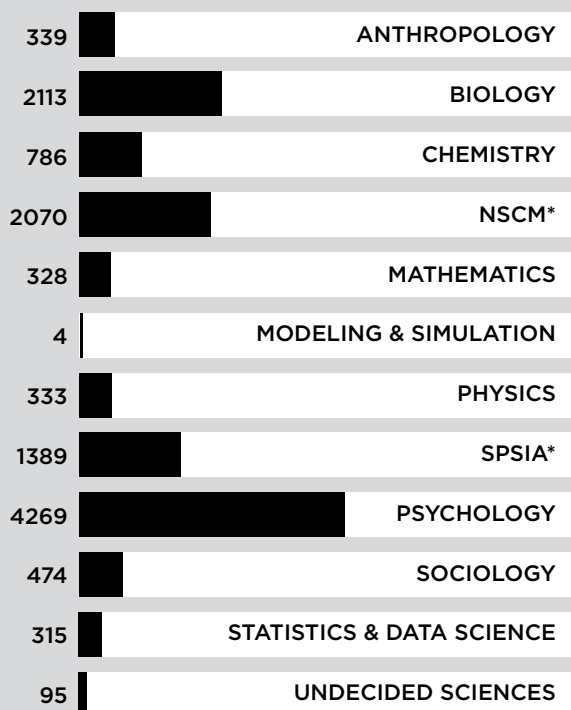
13

Master's

11

Doctoral

Fall 2019 Enrollment



*Nicholson School of Communication and Media
*School of Politics, Security, and International Affairs

18%

UCF Undergrads
Pursue COS Degrees

UCF Total
69,525

COS Total
12,515

2020 UCF Top Majors

#1

Psychology
4,269 Students

#7

Biology
2,113 Students

2020 Degree Programs

Anthropology

- Anthropology B.A.
- Anthropology M.A.
- Integrative Anthropological Sciences Ph.D.

Biology

- Biology B.S.
- Biology M.S.
- Conservation Biology Ph.D.

Chemistry

- Chemistry B.S.
- Forensic Science B.S.
- Chemistry M.S.
- Forensic Science M.S.
- Chemistry Ph.D.

Nicholson School of Communication and Media

- AD/PR B.A.
- Communication and Conflict B.A.
- Human Communication B.A.
- Journalism B.A.
- RTV B.A.
- Communication M.A.
- Strategic Communication Ph.D.

Mathematics

- Mathematics B.S.
- Mathematical Sciences M.S.
- Mathematics Ph.D.

Physics

- Physics B.A.
- Physics B.S.
- Physics M.S.
- Physics Ph.D.

School of Politics, Security, and International Affairs

- Int'l and Global Studies B.A.
- Political Science B.A.
- Political Science M.A.
- Security Studies Ph.D.

Psychology

- Psychology B.S.
- Clinical Psychology M.A.
- Industrial Organizational Psy M.S.
- Psychology Ph.D.

Sociology

- Social Sciences B.S.
- Sociology B.A.
- Sociology B.S.
- Applied Sociology M.A.
- Sociology Ph.D.

Statistics and Data Science

- Actuarial Sciences B.S.
- Statistics B.S.
- Statistical Computing M.S.
- Big Data Analytics Ph.D.

Interdisciplinary

- Modeling and Simulation - COS M.S.
- Modeling and Simulation - COS Ph.D.

2020 Centers, Institutes and Initiatives

- UCF Arboretum
- Center for Global Economic and Environmental Opportunity
- Geographic Information Systems
- The India Center
- Intelligence Community Center for Academic Excellence
- iSTEM
- Kurdish Political Studies Program
- Lou Frey Institute
- UCF Marine Turtle Research Group
- Prince Mohammad bin Fahd Program for Strategic Research and Studies
- Robinson Observatory
- National Center for Forensic Science
- Puerto Rico Research Hub
- UCF RESTORES

2019 -2020 Scholarship Funding



142k In Scholarships Awarded to Students

2019 -2020 National Rankings

BestColleges.com

Best Online Bachelor's Programs:

Anthropology	#2
Communication	#4
Political Science	#1
Psychology	#2
Sociology	#3

AffordableColleges.com

Affordable Online Bachelor's Programs:

Anthropology	#1
Communications	#3



U.S. News and World Report

Best Graduate Programs:

Physics	#61
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2020 Research Funding

New Funding	FY16	FY17	FY18	FY19
	\$14.6M	\$16.6M	\$26.1M	\$27.3M

2019 -2020 Research

\$27	MILLION AWARDED <i>in College of Sciences research funding</i>
1110	FACULTY PUBLICATIONS <i>in the College of Sciences</i>
24	FACULTY PATENTS <i>in the College of Sciences</i>
#2	COLLEGE FOR RESEARCH FUNDING <i>at the University of Central Florida</i>

