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## Progression Magazine, 2022-2023

Coastal Carolina University

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COASTAL CAROLINA UNIVERSITY

# progression

MAGAZINE

2022-2023

KEEPING UP WITH THE EDUCATIONAL MOMENTUM OF THE GUPTA COLLEGE OF SCIENCE

## A NEW CHAPTER

DEAN LEVERETTE'S JOURNEY TO CCU

COLIN SCHOLL

OUTREACH &  
ENGAGEMENT

SUBHASH SAXENA



# progression

2022-2023



## A message from the dean

It is a great honor to present this issue of *Progression*, the magazine of the Gupta College of Science at Coastal Carolina University, which captures some of the many activities that took place during the 2022-2023 academic year. What a year it has been! After 15 stellar years of leadership by our Dean Emeritus, Dr. Michael Roberts, I assumed the position as the seventh dean of the Gupta College of Science on July 1, 2022. It is truly an honor to serve as the dean of Coastal's largest college with such an amazing history.

The Gupta College of Science continues to lead the way at Coastal in excellent teaching, premier research and scholarship, and service. We greatly value the teacher-scholar model and strive to support our students in achieving success and becoming the next generation of scientists that the world needs. One of the ways we prepare our students is through engaging and cutting-edge experiential learning, which is one of our strengths. These nationally recognized high-impact practices equip our students to tackle tomorrow's global scientific challenges.

In this issue, you will read about how our excellent faculty and staff have pushed forward to create new, innovative teaching approaches, research experiences, and opportunities for our students. It also highlights many things we have accomplished this year in the classroom, the lab, the river, the field, and the ocean. Our faculty have broadened STEM (science, technology, engineering, and mathematics) awareness in our region and worldwide by inviting national scholars for presentations and participating in conferences around the globe.

Enjoy this issue as you learn more about how we are focusing on "Our Vision," "Our Communication," and "Our One-College Approach" to ensure an even brighter future! If you have any questions about our programs and activities, please don't hesitate to reach out to me. I look forward to hearing from you!

Chad L. Leverette, Ph.D.  
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Professor of Chemistry  
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**GUPTA COLLEGE OF SCIENCE AT  
COASTAL CAROLINA UNIVERSITY**  
[coastal.edu/science](http://coastal.edu/science)

### PROGRESSION MAGAZINE

Wendi V. Lee  
Director of Media and Communication  
Gupta College of Science

### ALUMNI INFORMATION

[coastal.edu/alumni](http://coastal.edu/alumni)

### ADVANCEMENT INFORMATION

[coastal.edu/endowment](http://coastal.edu/endowment)

### COASTAL CAROLINA UNIVERSITY

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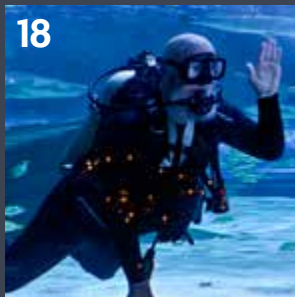
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RECENTLY FUNDED

# Research & Scholarship

## CCU SCIENCE FACULTY RECEIVE PRESTIGIOUS AWARDS AND GRANTS FOR RESEARCH AND TEACHING EXCELLENCE

**Faculty members in the Gupta College of Science have recently received prestigious awards and grants for their innovative research and teaching methods.**

**April Abbott, Ph.D.**

*Assistant professor of marine science*

Abbott was awarded a \$349,370 grant from the National Science Foundation. The grant project, titled "The Benthic Influence on North Atlantic Deep Water End Signatures," is in collaboration with Oregon State University and will involve a 1.5 months-long cruise with CCU students to the North Atlantic to collect sediment cores. Abbott was also the recipient of the Oceanographic Society's Early Career Award for her contributions to chemical oceanography.

**Shaowu Bao, Ph.D.**

*Associate professor of marine science*

Bao received a \$243,190 grant from the National Oceanic and Atmospheric Administration for a project titled "Advance Riverine-Coastal Model Coupling and Forecast Verification for Total Water Quantity and Water Quality Prediction." The grant is a subaward under the University of Alabama, Alabama Water Institute.

**Chiara Gamberi, Ph.D.**

*Assistant professor of biology*

Gamberi received a grant from the South Carolina IDeA Networks of Biomedical Research Excellence's Developmental Research Project program. The award will support her project titled "Modeling renal cyst mechanisms in the fruit fly *Drosophila melanogaster*."

**William "Billy" Hills, Ph.D.**

*Professor of psychology*

Hills was selected for the 2022 Polish Fulbright Specialist Program. The program enables a short-term collaboration with American specialists at Polish higher education institutions, as well as educational, scientific, research, cultural, and medical institutions and non-governmental organizations. Hills traveled to Poland during the latter part of the Spring 2023 semester.

**William Jones, Ph.D.**

*Professor of computer engineering*

Jones received a \$612,000 grant from the Los Alamos National Laboratory (LANL) to support his research project titled "Scheduling Simulation for Production HPC." The work funded by this grant will enable Jones and his group to add fidelity and increased functionality to a previously funded existing simulation framework that LANL can use, in conjunction with other tools, to make data-driven procurement, scheduling, and operational decisions for their large-scale high-performance production computing facilities. These computer resources, comprised of tens of thousands of individual computers, form the foundation on which LANL scientists routinely execute complex scientific codes that are of interest to the U.S. Department of Energy.

The simulator that Jones and his team are working on can help LANL system administrators make better decisions about how to use and repair these resources, which in turn can improve overall system efficiency and end-user experiences.

**Terry Pettijohn, Ph.D.**

*Professor of psychology*

Pettijohn was selected for the 2022 Undergraduate Teaching and Mentoring Award by the Society for Personality and Social Psychology. The award was designed to recognize excellence in teaching and mentoring among faculty at colleges and universities that do not have Ph.D. programs in social and/or personality psychology.

**Bryan Wakefield, Ph.D.**

*Professor of chemistry*

**Brian Lee, Ph.D.**

*Assistant professor of biochemistry*

Wakefield and Lee facilitated the efforts, along with Paul Richardson, Ph.D. (chair, Department of Chemistry), to procure a state-of-the-art 500 MHz NMR spectrometer. This is a research-grade instrument that has a new home at CCU. This is a tremendous resource for faculty and students and the community. NMR is a workhorse technique to determine the molecular structure of compounds for a wide variety of samples.





## CONGRATULATIONS TO THE FOLLOWING DEPARTMENTS, FACULTY, AND STAFF ON THESE SIGNIFICANT ACCOMPLISHMENTS THIS YEAR!

### PROMOTION AND TENURE DECISIONS

**Diane Fribance, Ph.D.**  
(marine science)  
- Promotion to professor

**Bryan Wakefield, Ph.D.**  
(chemistry)  
- Promotion to professor

**Siming Guo, Ph.D.**  
(physics and engineering science)  
- Tenured and promoted to associate professor

**Matthew Murphy, Ph.D.**  
(psychology)  
- Tenured and promoted to associate professor

**Melissa Paiva-Salisbury, Ph.D.**  
(psychology)  
- Tenured and promoted to associate professor

### RECOGNITION OF RETIRING FACULTY

**Sharon L. Gilman, Ph.D.**  
(biology)  
- Distinguished Professor Emeritus

**Craig Gilman, Ph.D.**  
(marine science)  
- Professor Emeritus

### 2023 HTC Distinguished Teacher-Scholar Lecturer Award

**Paul E. Richardson, Ph.D.**  
(chemistry)  
- Professor/Chair, Department of Chemistry

### 2023 Teaching Innovation and Excellence Award

**Amber McWilliams**  
(chemistry)  
- Senior lecturer

### 2023 Research Excellence Pre-Tenure Award

**April Abbott, Ph.D.**  
(marine science)  
- Assistant professor

### 2022 CCU STAFF AWARDS (recipients and nominees)

**Danielle Viso**  
(EQL)  
- Leadership (nominee)

**Kelita Colburn**  
(GCOS)  
- Leadership and Teamwork (nominee)

**Melanie McKeefery**  
(GCOS)  
- Teamwork (nominee and award recipient)

**Elizabeth (Beth) Bischoff**  
(marine science)  
- Rookie of the Year (nominee and finalist)

**Betsy Shuman**  
(chemistry and marine science)  
- Rookie of the Year (nominee)

**Jennifer Sparkes**  
(mathematics and statistics)  
- Rookie of the Year (nominee)

### DEPARTMENT OF PHYSICS AND ENGINEERING SCIENCE

The bachelor's degree program in engineering science is now accredited by the engineering accreditation commission of ABET. Congratulations on this significant accomplishment!

### Welcome to the new faculty and staff of the GCOS that were hired for the 2022-2023 academic year:

**Breana Kyker, Ph.D.**  
(chemistry)  
- Lecturer

**Gabriela Perez-Alvarado, Ph.D.**  
(chemistry)  
- Lecturer

**Savannah Post, Ph.D.**  
(chemistry)  
- Assistant professor

**Charles Taylor**  
(chemistry)  
- Lecturer

**Paul Cerkez, Ph.D.**  
(computing science)  
- Assistant professor

**Megan Hickman Fulp**  
(computing science)  
- Lecturer

**Kristen Haynes**  
(mathematics and statistics)  
- Lecturer

**Dana Lee**  
(mathematics and statistics)  
- Lecturer

**Joseph Njuki, Ph.D.**  
(mathematics and statistics)  
- Assistant professor

**Chong (Carol) Chen, Ph.D.**  
(physics and engineering science)  
- Lecturer

**Charles (Chaz) M. Hemphill, Ph.D.**  
(physics and engineering science)  
- Lecturer

**Melissa (Mel) Baker, Ph.D.**  
(psychology)  
- Assistant professor

**Lisa Gunter, Ph.D.**  
(psychology)  
- Assistant professor

**Charlene Kaurert**  
(physics and engineering science)  
- Administrative specialist

**Brenda Stevens**  
(computing science)  
- Administrative specialist

**Wendi Lee**  
(GCOS)  
- Media and communication director

FROM

INDUSTRY

TO

ACADEMIA

TO

Administration:

DEAN CHAD LEVERETTE'S JOURNEY TO CCU

**F**rom food chemistry and nanotechnology to the classroom, Chad Leverette, Ph.D., has had a career of advancing science, solving complex problems, and educating the next generation of scientists. In this article, we delve into Leverette's journey from industry as a senior research scientist to a chemistry professor, and

ultimately to his role as the seventh dean of the Gupta College of Science. Leverette shares the challenges he faced, the lessons he learned, the milestones that shaped his career, how his personal faith and family helped shape him into who he is, and advice for future scientists.



# 1

## CAN YOU TELL US ABOUT YOUR JOURNEY TO BECOME THE DEAN OF THE GUPTA COLLEGE OF SCIENCE? WHAT INSPIRED YOU TO PURSUE THIS POSITION?

I actually never thought I would be a dean, or any other administrator for that matter. I had always wanted to be a professor since I was in college. The main reason is because of a professor I had, Dr. Howard Thomas, who had a profound impact on my life. He was my chemistry professor at Erskine College. After observing him as a role model and taking multiple classes from him, I decided that I wanted to invest my life in helping students like Dr. Thomas. After I graduated with a B.S. in chemistry, I chose to go to graduate school, knowing that having a terminal degree would help me in my pursuit to be a professor. I attended the University of Georgia and had a great experience there. I studied analytical chemistry, in particular, vibrational spectroscopy.

Upon graduating with my Ph.D. in 2000, I had planned to do a post-doc to add to my research experience, but received some good advice from my mentors, including Dr. Thomas. I chose to work for the world's largest food/agriculture company, Cargill, as a senior research scientist in their global research and development. Many analytical chemists go into industry, so I thought working in industry would help me be a better professor. It definitely helped me. My time in industry led to some incredible experiences. I worked on research projects that included the Egg McMuffin for McDonald's, M&M's chocolates, Ruby Tuesday's sauces, SlimFast, Outback steaks, Coca-Cola, and Pepsi products, just to name a

few. In my time at Cargill, I worked for over 50 different business units that provide many of the products that we all enjoy on a daily basis. I led international teams of scientists from all over the world. It was a great job, but I wanted an even greater job: to be a professor! So, after more than four years in the industry, I knew it was time to return to the classroom. I began my journey as an assistant professor of chemistry at the University of South Carolina Aiken. I wanted to work with undergraduates primarily, have the resources of a university system (since my research is expensive!),

and have great collaborators; this is exactly what happened. I was a member of the University of South Carolina's NanoCenter and worked on nanotechnology research for 17 years as a professor.

For more than 12 years, my research was funded by the U.S. Department of Energy through the Savannah River National Laboratory. This allowed me and my students to create novel nanostructured sensors for low-level radionuclide analysis. I loved working with students and helping them become outstanding chemists and researchers.



Leverette on the cover of USCA magazine for his SC Professor of the Year honor.

My success at USC Aiken led to some incredible honors, including being selected as the 2010 South Carolina Governor's Professor of the Year. This award has a distinguished group of recipients, and I definitely don't feel worthy to be part of that group.

After these great successes, I was approached by a provost who saw something in me that I didn't see. She encouraged me and hired me to be the assistant vice chancellor for academic affairs (AVCAA). I never realized how many more students, faculty, and staff I could help as an administrator. I also love solving problems, and there is no shortage of problems as an administrator! In this role as AVCAA, I led the Center for Teaching Excellence, sponsored research, the honors program, and many other areas. I then decided to become department chair with the support of my faculty colleagues. That provided me with experience in promotion and tenure, hiring, larger budget management, etc. Then, as some people retired, I was asked to move into the interim dean role at USC Aiken. I held that position for two years before being selected for the full-time dean position after a national search. In total, I was dean for four years for the College of Sciences and Engineering at USC Aiken.

Things were going great, and I had no intention to leave, but a chance encounter led me to learning more about the dean position at CCU. I decided to speak to the recruiter and have a conversation about the position. After hearing about the strengths and needs of the Gupta College of Science, I thought it matched well with my skill set and interests, and I genuinely thought I could help. Being from South Carolina originally, I knew of Coastal and had followed the University's successes through the years. I knew CCU was a great institution. I applied and was very fortunate to be named the seventh dean of the Gupta College of Science! It has been a great first year at Coastal!



(Left to right): Leverette conversing with CCU President Michael T. Benson.

## WHAT WERE SOME OF THE BIGGEST CHALLENGES YOU FACED IN YOUR PREVIOUS CAREER PATHS, AND HOW DID YOU OVERCOME THEM?

I think sometimes we get so busy just working that we don't reflect back on where we have come from and what we have accomplished. Here are a few examples of some things I learned (sometimes the hard way) that have meant a lot to me during my professional career. When I was in graduate school, I didn't know if I could actually get a Ph.D. No one in my family up to that point had ever reached that individual accomplishment. I learned to push myself and really challenge myself. I grew a lot in those years. In graduate school, I was taught, like many Ph.D. students, to go "deep" in my scientific area. When I went into industry, I was working on projects with business units stationed literally all over the world. Industry taught me how to be flexible, go "deep," and be "broad" in how I approached scientific problems. In academics, I sort of naively thought that all students basically learn the same way. I remember teaching my first few classes and expecting all students to reach a very high, basically unattainable "bar."

As I continued to teach, I learned how special each of us is and really decided to learn about learning styles and the differences that exist amongst us. I decided to start teaching that way, and it made a huge difference. I feel that I was able to help students from all backgrounds and experiences rise to that "bar" of competence and excellence in my discipline, but I no longer expected that the path was the same for all students. I also fell in love with teaching at public institutions. I loved the diversity of the students I was able to teach! My students inspired me and continue to do so. I love seeing and hearing about their backgrounds and experiences. Finally, as I began working as an administrator, I initially focused on the problems to solve. I love that part of the job, but what I love more are the people. I learned that the problems will always be there, but what people will really remember is how they are treated. I have made it my desire to show genuine kindness to others and to help in any way that I can. That has given me great purpose to be able to help others and to help the University as a whole.



Leverette in the classroom.

# 3

## HOW HAS YOUR EDUCATIONAL BACKGROUND PREPARED YOU FOR YOUR CURRENT ROLE AS DEAN? ARE THERE ANY SPECIFIC SKILLS OR KNOWLEDGE THAT YOU GAINED DURING YOUR STUDIES THAT HAVE BEEN PARTICULARLY HELPFUL?

Both my bachelor's degree and doctorate definitely prepared me to be a chemist. I was ready to tackle the chemical problems that I faced in industry and academia. In industry, I was required to participate in Toastmasters International. That is an organization that focuses on being an excellent communicator. At the time, I hated it actually, but it helped me so much! I never realized how the skills I learned in Toastmasters would help me be an effective communicator.

My manager in industry once told me that I could be the greatest chemist in the world, but if I could not communicate it, I would not be effective. He was totally right. Since that day, as an educator, I have pushed my students to focus on their disciplines, of course, but also to work on the other tenets of the liberal arts: critical thinking, global perspectives, and effective written and oral communication.



# 4

## WHAT OPPORTUNITIES DO YOU SEE ON THE HORIZON FOR THE GUPTA COLLEGE OF SCIENCE? HOW DO YOU PLAN TO CAPITALIZE ON THESE OPPORTUNITIES?

Oh my goodness, there is so much! We do provide premier STEM education for our students. We have top-notch and award-winning faculty, first-class facilities, and state-of-the-art instrumentation, equipment, and marine vessels. Even though I completely believe this to be true, we are too much of a secret! We have to let the world know more about what we do here at Coastal. I see us working on clarifying our message together and sharing it more broadly. I believe we have the ability to do more in terms of research with collaborators at universities and organizations across the world, making a real difference with our scientific discoveries.

I see us being an even better partner with our community and building many more relationships with industry partners. I see us recruiting many more students to come to Coastal for our STEM programs first and then to enjoy our location and all that CCU has to offer. We want them here because of what they see us doing in STEM. I see us greatly expanding our experiential learning opportunities, which are national high-impact practices, to help our students be even more successful. These opportunities are a strength of our college. The future is extremely bright for the Gupta College of Science. It is an honor to help my faculty and staff as we work toward these types of things.



(Left to right): *Jamia Richmond*, interim dean of the Spadoni College of Education and Social Sciences, *Leverette, Lee Brown*, dean of the College of Graduate and Continuing Studies, and *Daniel Ennis*, former provost.

# 5

## WHAT ATTRACTED YOU TO COASTAL CAROLINA UNIVERSITY AND THE GUPTA COLLEGE OF SCIENCE? WHAT SETS CCU APART FROM OTHER UNIVERSITIES WHERE YOU HAVE WORKED OR STUDIED?

Our location and programs are distinctive, and I love the ocean. Coastal presented a unique opportunity in those areas where I wanted to help lead. That is not the main reason, though. After spending 18 years in higher education and with all those years being at a public, comprehensive university like Coastal, I see that Coastal is special.

We have a chance to do so much good, to really help our communities, state, and nation, and to help educate students from all over the nation and world. Coastal has the ability and resources to have a more statewide and national/international reach and presence. All of this was very interesting to me. I believe Coastal has the ability to help multitudes of students as they pursue careers in science!

# “

My manager in industry once told me that I could be the greatest chemist in the world, but if I could not communicate it, I would not be effective.”

# 6

## HOW DO YOU BALANCE YOUR RESPONSIBILITIES AS DEAN WITH YOUR PERSONAL LIFE AND FAMILY OBLIGATIONS? DO YOU HAVE ANY TIPS FOR ACHIEVING WORK-LIFE BALANCE?



Leverette with his wife, Cara, and her parents at a CCU baseball game.

I don't always do this successfully, to be honest. I am so passionate about my family and my work. I love what I do. Because of that, I don't mind working. My Grandma Motley and my mom always pushed the value of education to me, and they were right. I have learned that my education allows me to do something I love and get paid to do it! In addition to my passion, I come from a long line of hard workers. I believe in that.

My dad used to always say, "You can't outwork a Leverette!" I don't even claim remotely to be the most intellectual or most skilled compared to anyone else. What I know I can control is how hard I work. So, I apply the skills I do have, and I work hard. I will say that my faith as a Christian and my family are most important to me, in that order, followed by my job. Keeping that perspective helps me stay balanced. I am so grateful for my faith, my family, and my job. I think it has created a spirit of gratitude in me. It seems that the older I get, the more grateful I am. I hope I will always approach life that way.

# 7

## CAN YOU TALK ABOUT ANY EXCITING NEW INITIATIVES OR PROGRAMS THAT THE GUPTA COLLEGE OF SCIENCE IS WORKING ON?



Again, there are so many! One thing that we needed to do as a college was come together and work on our message and our vision for the future. I share more about that in this issue of *Progression*. We have made great progress this year on that and plan to release our college strategic plan in Fall 2023 with the help of our excellent faculty and staff. It is clear, though, that what we are great at is high-quality teaching and experiential learning opportunities for students.

This year, we created a completely redesigned Research Fellows program that represents our premier grant program to help fund undergraduate research. We are also looking to grow our undergraduate and graduate research experiences for our students and better support our faculty mentors who provide this experience. We are also looking at national models, with partner institutions like Georgia

Tech and others, where we can greatly expand these research opportunities for our students. We are also doing a lot in how we partner with external partners and industry.

These partnerships help us keep our curriculum current and relevant and help provide insight we can pass on to help our students be more career-ready. Finally, we are focusing on increasing our influence from Conway to the coast. We want to be more strategic in our use of incredible places like Waties Island and Winyah Bay to help provide experiences to our students while we help protect and conserve these environmental treasures. I envision us working with the campus and our state partners to soon have a research station at Waties Island, on the upland side, that will help us greatly increase the teaching and research that we do related to coastal systems and educate the community and nation on the importance of conservation. It is going to be fun!

## WHAT ADVICE DO YOU HAVE FOR STUDENTS WHO ARE INTERESTED IN PURSUING A CAREER IN SCIENCE, TECHNOLOGY, ENGINEERING, OR MATHEMATICS (STEM) FIELDS?

# 8

I would say, follow your passion. Yes, we all need jobs to take care of ourselves and our families, but education allows you to pursue your dreams, do what you love, and get paid to do it! Everyone will spend a huge portion of their lives in their careers. Invest your life in your passion and in ways to help others.

And when you get knocked down or face an obstacle, learn from it and keep pushing and trying. Some of my biggest lessons I have learned came from failures. It is okay to fail. It will make you tougher and will teach some great lessons that are hard to learn in other ways. It will keep you humble and keep you striving to do better the next time. Don't be afraid to try something new because you might fail. Just like any good scientist, be an experimentalist.

Have an attitude that is willing to try to make something better. Don't worry if you fail. You will learn either way, in your successes and failures. We all fail from time to time; it is normal. What is worse, in my opinion, is not being willing to try. Learn and keep going!

I would also add to make the most of every experience. Push yourself to try new things. Get involved in research. Do that internship. Add to the experiences you will gain in the classroom. Also, take advantage of the fact that you are at a place with so many experts who care about your success. Get to know your faculty. Learn about their stories. Listen to their advice. As faculty, we are here at Coastal because we care about our students and want to see them all be successful. All of these things will help prepare you for a great scientific career after college.



*Levette with his wife, Cara, and sons, Caleb and Micah.*

## LASTLY, COULD YOU TELL US A BIT ABOUT YOUR FAMILY AND HOW THEY HAVE SUPPORTED YOU THROUGHOUT YOUR CAREER?

I will try not to get too emotional! They are incredible and a huge blessing in my life. I come from parents who are thankfully still living and are a huge part of my life. They have been married for over 50 years and teach me so much each day. We talk almost daily. I have a wonderful sister, and she has a great family that I love dearly. My wife has two wonderful parents who have also been married for over 50 years. They are also great people and mentors in my life.

I also have awesome brothers-in-law and love their families dearly. I have the

best wife I could have ever imagined; she is my best friend. Her name is Cara, and we have been together for almost 30 years now! She was my high school sweetheart, if you can believe that. She was an elementary school teacher for almost 20 years and now owns her own art business, painting all sorts of original art for so many people. We have two amazing sons, Caleb (age 22) and Micah (age 20). They are incredible young men. Cara and I are very close to them. Finally, I have an amazing dog, Marley. She is a plot hound and “my baby girl.”



*The adorable Marley, the Levette family dog.*



**COLIN**

**SCHOLL**

**AN UNCONVENTIONAL  
PATH TO SUCCESS**

**C**olin Scholl is not a typical high school or college graduate. At only 18 years old, he is the first graduate of the Scholars Academy, a school for academically gifted high school students located on Coastal Carolina University's campus, to graduate from college before he graduates from high school.

Scholl's journey began in kindergarten, where he was identified as a gifted and talented student. He participated in programs that allowed him to showcase his academic talents, such as taking classes meant for students one grade above him. "It always felt natural to me that I would do something different than the norm," said Scholl. "My parents are both teachers in Horry County Schools, and my mom always pushed me to advocate for myself and take advantage of opportunities. Thankfully, I was afforded many opportunities as a student at the Scholars Academy and in Horry County Schools."

In August 2019, Scholl began attending the Scholars Academy. His journey started with a freshmen/introductory-type seminar regarding what to expect when taking college classes as a high school student. However, the first class he took, an introduction to music class, was at the beginning of the COVID-19 pandemic. Despite the added complications, he used the time to pursue his passion in music and to contemplate what his next few years as both a high school and college student were going to be. "The music class eased a few of my fears about becoming a college student while still in high school," said Scholl.

Scholl continued to excel at the Scholars Academy, quickly adapting to being a high school and college student simultaneously, but not without trepidation. "There was a lot of anxiety about becoming a college student at a young age due to the fear of not being respected because I was younger than most college students." Fortunately, many of his classmates welcomed him and communicated their admiration regarding what he wanted to accomplish. "I was lucky there was a sense of respect shown toward me from a lot of my classmates. They sort of had the mentality of, 'Hey, he's doing the same thing I am, but at a younger age.'"

Initially, Scholl was uncertain that graduating from college at the age of 18 was possible. However, after sitting down with his mom to discuss his options, he began planning his curriculum, unintentionally steering the course of his future in an unconventional direction. Scholl majored in psychology and initially planned to minor in Spanish, but a trip to China to play the cello with Chinese students changed his academic path. After taking Chinese, he added minors in language and intercultural studies, Asian studies, and Chinese. "Dr. Xinyi Tan is a wonderful professor and was a really big role model for me and a mentor while I was at Coastal," said Scholl. "She really helped me choose a path where I could combine my interests in psychology and language."

Scholl's interests in psychology and language have led him to the University of Texas El Paso. There, he plans to work toward his Ph.D. in psychology with a concentration in bilingualism, language, and cognition. "My plan is to do research on how people who are bilingual cognitively differ from people who aren't. El Paso is very close to the Mexican border, so there will be plenty of people who speak Spanish and English. In terms of test subjects, there's a wide pool." After receiving his Ph.D., Scholl hopes to become a professor, continuing the legacy of his parents and his family's long lineage of educators.

Despite his impressive academic achievements, Scholl remains grounded and humble. "I am certain that any of my peers at the Scholars Academy could achieve what I achieved, but because no one had done it before, they didn't think it was an option. I am also sure others will achieve this after me." He credits his success to the support of his family, friends, and mentors, as well as his own hard work and determination. He also credits his time at CCU, saying he's been "largely inspired by the people here and seeing what impact professors can have on their students."

Scholl's story is a reminder that there is no one "right" path to success. By following his passions and seizing every opportunity that came his way, he achieved something truly remarkable and is an inspiration to anyone who may be struggling to find their own path in life or who may be afraid to take risks and pursue unconventional goals.



(From left to right): Interim Provost Sara Hottinger; Norman McQueen, principal of the Scholars Academy; CCU President Michael T. Benson; Colin Scholl; and Chad Leverette, dean of the Gupta College of Science.

*Subhash Saxena, Ph.D.*

# REFLECTING

*on memorable  
experiences +  
achievements at  
Coastal*

$$(x^3 + \frac{4}{\sigma x}) dx +$$



**S**ubhash Saxena, Ph.D., distinguished professor emeritus of mathematics at Coastal Carolina University, has left an unforgettable mark on the institution through his contributions and unwavering dedication to his field. With a career spanning several decades, Saxena has witnessed the growth and transformation of the University over the years, and his role in shaping the mathematics department has been truly inspiring.

Saxena came to Coastal in 1973 with the intention of staying for only one year. When asked what brought him to CCU, Saxena said, “There are two things I love: teaching and mathematics. I loved this area, and I knew what they needed regarding building the math department.” At that time, CCU was a two-year institution, but it became a four-year institution in 1974. The University needed a math program and someone with a Ph.D. to help create the program and recruit faculty to teach courses.

*There are two things  
I love: teaching  
and mathematics.*



One of Saxena's notable accomplishments during his earlier days at the University was the creation of the Mathematics Advancement Council (MAC), which was established in 1978. This council brought together math faculty, mathematics teachers from local counties, and other stakeholders. "There was a good response from teachers in Horry and Georgetown counties and from the math faculty at CCU who were a part of MAC," said Saxena. "We worked together to identify ways to improve math education in middle and high schools."



The MAC served as a platform for teachers to voice their concerns, discuss challenges, and explore ways to enhance math education. As the chief editor of the MAC newsletter, which was printed twice a year, Saxena ensured that valuable insights and articles were shared, contributing to the professional development of educators and fostering a love for math among students. He also received three federally funded grants for improvements of math instruction in area high schools.

Other notable accomplishments include winning the Coastal Carolina College's Distinguished Teaching Award in 1985 and later winning the Amoco Teaching award in the USC system, an honor only four teachers from CCU's campus achieved. "That was a proud moment for me," said Saxena.

Saxena's commitment to bridging the gap between faculty and school teachers extended beyond the MAC. He offered advanced undergraduate- and graduate-level math courses, providing opportunities for teachers to enhance their credentials and improve their teaching skills. By holding evening classes, he accommodated the schedules of working teachers, enabling them to pursue higher education and further their careers. "This contribution is very important to me because I helped teachers in the area, as well as faculty, finish their education," said Saxena.



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*“This contribution is very important to me because I helped teachers in the area, as well as faculty, finish their education.”*

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Coastal’s mathematics department experienced significant growth during Saxena’s tenure. He made presentations at several national and international conferences in places such as Adelaide, Australia; Helsinki, Finland; Quebec City, Canada; Copenhagen, Denmark; Zurich, Switzerland; Beijing, China; Tokyo, Japan; Berkley, California; and Hyderabad, India. “In a small way, those presentations helped put the CCU math department on the world map,” said Saxena. He also played a vital role in establishing a symbiotic relationship between the department and the wider University community. “A lot of things grew faster than people thought they would, so that gave me a challenge,” said Saxena. However, Saxena did not let those challenges deter him from moving the math department forward. He and other math faculty created the math lab, and Saxena established the CCU chapter of Pi Mu Epsilon, the U.S. honorary national mathematics society. The establishment of Pi Mu Epsilon provided opportunities for students to engage with renowned scholars through guest lectures and create relationships with math professors and other math majors. Saxena was a big supporter of creating a symbiotic relationship between mathematics and technology and fostered interdisciplinary collaborations, particularly within computer science.

Saxena, who retired in 2000, continues to show his love and support for CCU and the local community in many ways. He initiated and continues to sponsor the Dr. Subhash Saxena High School Math Contest, which has garnered substantial participation from local schools and generated enthusiasm for mathematics among students. The competition, which just entered its 42nd year, was designed to promote interest in mathematics among high school students and draws students not only from South Carolina but also from out of state. The success of the competition prompted the establishment of an endowment in Saxena’s name to sustain and expand this annual event. He also started the Dr. Subhash Saxena Math

Research Endowment and the Subhash Saxena Scholarship. In recognition of a generous endowed gift, the Gupta College of Science mathematics department was officially named the Subhash Saxena Department of Mathematics and Statistics. When asked why he still continues to give to Coastal Carolina 23 years after retirement, Saxena says, “Coastal Carolina University is the crown jewel of Conway, S.C., and Horry and Georgetown counties. This institution is growing and has great potential. I believe the best days are yet to come.”

Throughout his career, Subhash Saxena has exemplified the qualities of an exceptional professor and mentor. His impact on the mathematics department at Coastal Carolina University will continue for years to come. His dedication to teaching, and fostering a love and appreciation for mathematics by making it fun to learn and creating relationships between CCU mathematics faculty and mathematics teachers in the Horry and Georgetown school districts, will always be appreciated.



*Pushpa and Subhash Saxena.*



Tom Mullikin greeting guests at the Burroughs & Chapin Center for Marine and Wetland Studies' annual open house at Ripley's Aquarium.

## Marine science faculty showcase research at Ripley's Aquarium open house

Coastal Carolina University's Burroughs & Chapin Center for Marine and Wetland Studies and the Mullikin Institute hosted a reception and open house at the Ripley's Aquarium of Myrtle Beach in November 2022. This was the first open house since the COVID-19 pandemic, and it was a great opportunity for the center to showcase its latest research and projects.

The event began with a warm welcome from Paul Gayes, Ph.D., executive director of the center and professor of marine science, as well as introductory remarks from Tom Mullikin, a research professor at CCU and S.C. attorney with more than 30 years of legal environmental expertise. They recognized key people who have contributed to the center's growth and success.

The reception was attended by members of the CCU and local community, S.C. lawmakers, government workers, environmental and nonprofit organization leaders, as well as students who presented their projects and research.

The Burroughs & Chapin Center for Marine and Wetland Studies has been a vital institution in the field of marine and wetland research for many years, and it continues to make significant contributions to the field.



(Top photo from left to right): Gupta College of Science Dean Chad Leverette, Ph.D.; Paul Gayes, Ph.D.; and CCU President Michael T. Benson, D.Phil.

(Middle and bottom photos): Students presented their research at the Burroughs & Chapin Center for Marine and Wetland Studies open house at Ripley's Aquarium of Myrtle Beach.



## CCU hosts Southeastern Section MAA Meeting 2023

by **Lindsey Bell, Ph.D.**  
*Assistant chair/professor of statistics*

The Mathematical Association of America Southeastern Section (MAA-SE) has been in existence for over 100 years. Their mission is to advance mathematical sciences across the Southeast. During the height of the COVID-19 pandemic in 2021, the call came for an institution to host the conference face-to-face. CCU mathematics and statistics faculty Debendra Banjade, Ph.D., Deepak Basyal, Ph.D., Lindsey Bell, Ph.D., and Paul Hill, Ph.D., worked together on the proposal to bring the 102nd annual MAA-SE meeting to Coastal Carolina University.

The meeting was held March 9-11, 2023, exactly 30 years since Coastal first hosted the conference in 1993. More than 250 attendees participated from Alabama, Georgia, South Carolina, North Carolina, and Tennessee. There were several workshops and special sessions held, over 50 talks given, and 19 posters presented.

All hands were on deck as faculty in the Subhash Saxena Department of Mathematics and Statistics volunteered their time to run registration tables, serve food, and moderate sessions among many other roles and responsibilities. Two CCU faculty, Basyal and Rajendra Dahal, Ph.D., and one former faculty, Anil Saxena, Ph.D., gave presentations at the conference. Five students presented their research, including Riley Beam, Michael Hendrix, Jensen Meade, Tyler Rielly, and Devyn Willey. Two former students, Cannon McIntosh and Alex Foster, who are now in graduate school, returned for presentations. The CCU Math Jeopardy! team won third place in the competition. The team consisted of Beam, Meade, Rielly, and Andy Xu. This was a wonderful opportunity for the department to come together to provide a rich experience in mathematics for attendees all across the Southeast.

More details about the meeting can be found at [maasoutheastern.org/2023-section-meeting](https://maasoutheastern.org/2023-section-meeting). The meeting would not have been possible without the tireless work of Jennifer Sparkes and Keshav Jagannathan, Ph.D., attending to every detail. And finally, it is of special note that Subhash Saxena, Ph.D., for whom the department is named, was in attendance when CCU first hosted the conference all those years ago and again on this very special occasion.

## CCU's math and statistics department shapes lives of future mathematicians

The Subhash Saxena Department of Mathematics and Statistics at Coastal Carolina University hosted the 42nd annual Dr. Subhash Saxena High School Math Contest. The purpose of this event is to stimulate and promote interest in mathematics among high school students. Students from various South Carolina high schools compete each year for awards, prizes, and scholarships in two levels of competition.

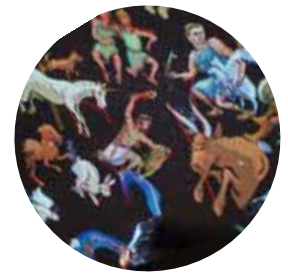
CCU offers a Coastal Scholars Award to the highest scoring Horry County senior on the Level II test, which is an assessment of junior and senior students who have taken algebra I and II and geometry.

In addition to the competitions, professors from the Gupta College of Science at CCU give interactive presentations on their research interests to both engage the participants and show them the importance mathematics plays in society and the workforce.

"The experience provided to high school students that excel in mathematics would not be possible without the support and generosity of Dr. Subhash Saxena," said Keshav Jagannathan, Ph.D., department chair. "He was the driving force behind the math contest at its inception and continues to be a strong advocate for the intellectual and mathematical enrichment of our local and regional high school students. We are deeply grateful to Dr. Saxena for his support of this important event."

Saxena, Distinguished Professor Emeritus at CCU, endowed the fund for the annual math contest that now bears his name. He taught mathematics at CCU from 1973 until his retirement in 2001, serving as department chair from 1987-1993.

The University's first high school math contest was held in 1979 and had more than 100 student participants. Through the past few years, the contest has attracted thousands of students from across South Carolina.



## Immersive Planetarium Education Project

by **Jean French, Ph.D.**,  
Chair, Department of Computing Sciences



*Horry County students enjoying the planetarium.*

Planetariums provide a unique perspective for viewing the wonders of nature. The Immersive Planetarium Education Project, a collaborative effort of Coastal Carolina University's Departments of Computing Sciences and Physics and Engineering Science, uses a portable planetarium system to provide an immersive experience to those who would otherwise not have access to such a visual learning environment. The project was funded through the Horry County Higher Education Commission and is maintained by CCU. The planetarium provides an avenue for delivering unique outreach experiences for audiences that include preschool students through adult lifelong learners. The 360° projection full-dome system features not only traditional planetarium astronomy demonstrations but also supports educational experiences across multiple disciplines, including 360° demonstrations of neuroscience, oceanography, physics, geography, anatomy, social science, art, history, and others. The project provides access to educational opportunities that may be otherwise out-of-reach for some Horry County citizens. The closest planetarium is in another state, so the need for local experience is essential to the area.

The Immersive Planetarium Education Project can support the community's educational needs by utilizing the system's portability and providing a unique learning environment that reaches beyond astronomy. The system includes fully developed demonstrations and allows educators either to record original demonstrations for later playback or to present live astronomical material with roaming control features. In addition, because the full-dome projection system is designed for education, it includes additional resources that support the development of new content.

Jean French, Ph.D., chair of CCU's Department of Computing Sciences, directs the Immersive Planetarium Education Project. Her scientific background spans both environmental geosciences and computer information systems. She has been involved in educational outreach with the public for decades via prior experience at the

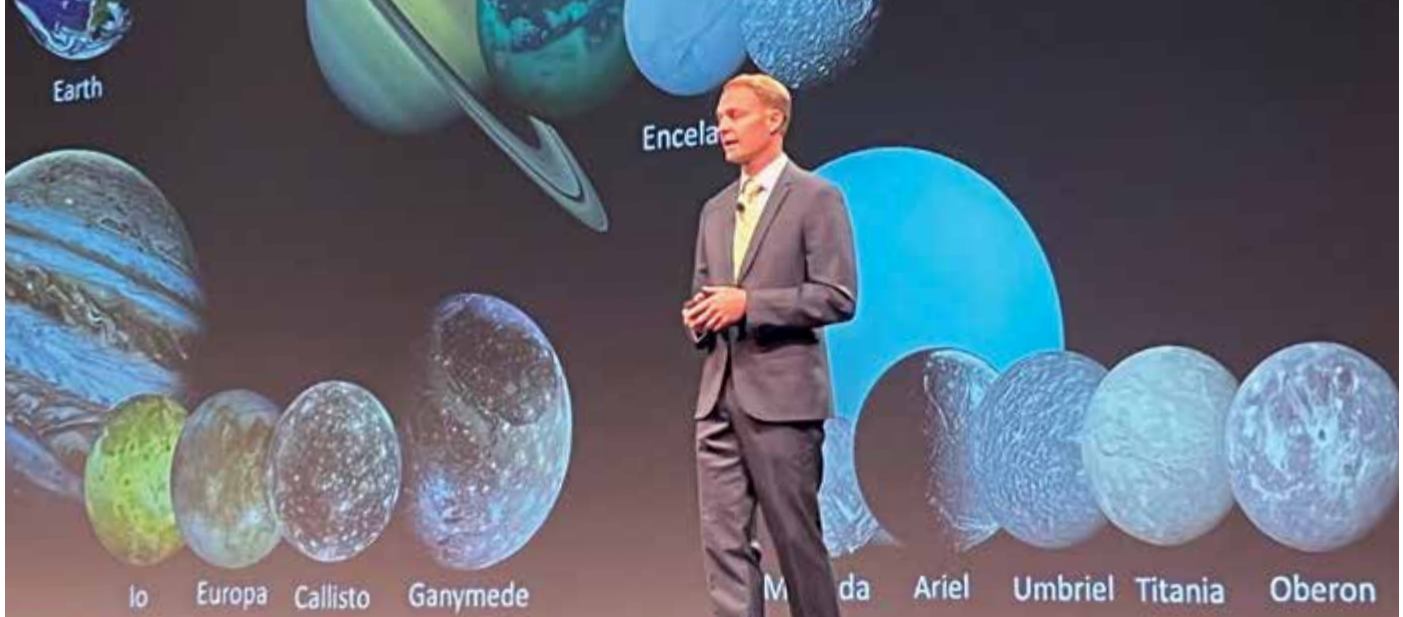
Boston Museum of Science, community service as a University faculty member, and extracurricular activities as an Horry County Schools volunteer. She is a faculty mentor for the University's Women in STEM Fellowship and engages in educational STEM research. Another supporter of the project is Ian Hewitt, lecturer in the Department of Computing Sciences and Department of Physics and Engineering Science. He serves as a professional advisor to the project and also attends events with French.

A majority of the planetarium is used in the K-12 arena with a focus on the required astronomy curriculum. A typical school visit starts with understanding the needs of the school. French is well-versed in the South Carolina academic standards related to astronomy and obtains any special requests by the school. Elementary schools start their days as early as 7:20 a.m. in the county, so many event days begin at 5:30 a.m. to accommodate handling and transporting of the equipment. Upon arrival, individual classes visit the planetarium dome on a rotating basis where French gives a live demonstration. The presentation focuses not only on science standards, as she provides practical experience and leads hands-on exercises in the dome on what students can expect to see in the sky that very night. Because she gives a live demonstration, she is able to respond to student questions immediately with the responsive astronomical software. Younger children tend to find enjoyment in seeing the surfaces of the planets while older students are interested in the latest comet or the location of other galaxies. Each class is focused on the age of the student and the needs of the school.

Another important outreach activity with the planetarium is related to community STEM nights. These events include audiences of all ages, with French's focus being directly on local residents understanding how to locate the planets and stars visible to them. Because our view of the sky is constantly changing, French ensures everyone is getting the specific information for that very night in the audience's actual location. She takes into account light pollution and any special astronomical events.

One of the highlights of the year was participating in the Horry County Schools Technology Fair, where the community was invited to view over 700 projects created by approximately 1,300 students.

The Immersive Planetarium Education Project celebrated its first anniversary of community outreach in March 2023. French has visited dozens of schools, answered scores of questions, traveled hundreds of miles, and has presented to thousands of participants. The project provides French with a forum for her dedication to science outreach in one of the most awe-inspiring, yet portable, environments imaginable.



Corey Cochrane, Ph.D., giving his presentation in the Wheelwright Auditorium.

## NASA scientist shares expertise on hidden oceans in solar system

On Nov. 14, 2022, Corey Cochrane, Ph.D., a scientist in the Planetary Interiors and Geophysics group at the NASA Jet Propulsion Laboratory in Pasadena, Calif., visited Coastal Carolina University to talk about the many moons in the solar system and how they are thought to potentially harbor hidden oceans based on the features observed by their surfaces.

In Cochrane's presentation, titled "Finding Hidden Oceans in the Solar System using Magnetometry," he explained how the magnetic environments of Jupiter, Uranus, Neptune, and Saturn provide ideal magnetic conditions to facilitate magnetic induction studies of their moon's interiors. He also explained the concept of magnetic induction and how it can be used to detect and characterize subsurface oceans within the icy bodies of the solar system for single- or multi-flyby mission concepts, and the feasibility of detecting magnetic

induction signatures of subsurface oceans within the moons of Ice Giants based upon various assumed interior profiles. The concepts provide guidance to required magnetometer performance and trajectory design for possible future missions to these systems.

Cochrane received his Ph.D. in engineering science and mechanics from Penn State University. In addition to his work in NASA's Jet Propulsion Laboratory, he is also an investigation scientist and the calibration lead for the Europa Clipper Magnetometer investigation, an investigation scientist for the Plasma Instrument for Magnetic Sounding investigation, and the radiation group facilitator for NASA's Europa Clipper mission. Before earning his doctorate, Cochrane was involved in the development of satellite communication systems at Boeing Satellite Systems.

## Gupta College co-sponsors STEM night at Myrtle Beach Pelicans ballpark

On April 21, 2023, the Gupta College of Science co-sponsored STEM night at the Myrtle Beach Pelicans baseball game. Working with the Spandoni College of Education and Social Sciences, the Gupta College sponsored 100 K-12 students who had participated in the Horry County Schools Technology Fair, enabling them to attend the Pelicans baseball free of charge. The night was a celebration of STEM in Horry County and emphasized the importance of future STEM careers. This event was a great opportunity to meet the families of so many young students, and talk about future STEM careers and opportunities. And Dean Chad Leverette threw out the first pitch!



## The Gupta College “Science Scoop” event and Faculty/Staff Appreciation Day



(Top photo left): Dean Chad Leverette and Associate Dean Richard Viso scoop ice cream for the Science Scoop Ice Cream Social.

(Top photo right): Associate Dean Prashant Sansgiry scoops ice cream for the Science Scoop Ice Cream Social. (Above): Gupta College students, faculty, and staff line up for the Science Scoop Ice Cream Social.

The Gupta College of Science at Coastal Carolina University is committed to fostering strong relationships with our students and colleagues through traditions and events. During Spring 2023, we had the pleasure of hosting the Science Scoop event and Faculty/Staff Appreciation Day.

The Science Scoop took place on April 4 in the Science Quad on the Gupta College grounds. STEM students, faculty, and staff came together to enjoy a scoop of ice

cream, great weather, and engage in stimulating conversations. The event provided a relaxed and enjoyable atmosphere for everyone to connect and share their love of science.

Continuing a tradition, we celebrated Faculty/Staff Appreciation Day on Thursday, April 6. This event, which has traditionally been held at the Myrtle Beach Pelicans ballpark, was held at CCU's Springs Brooks Stadium. The Gupta College faculty and staff, along with their families and friends, came out to enjoy each

other's company, eat some good food, and cheer on our Chanticleers, who emerged victorious against Georgia Southern!

Both the Science Scoop event and Faculty/Staff Appreciation Day serve as valuable opportunities to strengthen relationships, build camaraderie, and create lasting memories. We are excited to not only see these two events continue over the years, but we hope to add other events and traditions to help develop lasting relationships within the college.



(Top photo): Gupta College faculty and staff, along with their family and friends, mingling at the annual Faculty and Staff Appreciation Day. (Middle row, photo right): Brian Bunton, Ph.D., Dean Chad Leverette, Ph.D., and Carol Boyd pose for a quick photo at the Gupta College Faculty and Staff Appreciation Day. (Above): Chauncey takes time for a quick selfie with Gupta College faculty and staff.

# A **BODY** IN MOTION STAYS IN **MOTION**

## *Undergraduates start strong in CCU's Department of Physics and Engineering Science*

In the engineering and physics programs at Coastal Carolina University, a strong emphasis is placed on engaging undergraduate students right from the start. Through cornerstone courses and the implementation of the scale-up model, CCU aims to provide students with a comprehensive understanding of their chosen professions and prepare them for the workforce. Additionally, the accreditation of CCU's engineering science degree program by the engineering accreditation commission of ABET further enhances the value of the education provided. The Department of Physics and Engineering Science at CCU utilized various approaches to actively involve first-year students. These included incorporating Praxis and concept-based learning, employing tools to equip students for careers in engineering and physics, conducting research projects within capstone courses, and highlighting the importance of ABET accreditation.

CCU recognizes the importance of immersing first-year students in the practical aspects of engineering and physics.

“Our Physics 173 and Engineering 199 cornerstone courses introduce students to the central practice of their professions. In physics, it's model construction: How do you build mathematical models that both represent the data or the facts that are already known, but can also predict the outcome of experiments that haven't been done yet?” said Wes Hitt, Ph.D., department chair. “In engineering, the central practice is design: How do you take a stated problem from a client and turn it into detailed victory conditions for what they want solved? Both cornerstone courses are structured so that a student doesn't need to have finished two years of calculus before they can answer these questions. The conceptual basis for these professions, the scientific method and engineering design, are presented to students as rigorous, free-standing, important parts of the mental activity of those professions.”





## *CCU recognizes the importance of immersing first-year students in the practical aspects of engineering and physics.*

*Brian Bunton, Ph.D., professor of physics.*

“The intent is to produce felt need, and that has a positive impact on motivation. Psychologically, it frames the curriculum as if to say, ‘You’re a part of the profession: you are a physicist, you are an engineer,’” said Brian Bunton, Ph.D., professor of physics. “By putting a cornerstone in the very first semester, students obtain a substantive experience of the profession, and it makes them less likely to feel a sense of imposter syndrome.”

Because of the recognition of the importance of engaging students early in their academic journey, CCU employs the scale-up model, which combines lecture instruction and problem-solving labs within the same timeframe.

“The scale-up model gives you the flexibility to be able to do lecture instruction and problem-solving labs all within the same timeframe,” said Hitt. “We intentionally make our equipment portable to bring into the classroom at a moment’s notice, run a small mini lab or a demonstration, or maybe even run a traditional two-hour lab.”

“Rather than have separate courses, you can immediately reinforce concepts in front of them, and then follow up with some more conceptual questions because it is not just about the calculations,” said Bunton.

CCU is committed to equipping students with the necessary skills and tools to excel in the engineering and physics workforce. The Horry County Higher Education Commission has provided funding for a new materials testing center, which includes cutting, grinding, and polishing equipment, as well as microscopy line-scanning capabilities. These resources facilitate the study of alloy composition, grain boundaries, stress-strain curves, and other mechanical properties. Moreover, the tools serve as the foundation for experiments in the Engineering 203 course, focused on material science for engineering.

By engaging with real-world equipment and techniques, students gain practical experience that directly translates to their future careers.

In the physics and engineering capstone courses at CCU, students have the opportunity to undertake research projects that align with their interests and professional goals. When asked what research projects are produced in capstone courses, Hitt replied, “We have one group right now in Dr. Roi Gurka’s lab working on adapting features from owl wings to make drone rotors operate more quietly. Another team is working on a system that automates the training and testing of fruit flies’ memories of smells to support Dr. Chiara Gamberi’s work in biology. This tasks them with building a scientific apparatus, but to a specification. There’s also a team that’s been working for an external client, the Grand Strand Water and Sewer Authority, on an effluent structure to raise the Conway wastewater treatment plant up above the new 100-year-flood level.”

Bunton adds, “On the physics side, there are more individually proposed projects with one-on-one interactions. The engineering capstones are prescriptive, team-based projects, with the students in teams of three to five. We’re increasingly working toward having projects that are coming from our industry partners. These partnerships enable students to work directly with external clients, with faculty mentors guiding and supporting their endeavors.”

CCU’s engineering science degree program holds accreditation from the engineering accreditation commission of ABET. This accreditation signifies that the program meets a global quality standard, taking into account emerging technologies and public needs and safety. ABET accreditation assures confidence that a collegiate program has met standards essential in preparing graduates to enter critical STEM fields and be competitive in the global workforce. Graduates from an ABET-accredited program have a solid educational foundation and are capable of leading the way in innovation, emerging technologies, and in anticipating the welfare and safety needs of the public.



## Gupta College of Science students win big at SCAS annual meeting

What a great day we had as a college at the 95th annual South Carolina Academy of Science (SCAS) annual meeting at the Medical University of South Carolina in Charleston, S.C., on Saturday, March 25. There were 10 universities present from across South Carolina, including Clemson University, University of South Carolina, and College of Charleston, with students from each institution presenting their research. In total, we took 34 students and faculty to MUSC to present our undergraduate research projects. We led the way with the most participants from any institution. Our students and their faculty mentors did great! In fact, our CCU students received 36% of all the awards given out at the SCAS meeting - more than any other institution! For many of our students, this was their first time presenting their research in front of an audience and/or fielding questions about their research and their posters.

This conference celebrates research in South Carolina, allows institutions from across the state to come together, brings all STEM disciplines together in one place, and, most importantly, allows students to practice becoming better at communicating their research. In addition, Will Jones, Ph.D. (computing sciences), and Joe Cicero, Ph.D. (computing sciences - retired), were honored for their many years of faithful service to the academy.

Below is a list of the award recipients by research category. We are so incredibly proud of all of our students and faculty!

### Undergraduate Platform Award Winners

#### ORAL SESSION 2: CELL BIOLOGY AND HEALTH

Owen R. Smith, Coastal Carolina University  
*DEVELOPING A SAFE AND EFFECTIVE PAPILLOMAVIRUS SCREEN TO BE USED ON COLLEGE STUDENTS*  
Mentor: Paul E. Richardson, Ph.D.

#### POSTER SESSION: MATH AND STATISTICS

Jensen Meade, Coastal Carolina University  
*AN ANALYSIS OF THE SEQUENCE  $X(N+2) = IMX(N+1) + X(N)$*   
Mentor: David Duncan, Ph.D.

#### POSTER SESSION: MOLECULAR BIOLOGY

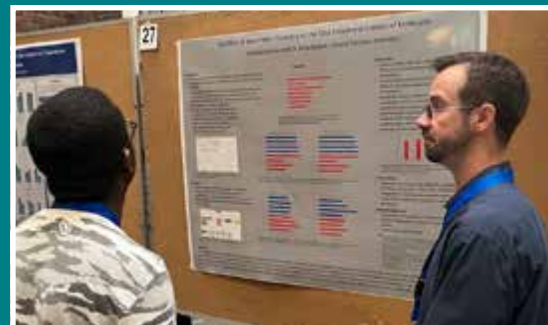
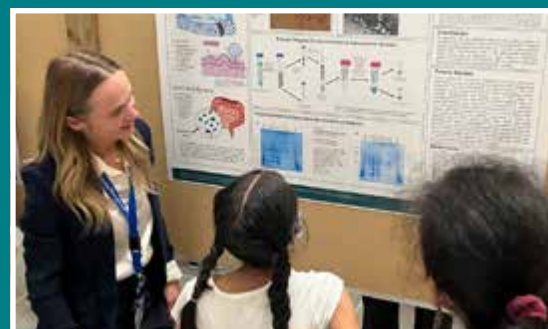
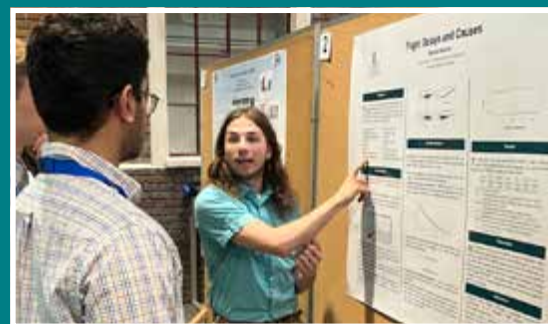
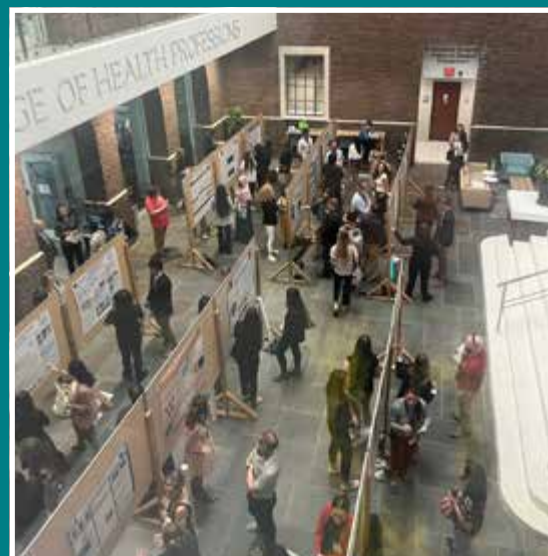
Kyla Thomas, Matthew Defreitas, and Jackie Gould, Coastal Carolina University  
*SYSTEMATIC ANALYSIS OF BACTERIOPHAGE GENE TOXICITY*  
Mentor: Daniel Williams, Ph.D.

#### POSTER SESSION: FIELD BIOLOGY AND ENVIRONMENTAL SCIENCE

Hailey Oldfield, Coastal Carolina University  
*ENVIRONMENTAL BACTERIOPHAGE PRESENCE IN THE DRAINAGE PONDS AT COASTAL CAROLINA UNIVERSITY*  
Mentor: Paul E. Richardson, Ph.D.

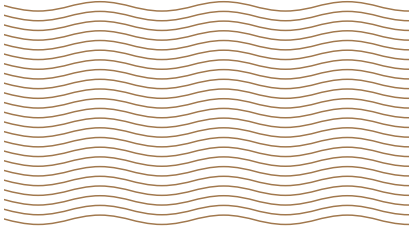
#### POSTER SESSION: CHEMISTRY AND BIOCHEMISTRY

Zarah Fowler, Finn Rose, and Gabriela Pérez Alvarado, Coastal Carolina University  
Sasha Bronovitskiy, Georgia Institute of Technology  
*IDENTIFICATION OF A SMALL REGULATORY RNA USPS ASSOCIATED WITH THE UNIVERSAL STRESS PROTEIN IN *Lactobacillus SPECIES**  
Mentor: Brian Lee, Ph.D.



Gupta College of Science students presenting their research at the annual SCAS meeting at MUSC.

# PROTECTING OUR COASTLINE



*Ocean acidification is a major environmental issue of our time and may produce socioeconomic impacts to affected coastline areas. Acidification heightens the rate at which marine organisms' shells and skeletons weaken and begin to dissolve. It can cause natural coastal protections, such as coral reefs, to become vulnerable to storm winds. Low oxygen and low pH in these organisms' environments can have wide-ranging impacts on several levels of the surrounding ecosystem.*

## COASTAL AND ESTUARINE ACIDIFICATION IN LONG BAY, S.C.

A decade of monitoring coastal ocean and marsh waters has led CCU researchers and volunteers to critical findings regarding South Carolina's coastline environments. Data has shown that low oxygen and acidification are common occurrences on South Carolina's coastline, likely impacting living resources and their commercial and recreational uses, and therefore are a particular concern to this state.

Angelos Hannides, Ph.D., and fellow researchers from CCU's Gupta College of Science are collaborating with the Southeast Ocean and Coastal Acidification Network and its coordinators from the University of Delaware and Mote Marine Laboratory to conduct the first coastal and estuarine acidification assessment of its kind in South Carolina, with funding from the South Carolina Sea Grant Consortium.

This project aims to provide researchers and coastal managers with a clear picture of the degree and extent of the problem in South Carolina waters and what drives it. The research findings developed while working in collaboration with educators and outreach specialists at university and high school levels will provide a local case study through which this major water quality issue can be addressed. This extensive graduate and undergraduate student engagement and training program will expand the knowledge and job skill sets of water quality field technicians, monitors, and data analysts.

The outcomes of this project will help to guide future expansion to South Carolina's coastline and provide more precise methods for measuring pH, which may be used in research to help other vulnerable coastal areas.

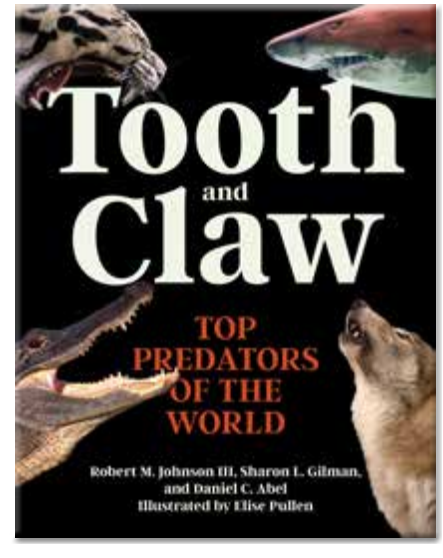


Angelos Hannides, Ph.D.





## CCU science faculty members co-author new book about the world's top predators



### ***Tooth and Claw: Top Predators of the World***

is a new book that is creating a buzz in the scientific community. Written by Dan Abel, Ph.D., professor of marine science; Sharon Gilman, Ph.D., distinguished professor emeritus; and Robert Johnson '98, Ph.D., a teaching associate in the Department of Biology; and illustrated by Elise Pullen '19, this book offers readers a fascinating and beautifully illustrated look at the most dangerous predators on the planet.

The book covers a wide range of predators, including sharks, lions, crocodiles, and snakes, and provides readers with a detailed look at their behavior, habitats, and hunting strategies. Each chapter provides readers with insights into the animal kingdom.



(Left to right): Sharon Gilman, Ph.D., Robert M. Johnson III, Ph.D., and Daniel C. Abel, Ph.D., authors of "Tooth and Claw."

The authors' expertise in marine science and biology is evident throughout the book, and they provide readers with a wealth of knowledge about each predator's place in the ecosystem and their role in maintaining the delicate balance of nature, which makes this an excellent resource for students or anyone interested in the natural world.

One of the book's standout features is its illustrations, which are beautiful and incredibly detailed. Pullen's artwork brings each animal to life and captures their powerful essence and majesty. The illustrations also help elevate the book's educational value by helping readers better understand each animal's physical characteristics and behavior.

*Tooth and Claw: Top Predators of the World* was released to the public in May and has already received critical acclaim from both scientists and casual readers alike. The book's engaging writing style, stunning illustrations, and in-depth knowledge make it a must-read for anyone interested in learning more about the world's most deadly predators.

Visit [youtube.com/watch?v=sUjYrWaRIHk](https://youtube.com/watch?v=sUjYrWaRIHk) or scan the QR code to see more.



# PREPARING FOR THE NEXT STEP

In early 2013, William Jones, Ph.D., began collaborating with a colleague at the Los Alamos National Laboratory (LANL) in New Mexico on work related to the reliability and performance of large-scale computer systems.



- Will Jones, Ph.D.  
Professor, Computing Sciences

LANL is one of three National Nuclear Security Administration (NNSA) labs within the Department of Energy complex, and the simulations run there require heavy lifting that only supercomputers are capable of achieving. The ongoing research has helped provide insights and improvements that can be made to computer systems and applications, often for the benefit of system designers, who will use the data to focus their efforts and budgets toward more optimized and reliable systems. These supercomputers have been used for a wide range of tasks, including aiding drug research firms, weather prediction, petroleum exploration, and companies that run large data centers.

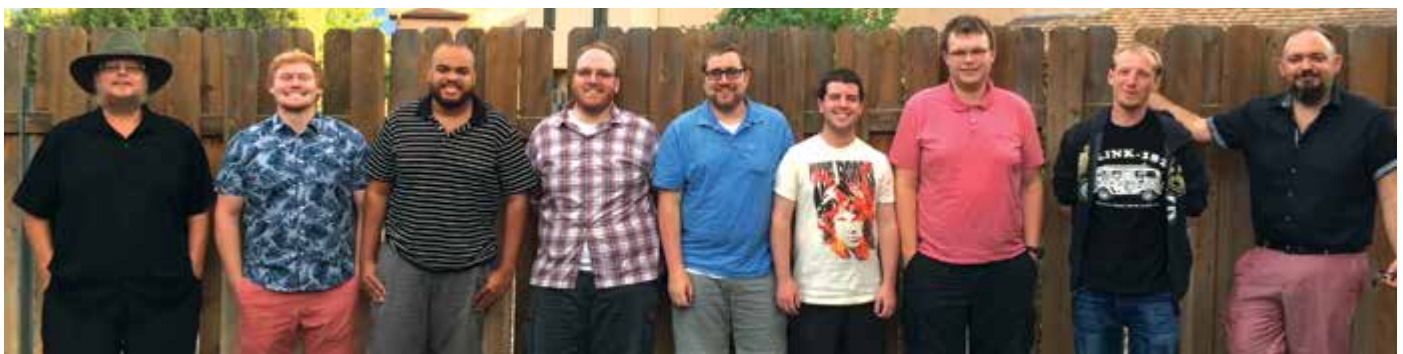
The collaboration between CCU and LANL has allowed for students to both contribute to LANL in meaningful ways and gain valuable training at a prestigious national laboratory.

"Not only did this experience help me grow technically, but it also helped me grow professionally," states Nicklaus Przybylski, a recent CCU graduate. "I regularly shared my ideas, thoughts, and findings with accomplished scientists."

Eleven peer-reviewed scholarly publications have been produced by CCU students at regional, national, and international conferences. These experiences help bolster our students' marketability in both the public and private sectors, and help CCU graduates stand out when applying to graduate schools and taking the first steps into an ever-expanding field with enormous possibilities.



(From left): Nicklaus Przybylski (CCU student) and Will Jones (CCU professor) in Los Alamos, N.M., October 2021.



(From left): Will Jones, Cannon McIntosh (CCU former student), Rusty Davis (former CCU staff), Terry Grové (CCU former student), Stephen Penton (CCU former student), Dylan Wallace (CCU former student), Dakota Fulp (CCU former student), Brian Atkinson (CCU former student), Nathan DeBardleben (LANL employee).



## Research Fellows Program enhances undergraduate research, mentorship opportunities

*The Gupta College of Science recently announced the revamping of its Research Fellows Program (RFP) for the Spring 2023 academic year. This is great news for STEM students looking for opportunities to conduct cutting-edge research under faculty mentorship. The RFP is the premier award for undergraduate research for STEM majors and is aimed at enriching the academic experience of students by providing them with a professional research experience.*

The RFP is a high-impact practice of undergraduate research that promotes student engagement, learning, and success. This program is designed to support experimental research by undergraduate students at the University, providing them with access to faculty mentorship on cutting-edge research projects. This program is an excellent opportunity for students to gain valuable research experience while pursuing their academic careers in STEM fields.

This year, there were 16 total students from the disciplines in Gupta College that were chosen as fellows. The selected fellows will receive a stipend as well as research funding to cover the cost of materials and equipment needed for their research projects.



*CCU students conduct research on sea turtles.*

The RFP is an excellent opportunity for undergraduate students to gain valuable research experience that can be beneficial for their future academic and professional endeavors. Undergraduate research is extremely important in STEM fields, and many graduate programs and employers look for candidates with research experience. The RFP helps students gain a competitive edge in the job market and increase their chances of being accepted into graduate programs.

The Gupta College of Science is dedicated to providing students with opportunities to excel in their academic and professional careers. The RFP is an excellent example of this dedication, providing students with access to high-quality research experiences that can help them achieve their goals.

Visit [coastal.edu/science/researchfellowsprogram/](https://coastal.edu/science/researchfellowsprogram/) or scan the QR code to see more.



*Research is a vital part of education in the Gupta College of Science.*

# IN TALKS with PAUL GAYES

- Paul Gayes, Ph.D.  
Professor and executive director,  
Burroughs & Chapin Center for Marine and Wetland Studies



*The world's coastal areas are home to a large percentage of our society's population, infrastructure, and economies and exist in the transition between two large and influential systems, found offshore in the larger ocean basin and onshore in the larger continental landmass. Living in such transitional zones is subject to strong gradients and variability in drivers and response that change and evolve across a range spatial and temporal scales.*

## What is different about CCU's approach to educating undergraduate and graduate students in marine science?

The transitional qualities of the coast make our area highly sensitive to ever-changing weather, climate, and water levels both in the watershed and the ocean into which it drains. Marine science as a field is to approach the coastal zone as the interdisciplinary "system" it is and located here at the base of one of the larger watersheds on the East Coast.

With the main campus located in Conway adjacent to the Waccamaw River, CCU's Waties Island property, facilities in Georgetown on Winyah Bay, and the R/V Coastal Explorer, CCU faculty and students have access to a wide array of natural and societal landscape settings across the coastal transition. This is a fantastic laboratory for research and education at needed systems and landscape-level scales.

## Tell us about the Smart Reef Initiative.

Smart Reef serves as one piece of the larger systems observing system. As much as there is need for higher resolution sensing to better predict environmental pressures (e.g., flooding) on scales needed by emergency and resource managers on land, there is a larger need to better characterize the transitions occurring from the ocean side of the coastal system, where there are far fewer instrumentation sites that are significantly more challenging to deploy and sustain.

Smart Reef is: 1) working with established artificial reef sites easing permitting challenges, 2) developing smaller modular components so reef systems can be deployed more inexpensively and engaging a wider array of participants, and 3) working towards future artificial reefs being part of the integrated observing system.

We are presently using high resolution sonars, remotely operated vehicles, and photogrammetry to drive high resolution visualizations of our regions natural reefs to drive 3D cement printing of future smart reef modules.

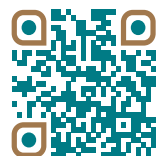
## Who uses the data coming out of the projects within the center?

The center's data is accessed by diverse partners for a range of applications: federal weather models, local and state emergency management, and environmental management, as well as diverse economic interests such as agriculture, communications, and energy sectors. The center's environmental quality partners with local municipalities and counties aiding the management of critical water resource quality and efforts to safeguard environment and associated public health concerns. The center also partners with groups such as Iowa State University and Savannah River National Lab, exploring expanding wind energy development. The wave data and site wind conditions are publicly available at [sensestream.org](http://sensestream.org).

## What projects are the Burroughs & Chapin Center for Marine and Wetland Studies working on?

A driving theme of work in the center revolves around increasing integrated environmental observations, to support advancing interactively coupled model systems that support a wide range of basic and applied research as well as planning and management needs in the coastal zone. This drives a need for new technologies to better resolve at higher spatial resolution the gradients and changes in the coastal zone for real time societal needs as well as model development. There are projects focused on elements of the overall system, including expanding coastal environmental observations (water level, weather, water quality), coastal response to storms and sea level rise, storm surge, and flood modeling, as well as leading efforts towards expanding wind energy production to help reduce large scale climate pressures but also regional economic development.

Visit [sensestream.org/measurements](http://sensestream.org/measurements) or scan the QR Code for more.



# The DEAN'S RECAP



## *Looking to the Future: A Focus on Our Vision, Our Communication, and Our “One College” Approach*

–Chad L. Leverette, Ph.D.  
Dean, Gupta College of Science



**Vision without action is just a dream, action without vision just passes the time, and vision with action can change the world.”**

This is an inspiring quote from Nelson Mandela that shows how vision and action must work together for important change to take place. This quote represents the proactive and intentional approach the Gupta College of Science is taking toward achieving an even brighter future.

On July 1, 2022, I was honored to begin my journey at Coastal Carolina University as the seventh dean of the Gupta College of Science. I knew I only had a matter of weeks before we started our Fall 2022 academic semester, and we kicked off a new academic year. I worked intentionally to meet with as many people as possible who care about Coastal and the Gupta College of Science. After many, many meetings, I would joke with my colleagues that my number of meetings greatly outnumbered the number of days I had actually been at Coastal. As I learned more and more about our college and Coastal, I would share that each week was indeed a “week of wonder.” As difficult as it was to have so many meetings, they were absolutely critical as our college began to think about its future.

I reflected on what I heard over and over again from our faculty, staff, students, campus administrators, board of visitors members, and external partners. There were definite themes that emerged, which helped shape the work of this past year. One of the things I have found that works best as any organization kicks off a new beginning is to have a “kickoff” meeting. That is exactly what we did. At the beginning of the fall semester, I worked to capture and summarize all I learned in my short time at Coastal and helped direct us toward the work we would do together this past year.

Some of my “early impressions” I gained through my conversations in these meetings are as follows: the Gupta College of Science is a special place with special people. The college has a great reputation, is strong, and is a leader at CCU. The college has a strong focus on student success, embraces the teacher-scholar model, excels at providing experiential learning opportunities for students, and provides what I believe to be a premier STEM education for our students. The college had recently

undergone a transition, resulting in a slight reduction in size (although it remained the largest college on campus). This change occurred with the establishment of the Conway Medical Center College of Health and Human Performance. This reorganization represented an opportunity for the GCOS to have a “laser focus” on the seven strong STEM departments of the college. Additionally, it was very clear our college had excellent resources, buildings, labs, and offices. Like any organization, there were also common themes we could work on to make us even stronger. When considering all of this, it is important to recognize important attributes that strong STEM colleges around the country focus on to help them be successful. These include things like ensuring student success through rich, inclusive educational experiences; excellent teaching and current and engaging teaching pedagogy; active research and scholarship allowing faculty to excel as teacher-scholars; a focus on recruitment and retention of both students and faculty/staff; good stewardship of resources; having vibrant and supported external partnerships; and a focus on the supporting community by helping to build STEM awareness and education in public spaces.

All of this information led to our college focusing on three strategic priorities this year: Our Vision, Our Communication, and Our “One College” Approach. In addition to the work that would be done on these three strategic priorities, our college also identified 22 total objectives that contained 54 secondary objectives for specific areas where we wanted to see proactive and meaningful change. As I shared with our faculty and staff, we shouldn’t be afraid of the amount of the work that is before us. We chose to write these objectives down so we can be accountable for seeing this work completed. This will be an approach that we take each year. We want to work together to be proactive in our approach and to combine our vision of where we want to go with the action of our work to see our future realized.

Now that our first year together has ended, I am very pleased to share the incredible progress made on these strategic priorities and the objectives identified by our college. In total, our college, by working together, was able to work on and/or complete 95% of all of the objectives that we identified. Seven of the objectives were completed in full and 14 are being worked on, with some great interim progress already realized.



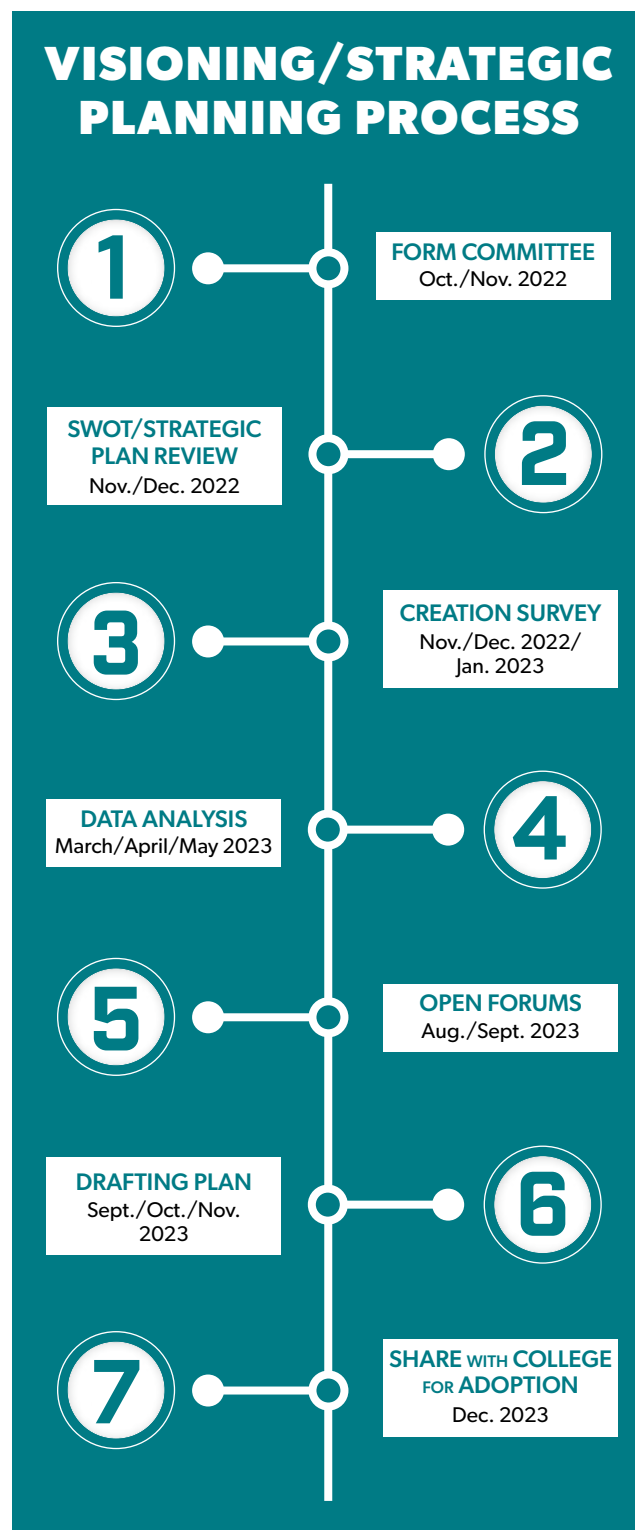
As I stated above, just as it is important to write down the objectives that lead to the work of the year, it is equally important to summarize and assess how we are doing in achieving our goals and objectives. We are compiling a written, year-end summary report on all objectives so our college can see every detail of what we have accomplished and what work remains on existing objectives.

Here is a summary of some of the key work accomplished on our three strategic priorities this academic year:

## OUR VISION

One of the themes that came from the many meetings with faculty, staff, and other stakeholders was that it is time for the Gupta College of Science to think about its vision, mission, and message for the future. This will help us clarify who we are, what we believe, and where we are going so we can share this message more widely and clearly with our region, state, and nation. While we are focusing on where we are as a college, our campus is also undergoing a planning process to develop our next CCU strategic plan. The timing is perfect for us so we can align our future direction with that of our University. To begin this process, our college put together an ad-hoc Visioning and Strategic Planning Committee, composed of 10 faculty and staff members. I have the privilege of leading/facilitating this incredible group of faculty and staff representing all areas and departments of our college. These individuals care deeply about our college, and it is a pleasure and honor to work with them on this important initiative.

The committee is following a seven-step process for our visioning/strategic planning process. After the formation of our committee, we began our assessment of strategic plans from peer and aspirant institutions. We also looked at over 14 different S.W.O.T. (Strengths, Weaknesses, Opportunities, and Threats) surveys from higher education institutions from across the country. After a deep review of successful approaches, we began drafting a visioning/strategic planning S.W.O.T. survey that includes open-ended questions about our college's niche areas and where our stakeholders would like to see us over the next five and 10 years.





Our goal was to gather widespread feedback to help us formulate our vision, mission, message, and goals/objectives. In total, we identified 11 different stakeholder groups to survey. The survey was released in January 2023 and closed Feb. 10. We received 953 responses to the survey, which is incredible. The survey results yielded 195 pages of data. Three faculty/staff subcommittees from our larger Visioning and Strategic Planning Committee worked hard throughout the spring semester to go through this data and produce graphical plots and summaries for both the quantitative and qualitative portions. All summary plots will help our college review the findings in an easy manner. In August 2023, the full report from our committee went before the college for review. We plan to hold two open forum sessions to allow our college to review this data together. The committee will then use the remainder of the fall semester to draft the vision, mission, and strategic plan for the college. With the campus strategic plan also being completed in Fall 2023, we will be able to align our college plan with that of the campus. The final college strategic plan will be shared with the college in December 2023 for review and adoption.

## OUR COMMUNICATION

One of the key themes shared was communication. It was clear that efforts to improve both our internal and external communication would make us stronger and allow others to see the great work happening in our college. To this end, we worked to develop a comprehensive, multifaceted communication plan for this year, which included intentional efforts and initiatives for both internal and external audiences. For internal communication, we recognized people enjoy receiving communication in many forms, and any approaches we took had to keep this in mind. For external communication, we believe what takes place at Coastal related to our outstanding STEM work is too much of a secret in our county, our state, and our nation. One last consideration we recognized is that communication needs to be timely and current. Considering these factors, our primary forms of communication take three approaches. The first approach was the development of a Gupta College Microsoft Teams page. This page allows for our college to feel more connected. Each faculty and staff member of the Gupta College is a member of our Teams page. Each post highlights events, activities,

and accomplishments of our faculty, staff, and students. These posts can be put out in the moment, providing current and timely information without burdening people with countless emails. The Teams page also allows our college to share files and presentations from meetings along with pictures of our events and what our people are doing. Our faculty and staff on our Teams page can choose to receive notifications on their smartphones, tablets, and computers so they can stay in tune with events and postings as they happen. For this year alone, we had 128 individual posts highlighting the successes and accomplishments of our people and departments. Our faculty and staff have commented how this approach has allowed them to be more connected, to feel less “siloeed,” and to become advocates and champions for their colleagues in other departments.

For some, the Teams approach may not be their preferred method. Many still rely on emails, and emails are still a major form of communication for our college. Therefore, we created a college recap email that goes out on the 15th of each month. This allows faculty and staff to expect to receive notification on a specific day of the month and helps create a rhythm for information. This also cuts down on the use of email by capturing important information in one monthly email. These recap emails contain hyperlinks to our college Teams postings so anyone can go to a given story that has taken place over the last month. This allows the reader to read what is of interest to them, yet all of the stories are available to everyone. The recap is almost like a digital newsletter that provides general announcements for the college and University, lists upcoming events, and shares departmental and college news, activities, and accomplishments.

Finally, it was important to broaden our reach by utilizing social media. Up to this point, our college’s presence on social media was limited to one Twitter account that was connected to the dean and a YouTube channel. Our new approach placed our college on five social media platforms, which has been shown to be the best number of platforms for communication coverage, under the catchy handle @coastalstem. The platforms where @coastalstem is active are Twitter, Instagram, Facebook, and LinkedIn. Since November 2022, we have created more than 500 unique posts across these five platforms and have attracted almost 2,000 new followers from around the world to our pages. This is helping us with our global reach as we tell our story of how our faculty and staff are providing premier scientific education and experiences for our students.



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This work would not be possible without creating a new media and communication director position in our college. Although unique for colleges of science, it was important for us to have someone dedicated to our marketing, media, and communication efforts. We were fortunate to hire Wendi Lee into this position in November 2022.

Other communication improvements planned include updating our website and webpages; creating both kick-off and wrap-up meetings so that our college could be more transparent and accountable on the work we are doing each year; the formation of a college calendar to share important events of the college; creation of a once-a-semester college town hall; and a year-end summary report to share the details about the accomplishments and work on the identified college objectives.

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## OUR "ONE COLLEGE" APPROACH

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Any organization can only be effective if its departments and units work together. Our faculty and staff recognize this, and it is our desire to create a more unified approach to all we do as we work toward the future. Through this "One College" approach, we have the opportunity to become advocates for each other, to have an awareness of what happens across our college and not just in one department, to appreciate the work of our colleagues, and to build excitement and support for each other. We are working to build this approach by listening to each other more, by sharing, and by intentionally working together. We are working hard to build on our strong community feel and our long-standing collegial approach. Some of the ways we are working to build this more unified and trusting environment is by visiting each other's classrooms and attending field trips. I had the pleasure to participate in many different classrooms and field trips this year. Just visiting shows our support for each other and our students. Equally important is sharing this information with each other through our improved communication methods. This is having a great effect! So many of our students, faculty, and staff are commenting how they had no idea that was taking place in our college. It is great to see our people cheering each other on in their efforts. Another effort to build this "One College"



approach is by intentionally joining in national conversations related to STEM education. We took a team of faculty representing almost every department in our college to the 2022 American Association of Colleges and Universities Transforming STEM Conference. This is something we plan to do each year to join in these national conversations on STEM pedagogy with universities from across the nation, looking closely at how we can become even better in the STEM education we provide. Additionally, we have changed our council so that our department chairs can share even more freely and support each other in leadership decisions for the college. We brought back key open house events, including an incredible open house our Burroughs & Chapin Center for Marine and Wetland Studies hosted this past November at Ripley's Aquarium. We reimagined how we share and organize information about our academic programs and activities to be even more compelling for our admissions events, showcasing the key similarities across our seven STEM departments while also highlighting the distinctive details of each. We carried on existing college traditions like our faculty/staff appreciation baseball game with a slight twist in that we all attended a CCU game this year to show our collective University spirit. We added a key student event in our "Science Scoop" where we provided

free ice cream to over 350 students to simply show them we care and enjoy being with them. So many students were so thankful they could get some ice cream with their professors. We brought in internationally recognized experts in STEM like Corey Cochrane, Ph.D., from NASA and Nahum Sonenberg, Ph.D., from McGill University. Having these well-respected experts join us on campus for in-depth science discussions grows our faculty, brings us together, provides incredible experiences for our students, and enriches the community. We also added events to celebrate important activities like ABET accreditations and student honors ceremonies. There is so much more we plan to do to continue to build our "One College" approach, but we are off to a wonderful start.

In summary, this has been an incredible year! As I shared with our college at our wrap-up meeting, my "early impressions" have been proven to be completely true. The Gupta College of Science is a very special place with incredibly special people. As we look to the future, just like the wisdom shared in the quote from Nelson Mandela, we believe our college's shared vision and our action will allow our students, faculty, and staff to indeed change this world for the better.



**Gupta College of Science**  
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# CONGRATULATIONS

2022-23 Gupta College of Science recipients of the Dean's and President's List honors.



Scan here for a complete list of recipients.

