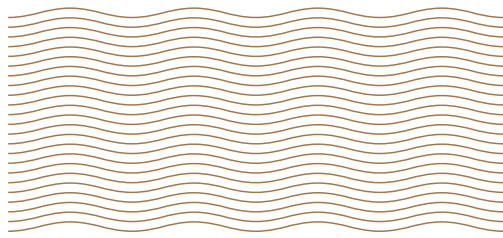


RESEARCH



*IN SUSTAINABILITY,
COMMUNITY, AND
IDENTITY*



ON THE

RISING

CCU is one of 12 institutions/ organizations in the Carolinas working together to accelerate the development of offshore wind energy in the Southeast.

TIDE

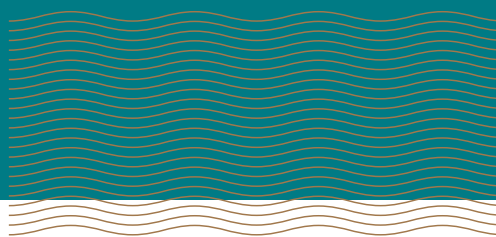
CCU is the host of the Gullah Geechee and African Diaspora Conference, signifying the importance of the University's position in the study of preservation of Gullah Geechee culture in America.

OF TEAL NATION



LOOK INSIDE TO
SEE HOW CCU'S
FACULTY RESEARCH
MAKES WAVES.

CCU's Wall College of Business is AACSB-accredited, an achievement held by less than 5% of business schools.





MESSAGE FROM THE PROVOST

Comprehensive universities are often asked to “punch above their weight” when it comes to research. We are often located in regions that need applied expertise. We value teaching such that pedagogy completes with – or is combined with – time in the lab or in the studio. Our attention to the undergraduate experience means that showing students how to enter the life of the mind is embedded in our approach to scholarship.

In short, at institutions such as Coastal Carolina University, research tends to be regionally impactful and nationally relevant, and the researchers range from veteran faculty masters to curious (and well-supervised) student apprentices. On this campus, everyone – from senior scholars to first-year freshmen – can contribute to research. That mix creates some terrific opportunities, and it attracts faculty with a heart for the teacher-scholar model.

It also means research at Coastal Carolina University is an all-hands-on-deck endeavor. As provost, I am proud that our president, Dr. Michael T. Benson, remains an active scholar. His recent book, *Daniel Coit Gilman and the Birth of the American Research University* (Johns Hopkins University Press, 2022), is an important contribution to the history of higher education.

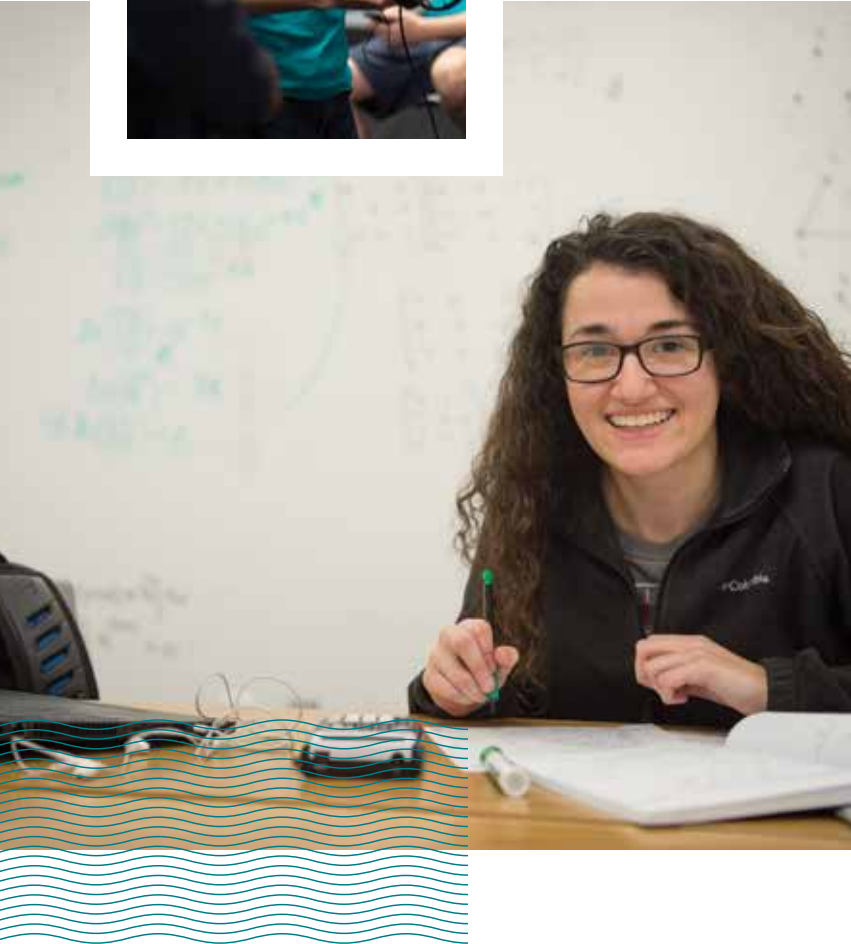
At the other end of the experience spectrum, I am also proud of the students who help operate the advanced equipment on the Coastal Explorer, our state-of-the-art research vessel (see pages 9-10). At every turn, Coastal Carolina University students collaborate with field experts to increase their store of knowledge in the world and to devise solutions needed in our region today.

Because of our coastal location, this institution has developed special expertise in the ways land, water, and people interact when in direct contact. Our community formed and remains along the waters. Our local economy depends upon the beach. Our future lies in solutions that will allow us to coexist in a region that demands sustainable strategies and humane wisdom.

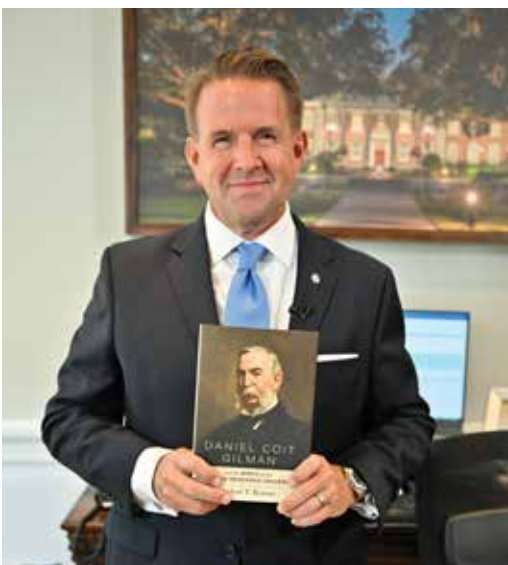
Given where we are and who we are, our research has high stakes - and high hopes. I am proud to share it with you.

Regards,

Daniel J. Ennis, Ph.D., *Provost*



CCU President Michael T. Benson holds a copy of his new book, Daniel Coit Gilman and the Birth of the American Research University.



PRESERVING COMMUNITY and CULTURE

THE GULLAH GEECHEE DIGITAL PROJECT

The collaboration between the Charles Joyner Institute for Gullah and African Diaspora Studies and The Athenaeum Press has produced a number of unique projects and events dedicated to the critical study of Gullah Geechee culture and communities throughout South Carolina. Funded by the National Historical Publications & Records Commission and the Gaylord and Dorothy Donnelley Foundation, the Gullah Geechee Digital Project (GGDP) is a major digitization initiative in collaboration with the South Carolina Historical Society, Library of Congress America Folklife Center, and the Association for Cultural Equity.

This project began in 2018 and is under the leadership of Alli Crandell, director of The Athenaeum Press. It is advised through the collaboration of Scott Mann, professor of graphic design; Susan Bergeron, Ph.D., associate professor of anthropology and geography; Tim Fischer, D.M.A., associate professor of music; and Scott Bacon, M.L.I.S, the coordinator of digital initiatives in Kimbel Library and Bryan Information Commons.

The GGDP digitized more than 6,900 historic records, from plantation journals to contemporary oral histories, to showcase the diversity and commonalities between Gullah Geechee communities across South Carolina. The project aims to weave together several sites and their stories, from reconstruction, civil rights, and land preservation, in five communities: Saint Helena Island, Johns Island, Murrells Inlet, Sandy Island, and Plantersville.



The Gullah Geechee people are descendants of various groups of enslaved individuals living in coastal areas of the Lowcountry, from Georgia up to North Carolina, as marked by the Gullah Geechee Cultural Heritage Corridor. They have been able to preserve much of their cultural heritage in addition to absorbing regional influences. Gullah, also referred to as "Geechee" in Georgia, is a creole language synthesized from English and West African groups' loanwords and syntax.

The Joyner Institute at CCU is the only interdisciplinary institute dedicated to a critical understanding of the Gullah Geechee people, and in 2019 was the inaugural host of the Gullah Geechee and African Diaspora Conference. Gullah Geechee scholarship at CCU focuses on the rich culture's music, language, food, history, and art.



NAVIGATING MARITIME TRADITIONS IN THE FAROE ISLANDS

Russell Fielding, Ph.D., was awarded a National Science Foundation grant, along with Harvard professor Elsie Sunderland, Ph.D., to analyze the impact of pollution on the health and culture of fishing communities, such as the Faroe Islands. Often, the topic of whaling the Faroe Islands is discussed as an ethical concern, with activists campaigning against the practice and proponents maintaining that whaling is important to Faroese culture, notably their food production. Many scholars believe the practice of whaling on the islands goes as far back as the 10th century, originating from Viking settlers on the island, as only 2% of the land in the islands is suitable for field crops.

Since 2007, Fielding has been investigating this practice from a different angle: how the increase of contaminants found in pilot whales is affecting human health. "The Faroe Islands are an extreme case of tension between cultural traditions and public health in a maritime community," said Fielding. "On one hand, people here have been whaling for many generations, so the practice is deeply ingrained in their culture and history. On the other, as top predators in the marine environment, pilot whales accumulate extremely high levels of environmental contaminants, making the consumption of their tissues a

serious health risk to people." Since the 1980s, researchers have noticed the Faroese diet contains pollutants such as methylmercury and polychlorinated biphenyls.

In addition to research on the rising pollution levels affecting the traditional diet of the Faroese, Ina Seethaler, Ph.D., assistant professor in the HTC Honors College and director of women's and gender studies, is partnering with Fielding to examine a topic that few scholars have focused on previously – women in whaling. Today, gender is not a factor in who can participate in whaling in the Faroe Islands, but, for years, women were excluded from the practice. Through first-person testimonies from women in the industry, Seethaler and Fielding aim to discover more about the history and the role that gender has played in the whaling community in the Faroe Islands.

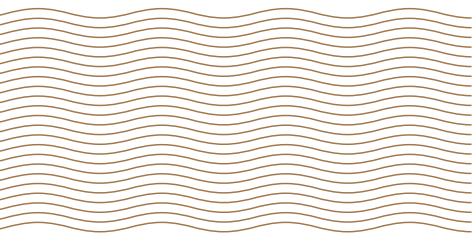
"The information we gather through our research in the Faroe Islands will inform the study of other similar situations around the world. This includes fishing communities in the U.S., like those in coastal South Carolina, where contaminant levels in the species consumed are often much lower, and cultural ties to fishing practices may not have as deep a history," said Fielding.



Many scholars believe the practice of whaling in the Faroes goes as far back as the 10th century, originating from Viking settlers on the island, as only 2% of the land in the islands is suitable for field crops.

*Russell Fielding, Ph.D.
Ina Seethaler, Ph.D.*

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 School of the Coastal Environment 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.



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.

LANL is one of three National Nuclear Security Administration (NNSA) labs within the DOE 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.

PROBING the DEPTHS

CREATING A CATALOG OF INSIDIOUS SEA SQUIRTS

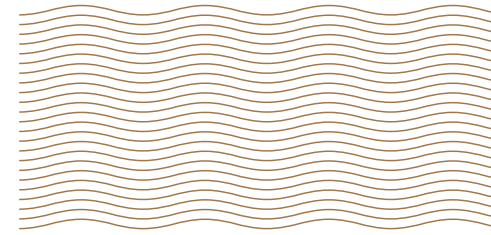
Ascidians, or sea squirts, are filter-feeding, bottom-dwelling invertebrate animals who have, in many areas, developed a reputation as a highly invasive species that cause negative impacts on natural ecosystems. Their ability to grow rapidly in some environments without natural predators allows them to disrupt natural ecosystems by inhibiting other organisms in subtidal areas.

Dipping into the natural laboratories of the Belizean coast, Lauren Stefaniak, Ph.D., is collaborating with Susanna López-Legentil, Ph.D., and Patrick Erwin, Ph.D. (both of University of North Carolina - Wilmington), and Marie Nydam, Ph.D. (Soka University of America), to develop new molecular markers from across the nuclear genome and the ascidian tree of life and create the first integrated catalog of ascidian diversity in Belizean harbors and the reefs at Carrie Bow Cay.

This catalog will extend researchers' knowledge of ascidian biodiversity and distribution along the Mesoamerican Barrier Reef System, as well as gauge the prevalence of introduced ascidian species.



PROMOTING IDENTITY through ART + MEDIA



(RE)-TELLING THE STORY OF ANCIENT GREEK PORTRAITURE

Elizabeth Baltes' book project, *Portrait Statues in Hellenistic Greece: Spatial Practices and Identity Politics*, was awarded a Loeb Classical Foundation Fellowship from Harvard University (2022), a Franklin Research Grant from the American Philosophical Society (2022), and a summer stipend from the National Endowment for the Humanities (2020). In this book, Baltes explores the dedication and display of portrait monuments at some of the most important sites in Hellenistic Greece (c. 4th-1st centuries BCE). Baltes' aim is to better understand how patrons used monument bases, inscriptions, statues, and locations to construct identity within the diverse social topography of the Hellenistic Mediterranean. As we struggle with issues of identity and representation in our modern-day statue landscapes, exploring the roots of these practices in the ancient Mediterranean is now more important than ever.



Elizabeth Baltes, Ph.D.



Mitchell Church, Ph.D.

GAMING THE SYSTEM: EXAMING TWITCH VIEWERSHIP

Live streaming represents a rapidly expanding area of social commerce. Notably, live streaming video games on Twitch has offered streamers a great deal of opportunity in the online marketplace. Marketers regularly tap popular streamers for promotions, using them to advertise merchandise; therefore, streamers who establish a strong identity in the Twitch community are able to accrue a substantial amount of revenue. Mitchell Church, Ph.D., associate professor of management and chair of the Department of Management and Decision Sciences, delves into this unique expansion of the online marketplace in his research to answer the question: "What factors are making viewers stick?" Church examines the heuristics surrounding streamers' content and delivery, and, in his findings, urges influencers to be methodical when streaming games that rely too heavily on microtransactions.

RECIPES WITH INSIGHTS INTO THE GENDERED INCARCERATION EXPERIENCE

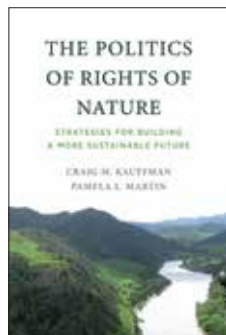
In studying prison food narratives written by incarcerated individuals, Ami E. Stearns, Ph.D., assistant professor of human services, in collaboration with Casey Albritton, M.S. (University of Louisiana at Lafayette), explored how imprisoned men and women express their gendered selves in penal institutions through their cooking and the act of writing recipes. In her independent research, *Baking Bittersweet*, Stearns explores the ways inmate-authored cookbooks provide a means for imprisoned women to affirm their pro-social identities and respond to their powerlessness. Her careful analysis of these texts aims to lead readers and researchers to a more compassionate and nuanced understanding of incarcerated individuals. This work led to her current project: a book covering her studies with prison cookbooks, which will be published by Routledge Press.

PERPETUATING SUSTAINABLE SOLUTIONS

AWARD-WINNING TYPOLOGY FOR SERVICE PROCESSES

Subhajit Chakraborty, Ph.D., in collaboration with Muratcan Erkul, Ph.D. (Kutztown University), and Hale Kaynak, Ph.D. (University of Texas-Rio Grande Valley), proposed a classification system suggesting that contemporary manufacturing firms may benefit by improving their customer focus and being organizationally innovative. Manufacturing firms that implemented these approaches with quality management practices were shown to achieve more effective servitization – processes by which companies become service-centric – and higher firm performance.

Chakraborty received the Gryna Award from the American Society for Quality, the primary body for quality in the world. This international award, bestowed only eight times since 2010, is presented for the paper published in the preceding year that made the largest single contribution to the extension of understanding and knowledge of the philosophy, principles, or methods of quality management.



THE FIGHT FOR ECOLOGICAL SUSTAINABILITY

The prevalent discussions around climate change and the prospect of mass extinction have amplified the call from politicians, policymakers, and activists around the world for the right of nature to be legally recognized. In *The Politics of Rights of Nature*, CCU's Pamela Martin, Ph.D., professor of politics and international relations, and Craig Kauffman, Ph.D. (University of Oregon), explore the way communities, organizations, and concerned citizens are seeking ways to position the right of nature as a means to counteract environmental crises. Telling case stories from around the world, they explore what movements are working and what has failed so far, but ultimately show that communities are willing to rally for the preservation of the natural environments.



PRIORITIZING HEALTH and NUTRITION

MANAGING HEAT STRESS THROUGH NUTRITION

Brandon Willingham, R.D., combines his research interests of fluid balance, thermoregulation, and human performance in his recent publication, wherein he investigates the role of betaine supplementations in improving heat tolerance. He has received two industry grants from NOW Foods in the areas of exercise metabolism and the challenges associated with exercising in the heat, which are funding ongoing investigations of nutritional approaches to managing heat stress.

AEROBICS WITH HYPOXIA TRAINING

Jakob Lauver, Ph.D., maintains a line of research investigating the application of blood flow restriction (BFR), or hypoxia, during aerobic-based exercise. Through the use of tools such as pressure cuffs, occlusion training bands, or knee wraps, BFR can be used as a training method that artificially alters the blood flow response to exercise.

Recent literature suggests that aerobic exercise with BFR may be an effective means of training, but the limited research in the area conflicts with various modes and exercise prescriptions currently being utilized. Lauver has been investigating various methodological concerns, including the effects of various intensities of exercise and various restriction pressures on the acute physiological responses to provide further insight into aerobic exercise with BFR.

IN TALKS with **PAUL GAYES**



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.

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

What is different about the angle by which CCU's undergraduate and graduate approach 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.

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.

BURROUGHS & CHAPIN CENTER FOR MARINE AND WETLAND STUDIES

- Advance the understanding of complex environmental processes within the coastal zone through applied research.
- Train the next generation of coastal scientists who will apply this knowledge to predict behavior and aid in addressing environmental issues within the coastal zone.
- Communicate the best science available to help society effectively manage its critical coastal natural resources and the economics dependent on them.



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 3-D cement printing of future smart reef modules.

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 or scan the QR Code for more.

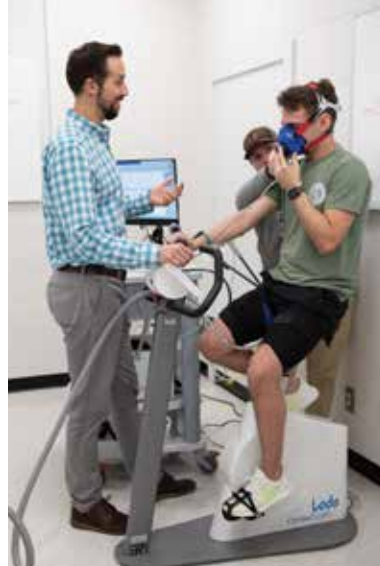


#ccuacademics

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 @CCUChanticleers  [coastal.edu/virtual_tour](https://www.youtube.com/watch?v=coastal.edu/virtual_tour)

Learn more about our programs here:



Jakob Lauver, Ph.D.



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