

New programs at USCB

Besides a B.S. in Biology or Computational Science, we have been working over the last two years to add:

- a **Bachelor of Science in Mathematics**
- a **Bachelor of Science in Secondary Education—Mathematics**
- a **Bachelor of Science in Secondary Education--Biology**

Our three newest programs are under way and looking to grow! Both the B.S. in Math and Secondary Math Education came on line a year or so ago, but the B.S. in Secondary Ed in Biology was just approved by the Council of Higher Education (the S.C. governing board). It took work and dedication by Dr. Bud Sanders, Math; and Dr. Gordon Sproul, Science; to shepherd the degree proposals through. We hope the addition of these Secondary Ed degrees will positively impact the staggering numbers of vacancies that have proven so difficult to fill in STEM education, both regionally and nationally. The need is so great that there are means now to have student loans forgiven if you serve in a critical need area. If you are interested in these programs, contact Dr. Bruce Marlowe, the head of our Education Department, at BMARLOWE@uscb.edu. Look for updates in future newsletters from the School of Science and Mathematics.

USCB is among the fastest growing undergrad institutions in the U.S.!



THE CHRONICLE OF HIGHER EDUCATION

The Chronicle of Higher Education certified USCB recently as one of America's top five public undergraduate institutions over the 10-year period ending in 2015. Fortunately, the sciences have kept pace with the university's rapid growth. In fact, Biology is now the second largest degree program based on enrollment. It

has grown by nearly 100 percent since the fall of 2013. In the same time period, the number of Computational Science degree-seeking students has grown by 82 per cent. We are actively working to create more and better internship opportunities for Biology and Computation Science students alike. Two of our Computational Science students worked at Fidelity Investments in the summer of 2017. They created an app for which the company is seeking a patent. Both interns were offered jobs when they graduate in the spring of 2018. Our first intern in Biology at Nemours Plantation was asked to continue working with them into the fall. He's now back at USCB taking a couple of extra classes this spring. He plans to apply to vet school next year.

NEW HONORS PROGRAM

The Biology Program and the Nursing Program will introduce Beaufort College Scholars, an honors program at the Beaufort campus, this fall. The Beaufort Campus is getting a makeover right now, which includes new student accommodations for 96 students along the east end of Boundary Street. The new housing facilities will be within walking/biking distance to classes. They will be located near the Boundary Street bend beyond which the historic Beaufort College campus has stood since 1795. That was the historic location where higher education actually started in South Carolina. Students in both programs will participate in smaller classes with an honors seminar and

group activities/field trips. They will live on the Beaufort Campus for the first two years and then transition to the Bluffton Campus to complete their junior and senior coursework. Our first cohort of Beaufort Scholars will be limited to 20 of our top applicants this fall. Look for details on the program at www.uscb.edu/biology.

Large-scale renovations are already under way. Site preparation has been completed and construction on the residence halls has begun. For more information on the new honors program for Biology majors, contact us at biology@uscb.edu. Those interested in the Nursing honors program can contact nursing@uscb.edu.

Meet our newest faculty



UNIVERSITY OF
SOUTH CAROLINA
BEAUFORT

In the past few years, we have attracted some stellar permanent and visiting faculty members to our growing pool of teacher scholars:



Teresa Carroll (Ph.D., Ecology & Evolutionary Biology, University of Kansas 2009). Teresa stepped down as Director of Environmental Programs at Drury University in Springfield, Mo., to enjoy her family's Low-country residence on Hilton Head Island and to pursue research opportunities here and in the south-eastern U.S. As a side benefit, she

reached out to us to teach and mentor students in research here at USCB. Her arrival could not have been timed better with our record-breaking enrollments over the past few years.



Kimberly Ritchie (Ph.D., Genetics, University of North Carolina, Chapel Hill 2000). Kim joins us after a 12-year stint as a research scientist in Marine Microbiology and Coral Reef Ecology at Mote Marine Lab in Sarasota, Fla. A native of Walterboro, S.C., Kim is active with undergraduate interns in her research on discovering new marine sources of

microbes for drug discovery. Several students accompanied Kim on her OCEARCH cruises last year.



Jena Chojnowski (Ph.D., Zoology, University of Florida 2010). Jena joins us from her last position, postdoctoral researcher at the University of Georgia, where she studied the effects of the Pax-6 gene on human aniridia, a congenital iris defect. She is currently working with several undergraduates in her lab to de-

velop a comparative atlas of eye anatomy across multiple species of vertebrates.



Morgin Jones Williams (Ph.D., Teaching and Learning, Mathematics Education, Georgia State 2016). Morgin joins us from her position as a Clinical Assistant Professor of Math Education at Georgia State University. She is passionate about mathematics teaching, learning and using unique methods to help students develop a mastery of mathematics

in the classroom. Morgin's research is focused on the experiences of black women who earned a bachelor's degree in mathematics and teaching and learning in mathematics at the secondary and higher education levels.



Ron Erdei (Ph.D., Computer and Information Technology, Purdue 2016). Ron is an experienced database administrator and application developer. As a nontraditional student in these areas, he realized the need to create novel ways of teaching to make complex technical concepts more accessible for

today's students to master. These concepts include those commonly found in Computational Science and Math. He employs innovative teaching techniques, often in nontraditional classroom environments, to make challenging course content relatable, and meaningful for, all students.



Xiaomei Zhang (Ph.D., Computer Science and Engineering, Penn State 2016). Xiaomei ("J[e]ow-mae") is a specialist in mobile computing, wireless communication, social networks/network science, data science, data-centric computing, and machine learning (more than 10 papers published in IEEE transactions and conferences in the last

four years). She is also working with several undergraduates in her research to discover the evolution in social trends in our local community based on online social networks.

Dr. Bud Sanders becomes first USCB professor named Fulbright Scholar

USCB professor and chair of mathematics Manuel J. (Bud) Sanders, Ph.D., was selected for a Fulbright U.S. Scholar Program to conduct research in Finland for the 2017-2018 academic year.

The Fulbright Program is an international educational exchange program designed to “increase mutual understanding between the people of the United States and the people of other countries.” Dr. Sanders will be using his Teaching Research Award to study mathematical competency at Tampere University of Technology in Finland.

Dr. Sanders’s goal, through his research program entitled “Mathematical Competency in STEM: Preparing the Researchers of Tomorrow,” is to improve the undergraduate learning process for students in scientific disciplines at USCB.

“I want our students to be prepared as they continue into graduate school or go directly into industry,” he said.



Dr. Manuel J. (Bud) Sanders

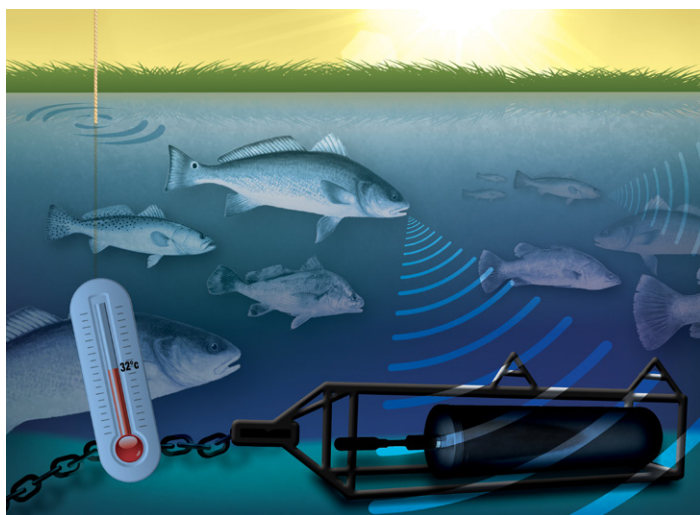
Highlights in recent research



Dr. Eric Montie

Eric Montie and his research group (Agnieszka Monczak, Andrea Berry and Chris Kehrer [USCB class of 2015]) published a *groundbreaking* article on the acoustic landscape of the May River ecosystem, entitled “Long-term acoustic monitoring of fish calling provides baseline estimates of reproductive timelines in the May River estuary, southeastern USA” in the Oct. 13, 2017,

issue of *Marine Ecology Progress Series* (MEPS). MEPS is a major international journal in marine ecology. The article caught the eye of the editorial board and became the featured article for the issue. It was highlighted on the issue’s cover. Dr. Montie’s research is focused on the seasonal changes in local estuaries as impacted by the changing seasonal temperature patterns.



Cover art for MEPS Oct. 13, 2017, by USCB Graphic Artist Tim Devine.

Dr. Gordon Sproul to retire



Dr. Gordon Sproul

The spring of 2018 will be the last semester that Dr. Gordon Sproul (Ph.D., Inorganic Chemistry, University of Illinois 1971) will be teaching chemistry at USCB. Gordon joined the university in 1975. He has been the core of the chemistry faculty; he served as Natural Sciences Chair and the Division Coordinator for Science and Mathematics during his distinguished tenure here.

When he started at USCB, it was still a two-year teaching college with scant emphasis on research. Undeterred, Gordon continued to pursue his interests in the chemical processes involved with pre-biotic compounds that set the stage for the amazing diversity that is the biosphere of our present Earth. Gordon has served as a mentor, a boss and a colleague. He was the second faculty member I met when I arrived at USCB in 2003. We’ve agreed, disagreed, celebrated victories, and even been in “cahoots” to get things expedited over my time here, but as Gordon said to me not long ago, “The science faculty at USCB is incredibly collegial: agree or disagree, we work together well.” With his 43 years of service, Gordon will step down from teaching in the classroom as the longest serving faculty member in our history. He plans to continue his research, while taking time to travel and spend more time with his wife, his children and his grandchildren. His years of service have made USCB what it is today: an excellent four-year school from which to launch your future.

– Joe Staton, *Founding Dean, Science and Mathematics*

Grants and recognition for Computational Sciences:



Dr. Yiming Ji

In the fall of 2017, Yiming Ji was a co-author on a statewide grant that was successfully funded by the National Science Foundation. The initiative, called “**Materials Assembly and Design Excellence in South Carolina**” (or **MADE in SC**), totaled \$20 million in NSF funding, of which nearly \$900,000 was awarded directly to USCB. Dr. Ji, the senior professor and program director for USCB’s Computational Science program, co-wrote the proposal to fund three new faculty lines in Computa-

al Science and Engineering, as part of a program to begin graduate training in STEM at USCB.

Dr. Ji was also honored in January by the University of South Carolina system with a **2018 Breakthrough Leadership in Research Award**. He was the only faculty member recognized in 2018 from a USC senior campus (Beaufort, Aiken and Upstate). Previously recognized as a Breakthrough Rising Star in Research in 2010 and presented with the South Carolina Governor’s Award for Excellence in Scientific Research at a Predominately Undergraduate Institution in 2016, Dr. Ji continues to grow the STEM disciplines at USCB. He has successfully garnered state-level recognition as a STEM leader.

Recent publications from the SCHOOL OF SCIENCE AND MATHEMATICS:

Brodie RJ, Roberts B, Espinosa JI, Heilman K, **Borgianini SA**, Welch JM, Reinsel KA. 2017. Seasonal and latitudinal variations in the energy reserves of the mud fiddler crab *Uca pugnax*: implications for the response to climate change. *Aquatic Biology* 26:113-123.

Carroll TM. 2017. Experimental manipulation of invertebrate feeding pathways and evidence of feeding plasticity in a karst spring ecosystem. *Hydrobiologia*. In review.

Cross SB, Tanguay C, Cannon SO, **Williams, MJ**, Hale JJ. (in press). It’s time for a “reboot”: Shifting preservice teacher education from business capital to professional capital. In R Flessner & R Lecklider (Eds.), *Case Studies of Clinical Preparation in Teacher Education*. Association of Teacher Educators.

DeRoy S, Mishoe A*, Prosper O, Mubayi A. 2017. Challenges in Modeling Complexity of Neglected Tropical Diseases: Assessment of Visceral *Leishmaniasis* Dynamics in Resource Limited Settings”. *Emerging Themes in Epidemiology* (Accepted for publication)

Dudakova L, Cheong SS, Merjava SR, Skalicka P, Michalickova M, Palos M, Mahelkova G, Krizova D, Hlozaneck M, Trkova M, **Chojnowski JL**. Familial limbic stem cell deficiency: Clinical, cytological and genetic characterization. *Stem Cell Reviews and Reports*. 2017 Nov 13:1-4.

Erdei R, Whittinghill D, Springer J. 2017. An impact comparison of two instructional scaffolding strategies employed in our programming laboratories: employment of a supplemental teaching assistant versus employment of the pair programming methodology. In *Proceedings of the IEEE Frontiers in Education (FIE) 2017 Conference*, Indianapolis, IN (October 2017).

Fusi D. On rational varieties of small degree. *Advances in Geometry* (Accepted for publication).

Iwasa A. 2018. Preservation of a neighborhood base of a set by ccc forcings. *Topology Proceedings* 52: 61-72.

Iwasa A. 2017. Preservation of countable compactness and pseudo-compactness by forcing. *Topology Proceedings* 50: 1-11.

Iwasa A. 2017. Adding a convergent sequence. *Topology Proceedings* 49: 9-17.

Monczak A, Berry A, **Kehrer C***, **Montie EW**. 2017. Long-term acoustic monitoring of fish calling provides baseline estimates of reproductive

timelines in the May River estuary, southeastern USA. *Marine Ecology Progress Series*. 581: 1-9.

Montie EW, Hoover M*, Kehrer C*, Yost J, Brenkert K, O’Donnell T, Denson MR. 2017. Acoustic monitoring indicates a positive relationship between calling frequency and spawning in captive spotted sea-trout (*Cynoscion nebulosus*). *PeerJ* 5:e2944; DOI 10.7717/peerj.2944.

Krediet CJ, Zaragoza WJ, Alagely A, **Ritchie KB**, Teplitski M. In Press. *Aiptasia pallida*: a surrogate model polyp susceptible to infections with coral opportunistic pathogens. *Applied and Environmental Microbiology*

Liang X, Wang J. A fiber tract clustering framework to facilitate group analysis in DT-MRI. *Journal of Medical Engineering (JME)* (submitted)

Lu Y, **Pawelek KA**, and Liu S. 2017. A stage-structured predator-prey model with predation over juvenile prey. *Applied Mathematics and Computation* 297: 115-130.

Muller EM, Leporacci NM, Macartney KJ, Shea AG, Crane RE, Hall ER, **Ritchie KB**. 2017. Low pH reduces the virulence of black band disease on *Orbicella faveolata*. *PLoS ONE* 12(6): e0178869. <https://doi.org/10.1371/journal.pone.0178869>.

Pawelek KA, Tobin S*, Griffin C, Ochocinski D, Schwartz EJ, and Del Valle S. 2017. Impact of a waning vaccine and altered behavior on the spread of influenza. *AIMS Medical Science* 4: 217-232.

Ritchie, KB, Schwarz M, Mueller J, Lapacek V, Merselis D, Walsh CJ, Luer CA. 2017. Survey of antibiotic-producing bacteria associated with the epidermal mucus layers of rays and skates. *Frontiers in Microbiology*.

Zhang X, Wu Y, Huang L, Ji H, Cao G. 2017. Expertise-aware truth analysis and task allocation in mobile crowdsourcing. *Proceedings of the 37th IEEE International Conference on Distributed Computing (ICDCS)*.

Zhang X, Cao G. Transient community detection and its application to data forwarding in delay tolerant networks. *IEEE/ACM Transactions on Networking*, to appear.

Tian F, Liu B, Sun X, **Zhang X**, Cao G, Gui L. In Press. Movement-based incentive for crowdsourcing. *IEEE Transactions on Vehicular Technology*.

(Names in **Bold** indicate affiliation with USCB and an asterisk (*) indicates an USCB undergrad/alumnus.)