

# Ascension

Vol. 2, 2013

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**Writers**

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# Ascension

Elevating research and scholarship  
at Georgia Southern University

2013

New Herty Advanced Materials  
Development Center, p. 2

University Takes Lead on Coastal Plains  
Research, p. 6

# Welcome



These are truly exciting times for Georgia Southern University. Research and scholarly efforts of our exceptional faculty and students continue to expand, and Georgia Southern's impact – in the region and throughout the state – has perhaps never been greater. In 2011-2012, Georgia Southern faculty set new records in the acquisition of external funding to support scholarly inquiry and the University is on pace to set another record in the current year. Combined with

record enrollments and the addition of new faculty and staff, Georgia Southern's economic impact during fiscal year 2012 topped \$846 million, setting a new record for one of the state's growing research universities.

The efforts of new and current faculty are pushing the boundaries and are collaborating en masse to develop truly interdisciplinary solutions to regional, state and national priorities. The newly created Interdisciplinary Institute for STEM Education (I<sup>2</sup>STEM<sup>®</sup>), described in more detail in this issue, is a prime example of these efforts. The goal of the Institute is to not only inspire Georgia's best and brightest K-12 students to pursue STEM careers, but to create an environment where Georgia citizens are more STEM literate and can make informed decisions about complex issues.

Interdisciplinary outreach efforts within rural Georgia were also recently, and significantly, assisted by a five-year, \$5.1 million grant awarded to the Rural Health Research Institute, a collaboration of five colleges that establishes an interdisciplinary hub of rural health outreach across the disciplines. This grant, provided by the National Institutes of Health (NIH), provides funding to enact a comprehensive health disparities program consisting of research, training and community outreach.

Perhaps one of the largest examples of Georgia Southern's emerging research strengths is the recent alignment of Georgia Southern and the Herty Advanced Materials Development Center. This partnership pairs Herty's 75 years of applied development and manufacturing experience with the basic and applied research interests of faculty in the College of Science and Mathematics and the Allen E. Paulson College of Engineering and Information Technology, as well as others. This pairing also continues to emphasize the economic development role that research universities play in their communities. The Georgia Southern-Herty partnership provides a university-industry pairing that will help catalyze research, innovation and industry investment in the region and throughout the state of Georgia.

*Ascension*, the research magazine of Georgia Southern. As the name implies, the University is soaring onward and upward thanks to the extraordinary efforts of all our faculty and students. I look forward to continuing to share more great stories with you in future issues.

CHARLES PATTERSON, Ph.D.  
Vice President for Research and Economic Development,  
Dean, Jack N. Averitt College of Graduate Studies



## Ascension

Elevating research and scholarship  
at Georgia Southern University

### 2013

VOL. 2 2013

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ON THE COVER  
High pressure screens are used in the  
papermaking process at the Georgia  
Southern Herty Advanced Materials  
Development Center. Read more on page 2.



6

## CONTENTS

### RESEARCH ON THE HORIZON 2

*Georgia Southern's Herty Advanced Materials Development Center takes University research to the next level.*

### COASTAL PLAIN RESEARCH 6

### PHILANTHROPY ADVANCES GEORGIA SOUTHERN'S DEVELOPMENT 8

### STEM INSTITUTE BUILDS CAREER PATHWAY FOR K-12 STUDENTS 10

### RURAL HEALTH RESEARCH INSTITUTE RECEIVES NATIONAL GRANTS 11

RESEARCH NOTES 12  
STUDENT SPOTLIGHT 18  
PROFILES 20  
PUBLICATIONS 24



8



10



11

# RESEARCH ON THE HORIZON

Georgia Southern's Herty Advanced Materials Development Center takes University research to the next level

**IN A MOVE IMPACTING THE FUTURE OF RESEARCH AND ECONOMIC DEVELOPMENT IN THE STATE OF GEORGIA FOR GENERATIONS TO COME, GOVERNOR NATHAN DEAL SIGNED LEGISLATION TRANSFERRING MANAGEMENT OF THE HERTY ADVANCED MATERIALS DEVELOPMENT CENTER IN SAVANNAH, GA., TO GEORGIA SOUTHERN UNIVERSITY.** This merger blends the unique large scale development and manufacturing capabilities of Herty and the scientific expertise of Georgia Southern faculty and students. According to Georgia Southern President Brooks Keel, Ph.D., this strategic alignment is a win-win situation for all involved. "This new partnership has generated the potential for the University to engage in global research opportunities," he said, "and provides an outstanding opportunity for us to combine Georgia Southern's broad base of engineering and scientific expertise with Herty's leadership and reputation in advanced materials innovation."

Founded in 1938, Herty's clients include global corporations, as well as numerous Fortune 500 companies, focused in a wide range of areas including: transportation,

pulp and paper, building materials, energy, environmental and bio-products industries. The facility is one of the few organizations in the world offering lab and pilot scale development as well as production-line capabilities. Herty's project managers and operators have produced products from literally hundreds of varieties of raw materials and fiber blends.

Georgia Southern now has the opportunity to integrate faculty research interests with Herty's industrial development capabilities. "Herty allows the University to accelerate its research interests in the material sciences and provides an avenue for applied research and development that most universities without dedicated research parks can only dream of," said Charles Patterson, Ph.D., vice president for research and economic development and dean of the Jack N. Averitt College of Graduate Studies.

"We've got all the building blocks for a strong industry research and development presence - now the challenge is to leverage the opportunity," said Don McLemore, Ph.D., director for the Office of Industry Relations and Economic Development. McLemore knows Herty well, having served as the Center's chief operating officer from 2005-2011, and he is currently linking industrial research projects and economic development

opportunities with the University and Herty.

These "building blocks" include the talents of more than 100 Ph.D. scientists and engineers said McLemore, and he suggested that the University also has the opportunity to expand its base of scientific expertise by hiring additional researchers to teach in various colleges.

"The partnership provides a powerful academic and industrial structure that will attract companies to work with Herty," said Dr. Alexander Koukoulas, CEO and president of Herty, about the benefits of the merger that is blending research and industry. "Herty will allow Georgia Southern's faculty and students to see their early-stage research translated into a scale that is commercially relevant," he explained about the collaboration. "Herty de-risks the development process, which allows investment in University R&D to have greater economic impact." One example he cited is work on polymers that can be used in unique non-woven structures, which is a core strength at Herty. Another is the analytical chemistry research and material characterization methods that can support process and product development efforts at Herty. Koukoulas' broad experience base includes working on many major process technologies in the pulp and paper industry. He served as the chief research scientist and

directed corporate R&D for International Paper and most recently served as the managing director of ANL Consultants, LLC, a private consulting firm supporting the pulp and paper, biomaterials and bioenergy industries. As a holder of more than 20 international patents, he is passionate about bringing new research ideas to the market. He also believes that the vast forestry resources of the state of Georgia hold special potential for new product development.

Without a doubt, Keel said the merger advances Georgia Southern's research mission and elevates the University's established research programs. "This is a real opportunity for Georgia Southern to fill a gap. Students stand to benefit through potential internships and hands-on learning experiences with Herty's clients," he added.

## THE HISTORY OF HERTY

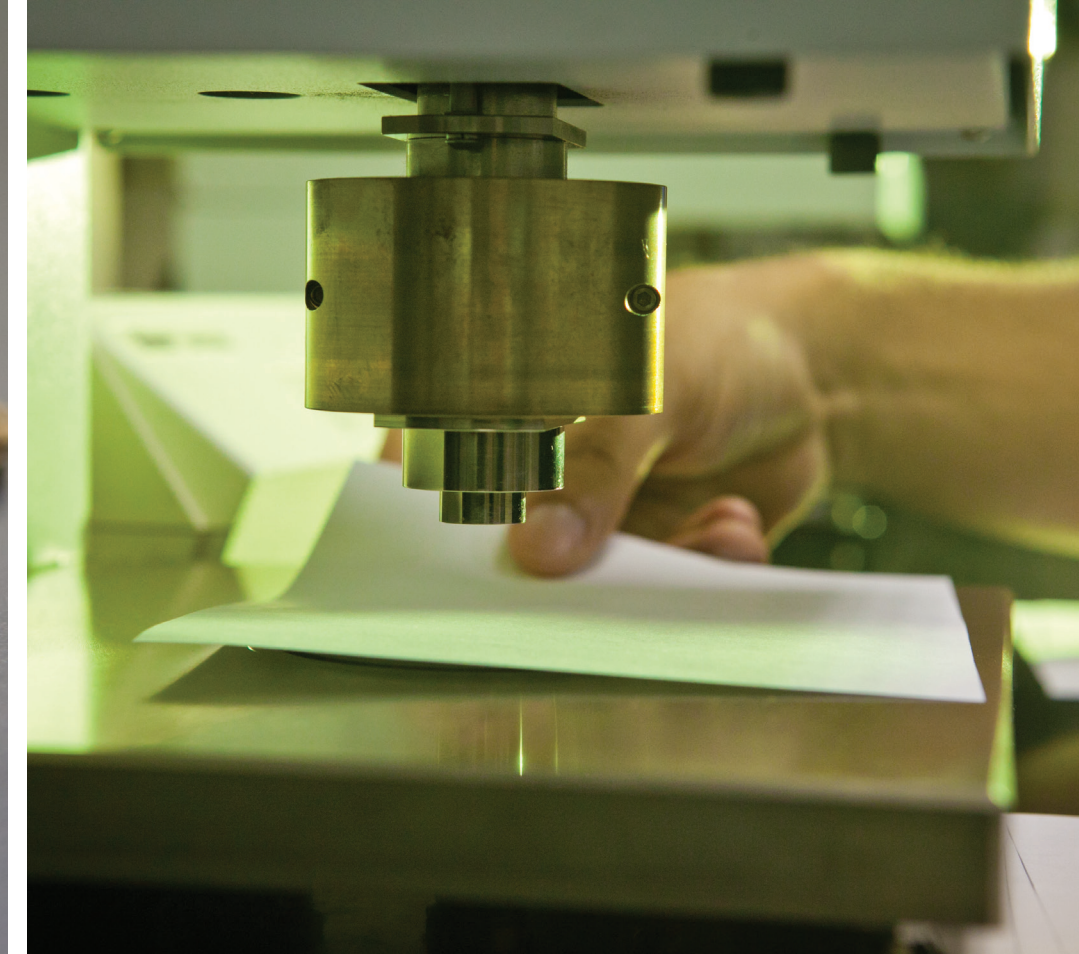
"In many ways, this merger reunites Georgia Southern with our history," said Keel, mentioning Dr. Charles Herty's groundbreaking experiments in a pine forest in 1901, the future site of the First District A&M School.

During Gov. Deal's statewide tour promoting economic development, he signed Georgia Senate Bill 396 into law on the steps of the Marvin Pittman Administration Building on Sweetheart Circle. This historic and meaningful event represented a homecoming of sorts for Herty, the chemist and revolutionary researcher who saved the turpentine and rosin chemical industry more than a century earlier in the northeast corner of the Circle. Herty's pioneering invention of a simple cup-and-gutter system - at the site later renamed Herty Pines -- collected resin without harming pine trees, and ultimately saved the nation's naval stores.

In the 1930s, Herty made another research discovery with southern pines, discovering that newsprint and paper could be made from the fast-growing trees. Due to those findings, Herty is largely considered the founding father of the pulp and paper industry, and the tree farming industry. In 1938, the Georgia legislature recognized Herty for his significant research contributions by establishing the Herty Foundation (later renamed the Herty Advanced Materials Development Center).

## INNOVATION AND IMPACT

Herty's areas of expertise have expanded from early work in tree-based natural fibers to include process and product development, technical analysis, economic analysis and laboratory testing for projects and products employing a broad spectrum of natural and synthetic materials. One example is its production of pellets from pine trees. Herty has aided several companies in the development of processes for drying, resizing, blending,



the specialized treatment and pelletizing of pine and other forms of biomass. “Georgia is a leading producer of pellets. This nascent industry will continue to grow and we have tremendous opportunity to support its development while conducting research that will position it for expansion into products of higher value,” said Koukoulas.

“Herty’s aim is to accelerate the commercialization of new concepts, new products and new businesses,” said McLemore, and the Center has conducted development for a variety of different products. One project, in collaboration with the U.S. Mint, explored the capabilities of printing currency with Braille for the visually impaired. Herty also worked with the company P2i to test a new plasma coating technology, which is used on products ranging from running shoes and clothing to hearing aids. “If a product – such as running shoes -- is treated with this ultra-thin polymer layer, it doesn’t absorb liquids,” said McLemore, about the liquid repellent nano-technology. Companies such as Hi-Tec, Adidas Golf, Nike, Magnum and Ecco have used this technology, as well as the global hearing aid market.

Herty’s longevity, expertise and knowledge in the field of pilot testing have made it the natural choice for companies looking for ways to improve efficiency and give them an advantage in the marketplace. “We have a unique skillset built around process and product development, and the infrastructure to support pilot projects before the product is prepared for full commercial

scale-up,” said Koukoulas about Herty’s capabilities.

Companies eager to introduce a new product to the market utilize Herty’s equipment and testing capabilities before a launch. “We work out key engineering and product specifications so a company will know with certainty that a process or product is going to work before spending millions of dollars to construct a dedicated facility. We are delivering solutions to help companies become more competitive while helping them to expand their business within the state,” said Koukoulas. “There is no better place to do business than in the state of Georgia, at Herty and with Georgia Southern, and we intend to make sure that companies know this and look at us as a partner for growth.”

### PARTNERSHIP POTENTIAL

Georgia Southern’s Herty Advanced Materials Development Center has opened the door for potential partnerships, especially with the significant manufacturing cluster growing between Statesboro and the coast. “These companies need engineering skills, manufacturing skills and materials knowledge – all which we can provide,” said McLemore.

Another essential component of the partnership is the promise of economic development. Bringing Herty under the umbrella of Georgia Southern will help the University become a driving force in accelerating the region’s future economic development, said Keel. “Herty’s main focus

is spearheading economic development within the state,” said Koukoulas, about their goal of encouraging companies to relocate to Georgia.

Patterson offered an example of Herty’s step-by-step process. “If a company is interested in a compound that can be extracted from pine trees, Herty can advance that process in the lab to demonstrate proof-of-concept as well as bring the process to the commercial (manufacturing) scale,” he said. “In addition, working hand-in-hand with our economic development professionals in the region and the state, we want to attract industries to the region that can benefit from our rich abundance of biomass,” he added.

### THE FUTURE

According to Koukoulas, new technologies are emerging in the forest products industry, which translates into further expansion for Herty and Georgia Southern. “We are looking at the next generation of technologies – specifically nanocellulose and new uses for lignin -- which can impart unique and enhanced material properties,” he described about the basic building blocks of woody biomass. “Nanocellulose has great potential for a variety of commercial applications including the pharmaceutical industry, in the plastics industry to impart strength and enhanced barrier properties,” he added. Additionally, nanocellulose fibers can be used to produce high performance plastics for the automotive and aerospace industries. Lignin is also finding novel uses, especially

in the development of low-cost carbon fiber. “The future holds unlimited possibilities for these renewable materials,” said Koukoulas.

Other potential opportunities for Herty and Georgia Southern include the development of biomass to fuels. “Second generation fuels and bio-based chemicals from lignocellulosic materials is an emerging industry,” said Koukoulas. “Herty’s intention is to support this industry by expanding on our process capabilities. In doing so, we can develop new uses for our biomass resources such as transportation fuels, renewable plastics and chemical feedstocks – all from renewable and sustainable raw material sources such as wood and agricultural residues,” he said. Students in Georgia Southern’s Renewable Energy Lab already have experience making biofuels created from peanuts, poultry fat and cottonseed oil.

Keel is excited about what the future holds for the Georgia Southern Herty Advanced Materials Development Center, as the University continues toward its goal of achieving national comprehensive research institution status.

“Now that these two entities have come together, Georgia Southern has the opportunity to be at the center of all of the development in our state,” he said. “There are so many distinct advantages -- not only can companies utilize the piloting capabilities of Herty, but also benefit from our faculty researchers. Georgia Southern is aligned with a facility that can grow ideas.”

For more information, visit [www.herty.com](http://www.herty.com).



# COASTAL PLAIN RESEARCH

**GEORGIA SOUTHERN UNIVERSITY IS EXPANDING RESEARCH EFFORTS IN GEORGIA'S COASTAL PLAIN REGION THROUGH AN INTERDISCIPLINARY RESEARCH GROUP THAT IS DRIVING INNOVATIVE NEW PROGRAMS, PROVIDING COLLABORATIONS AROUND THE STATE AND INCREASING EDUCATION AND OUTREACH.**

The University's Coastal Plain Science research group provides opportunities for students and faculty while addressing important community issues throughout the region in studies ranging from coastal hazards to water quality. The Georgia Coastal Plain is located south of the Fall Line that runs through Augusta, Milledgeville, Macon and Columbus, Ga. The area includes one-third of the salt marshes on the east coast and other natural resources, which researchers say are at risk due to population growth.

**“OUR GOAL IS TO ESTABLISH GEORGIA SOUTHERN AS A LEADER IN RESEARCH RELEVANT TO THIS REGION.”**

**- DANNY GLEASON**

“Our goal is to establish Georgia Southern as a leader in research relevant to this region, and make us the go-to institution for coastal plain knowledge,” said biology professor Daniel Gleason, the team leader of the research group, which facilitates interaction among different colleges and departments. Faculty from the College of Science and Mathematics, the Jiann-Ping Hsu College of Public Health and the Allen E. Paulson College of Engineering and Information Technology are collaborating on studies aimed at maintaining and preserving a balance between continued development and the physical and biological resources of the region.

Gleason and his colleague Risa Cohen are conducting a study to determine where contaminants travel in local rivers and water systems. The goal of their EPA funded study is to examine how these contaminants affect marine biological communities offshore. Last spring, the researchers deposited 50 gallons of the non-toxic dye Rhodamine WT into the mouth of the Altamaha River and traced it 20 miles offshore to Gray's Reef National Marine Sanctuary, a three-day process. “We are studying the connectivity between terrestrial, aquatic and marine systems,” said Gleason.

Civil engineering professor George Fu and biology professor Tiehang Wu, members of the research group, are collaborating on the development of a biological filter for water treatment. The purpose of their study, said Gleason, is to improve treatment methods for waters from local rivers, because the coastal plain region may have to rely on these rivers as a future drinking water source.

Georgia Southern's coastal plain research also extends to the Applied Coastal Research Laboratory, located at the Skidaway Institute of Oceanography in Savannah, Ga. Clark Alexander, the lab's director, said the facility is a place for University faculty and students to explore the dynamics of coastal environments. “The lab provides a home base for students and faculty conducting research on the coast, and also appeals to a wide range of disciplines. “A number of students have completed their undergraduate and graduate research working at this facility, studying for example, salt marsh restoration, patterns of crab larvae settlement during

various times of the year, and other field-based research projects,” he continued.

Alexander's own research includes a study determining the impact of dock construction on the salt marshes, specifically the large increase of docks built in the period from 1970 to 2000 on Wilmington Island in Savannah. In this study, Alexander found that the docks shade the marsh and attract and trap marsh wrack, which subsequently destroys marsh life and the habitats of juvenile shrimp, crabs and fish. In an effort to combat the destruction of marsh life, Alexander is researching alternative dock construction methods that may be used to prevent marsh wrack from becoming trapped.

“We know that people want to live along the coast and that coastal development is going to happen. We just want to inform the public, so construction can be completed in the most sustainable way possible,” he said.

Alexander revealed the newest research tool acquired by the lab is a bathymetric sonar that provides a view of habitats while mapping the ocean floor. “The bathymetric sonar will allow us to tell if the surface is rough, smooth or sandy, and we will begin by mapping Wassaw Sound,” he said. Alexander also mentioned that this tool will allow researchers to collect the first known data of Wassaw Sound, which would give them the capability of making decisions about habitats that need to be protected.

Additional ongoing studies through the lab include long term ecosystem research, mapping the elevation of salt marshes in an effort to develop better models for circulation in tidal creeks and documenting shoreline changes, hurricane tracking and developing other data for the Georgia Coastal Hazards Portal ([gchp.skio.usg.edu](http://gchp.skio.usg.edu)).

Georgia Southern's future in Coastal Plain research continues to rise with the establishment of the University's new James H. Oliver Institute of Coastal Plain Sciences as well as the recently signed Memorandum of Understanding (MOU) with the U.S. Environmental Protection Agency (EPA). Research opportunities for students will explore alternative energy, water contamination and its impact on public health and a collaboration with the University's Center for Sustainability.



## PHILANTHROPY ADVANCES GEORGIA SOUTHERN'S DEVELOPMENT



### PHILANTHROPY - ENHANCING THE QUALITY OF LIFE OR DEVELOPMENTAL POTENTIAL OF OTHERS - CAN BE A DRIVING FORCE FOR ESTABLISHING NEW COLLEGES, FOR ENHANCING THE RECRUITMENT OF QUALITY STUDENTS AND FOR THE RECRUITMENT AND RETENTION OF QUALITY FACULTY.

Historically, public universities have depended primarily on public funds and tuition to support them; however, the pool of available public funds has decreased substantially over the past ten years. Between 2000 and 2010, state funding for public research universities decreased by over 20% nationally and over 30% in Georgia. This has increased the importance of philanthropy in maintaining the quality of academic programs and providing support for students who are having more and more difficulty paying increasing tuition costs.

The Jiann-Ping Hsu College of Public Health (JPHCOPH) has benefited greatly from the philanthropy of those who wish to help others. The initiative for establishing the College began in 1998 with the development of a Master of Public Health and a Master of Health Services Administration in the Department of Health and Kinesiology within the College of Health and Professional Studies.

These programs might have remained separate from Public Health, if not for the initiative of Karl E. Peace, Ph.D. and his generous gift in 2004. The gift was used to establish the College of Public Health, which was named in memory and honor of his wife, Dr. Jiann-Ping Hsu. At the same time, Peace endowed the Karl E. Peace Center for Biostatistics - an important academic component of the College.

The College has grown in student numbers from 30 in its first year to more than 190, and was accredited by the Council on Education for Public Health in 2011. Since its establishment, Peace has provided seven endowments to the JPHCOPH, funding graduate assistantships and scholarships that have made it possible to recruit quality students who might not have been able to attend Georgia Southern otherwise. Peace also saw the need for leadership in biostatistics in the College, establishing the Karl E. Peace Eminent Scholar Chair in biostatistics. In addition, Peace has endowed seven scholarships for undergraduate students in other colleges at Georgia Southern and has made substantial gifts to several other universities. Other individuals and families have also

provided endowments and scholarships to the College, including funds for the establishment of the Center for Addiction Recovery. The Willingway Foundation provides scholarship money and complete financial support for the operation of the Center, which offers a safe supportive network and other resources to help students stay in school and stay on track on their path to recovery.

As a result of this support, more than 200 students have graduated from the JPHCOPH since 2004. Many of these students are serving in public and private health organizations, particularly in rural and underserved areas of Georgia, where they, like the College's philanthropic supporters, serve others.

The College of Business Administration (COBA) is another example of a University institution that has benefited greatly from the philanthropic efforts of others. The late William Freeman's ('57) loyalty, dedication and giving have been a cornerstone of successful growth for COBA. He endowed the William A. Freeman Distinguished Chair of Free Enterprise and the Freeman Business Scholars Program, which provides a full four-year scholarship for one business major in each class. Additionally, he endowed 10 scholarships in the University's Honors Program. Today, the Freeman family continues to support his philanthropic vision, which has opened the doors of opportunity for generations of students at Georgia Southern.

For more than 46 years, Betty Foy Sanders has demonstrated her devotion to the University and to the advancement of the arts and art education. The wife of former Georgia Governor Carl Sanders has established generous academic scholarships and opportunities for the University's art students. Sanders has donated paintings and sculptures from her own personal collections and in 1967, she established the Georgia Artists Collection, a permanent exhibit on campus that she curates, featuring the works of Georgia artists. She also commissioned the large-scale public sculpture "Ascend" which greets visitors to The Center for Art and Theatre at Georgia Southern. When her husband was in office from 1963-67, Sanders dedicated her efforts toward the construction of several fine arts buildings in the University System of Georgia including Georgia Southern's Foy Fine Arts Building, named for her father, J.P. Foy.

Georgia Southern continues to move forward, providing faculty and students with fulfilling academic experiences due to the tremendous commitment from donors and benefactors. *- Gregory Evans, Ph.D.*

CLOCKWISE FROM TOP LEFT: William Freeman, Betty Foy Sanders, Karl Peace, Ph.D. and Jimmy, Carol Lind and Bobby Mooney of the Willingway Foundation



## STEM Institute Builds Career Pathway for K-12 Students

**GEORGIA SOUTHERN UNIVERSITY HAS ESTABLISHED A NEW INSTITUTE FOR INTERDISCIPLINARY STEM (SCIENCE, TECHNOLOGY, ENGINEERING AND MATH) EDUCATION (I<sup>2</sup>STEM<sup>e</sup>)** (pronounced “I two STEM e”) that will support thematic grant writing, research and outreach. I<sup>2</sup>STEM<sup>e</sup> is the only institute within the University System of Georgia to address all four components of STEM disciplines and addresses a specific need in the state.

The Institute is committed to excellence in primary, secondary and higher education STEM teaching and learning with a focus on rural and diverse populations under-represented in STEM areas.

The Institute will create a broad range of partnerships across academia, business, education and research centers in southeast Georgia, support professional development, outreach, curricular development, the creation of innovative courses and research in STEM education through grant funded projects.

“Georgia Southern has a track record in developing programs that serve the special needs of our region, a largely rural and ethnically diverse area,” said Charles Patterson, Ph.D., vice president of research and dean of the Jack N. Averitt College of Graduate Studies. “Our goal is to provide greater access for rural and underserved populations to science, technology, engineering and math by helping these students to pursue degrees and careers in those areas.”

The University was also awarded an Innovation Fund Grant by Georgia Governor Nathan Deal. The STEM grant, estimated at approximately \$700,000 during two years, will fund a unique partnership between the University, seven area research institutes and six school districts covering 27 counties in southern Georgia.

Georgia Southern will utilize the grant to fund the partnership known as “Real STEM.” The project, run through I<sup>2</sup>STEM<sup>e</sup>, will develop hands-on STEM learning modules related to the environmental concerns of Georgia’s coastal region. This is the first Innovation Fund Grant that has been awarded to the University.

The Real STEM service region of the lower coastal plain is a rural geographic region which includes low social economic status counties in southeast Georgia with a high number of minorities. “This is a University-wide initiative,” said Robert Mayes, Ph.D., director of I<sup>2</sup>STEM<sup>e</sup>, explaining the commitment of core faculty fellows from the College of Science and Mathematics, the College of Education, the



College of Engineering and Information Technology and the College of Liberal Arts and Social Sciences.

As part of the grant, the team will work with research partners at Georgia Southern, the Applied Coastal Research Laboratory at the Skidaway Institute of Oceanography, the UGA Marine Institute at Sapelo Island, Gray’s Reef Marine Sanctuary, Marine Education Center and Aquarium, Southeastern Natural Sciences Academy and the Ossabaw Island Education Alliance. The team will also work with the Okefenokee National Wildlife Refuge. Additionally, the team will work with six school districts including Bulloch County, Burke County, Camden County, Jenkins County, Treutlen County and Ware County.

“Our goal is to reignite the interest of students in science, technology, engineering and math by engaging them in applied learning through real-world challenges of environment and energy that are impacting their local communities,” said Mayes. “Ultimately, we hope to improve STEM achievement in Georgia and encourage students to pursue careers in STEM.”

Mayes added that the Institute is also challenging students to look at real world complex problems from a variety of disciplines. “For example, take a grand challenge like climate change, geochemical cycles or carbon – what are the consequences both locally and globally? We are trying to get students to look in their backyard and think locally about the impact these challenges will have on our futures.”



**GEORGIA SOUTHERN UNIVERSITY’S RURAL HEALTH RESEARCH INSTITUTE (RHRI) HAS BEEN AWARDED TWO NATIONAL GRANTS IN EXCESS OF \$5 MILLION** that will change the outcome of health care in rural communities through outreach, training and research.

The grants were awarded to Dr. Jacob Warren and Dr. Bryant Smalley, the founding co-executive directors of the RHRI. Warren is an epidemiologist in the Jiann-Ping Hsu College of Public Health, and Smalley is a clinical psychologist in the College of Liberal Arts and Social Sciences.

Georgia Southern’s RHRI was founded in 2011 as an interdisciplinary hub of rural health research and outreach that spans five Colleges within the University. Its mission is to improve health in rural areas by promoting cutting-edge, interdisciplinary research and outreach that connects faculty from diverse fields and promotes the development of researchers examining rural health issues.

The first grant, awarded from the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services for \$450,000, will provide diabetes education to patients in rural areas through Project ADEPT (Applied Diabetes Education Program using Telehealth). Project ADEPT will bring information to diabetes patients on how to care for themselves and manage their condition.

The computer-based system is complete with a portable webcam that has the capability of being moved to different rooms in a clinic for one-on-one visits with a single patient or larger groups. “Project ADEPT can be used for one session, or to give a patient the information needed over a period of time. We are making this available in English and Spanish in an effort to make sure anyone

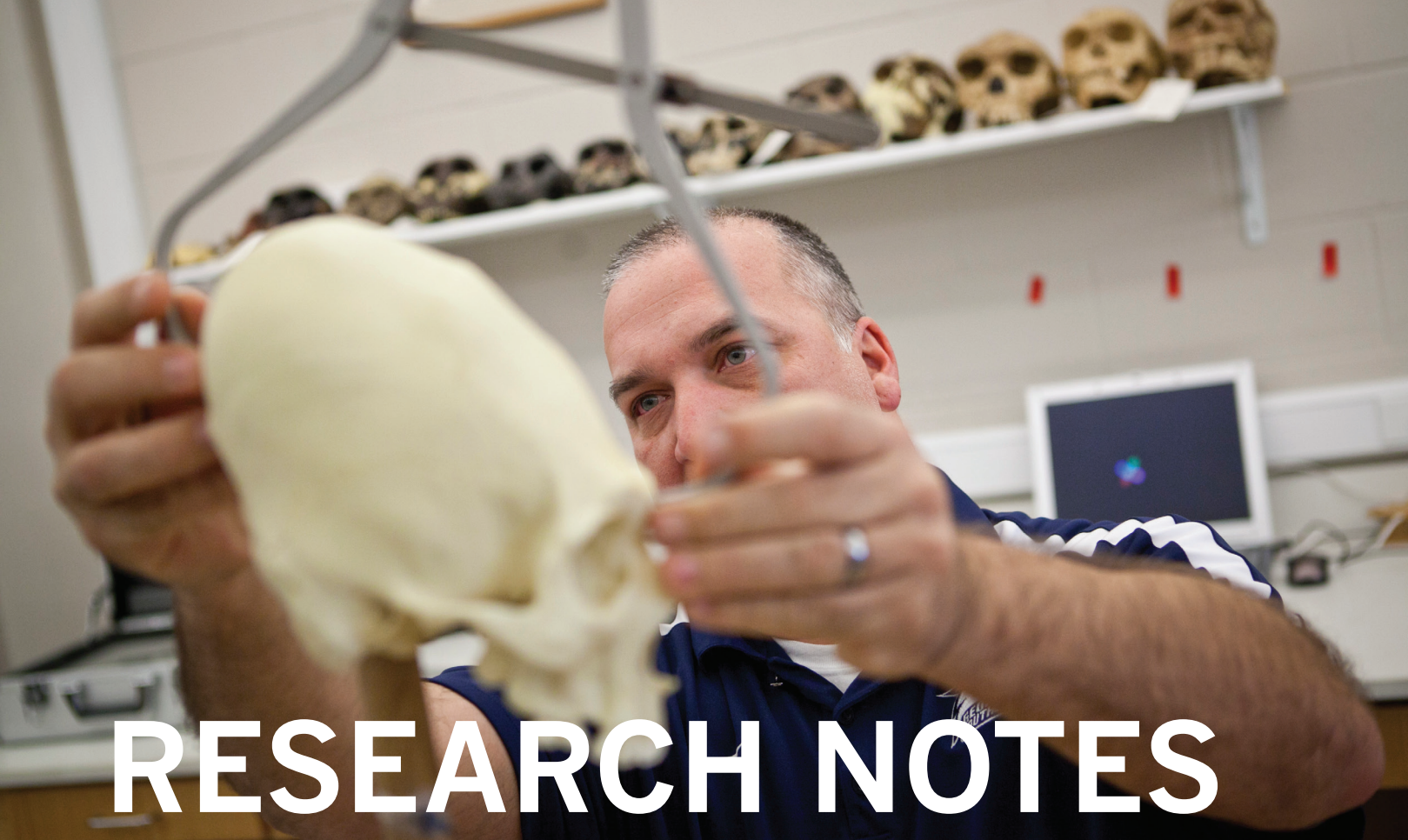
who needs the information will have access to it. Our goal is to help the patients make long-term health behavior changes that will lead to a better quality of life,” said Warren.

The program is expected to reach approximately 750 diabetes patients in Candler, Emanuel, Tattnall, and Toombs counties who may otherwise have a difficult time accessing important information on how to best manage the symptoms and possible complications of diabetes. According to Smalley, a diabetes educator will conduct the telehealth program for the next three years in these counties, with the prospect of expansion.

The second grant, awarded in the amount of \$5.1 million from the National Institutes of Health (NIH), designates the RHRI as a Center of Excellence for the Elimination of Rural Health Disparities. “Georgia Southern’s RHRI is the only Center of Excellence focused on rural health in the nation,” said Smalley.

Funding for the new five-year project comes from NIH’s National Institute on Minority Health and Health Disparities (NIMHD) and will allow the RHRI to enact a comprehensive rural health disparity elimination program spanning research, training and community outreach.

The grant’s activities include developing and testing new rural-specific health promotion programs designed to improve diabetes, hypertension and prostate cancer outcomes; enacting a rural health disparities elimination summer training program for undergraduate and graduate students; implementing new mentoring programs for faculty wishing to pursue careers in rural health; and creating a new community capacity-building initiative to improve health outcomes throughout rural southeast Georgia. The grant, which will last through 2017, will also create 10 new grant funded jobs on campus.



# RESEARCH NOTES

## 3D LASER SCANNING MEASURES ANCIENT SKULLS

Matt Williamson, director of Georgia Southern's Human Osteology and Gross Anatomy Laboratories and a biological anthropologist in the College of Health and Human Sciences has teamed up with graduate student Chris Kowalczyk to investigate the mysteries of ancient man through cutting-edge 3D laser scanning. According to Kowalczyk, these detailed scans produce 26 different measurements on a skull, and can be used to study the varied cranial modifications around the world in many different cultures.

Cultures from the Mayans and Egyptians to Native Americans had different reasons for changing their skull shapes. "In Georgia, there are a few archaeological sites where individuals display unusually shaped skulls. For some, the change was intentional, but for others there was a functional cause," said Williamson.

"For example, heavy loads were carried on their backs using a tumpline, which is a strap that wraps around the front of their head, and over time would create a flattened forehead," he explained about the 100-plus year customs followed by Native American tribes near Columbus, Ga. in the mid-1600s.

"If we understand how the skull changes and adapts, it will help us understand genetic abnormalities and we can see how a child's growth is affected," said Kowalczyk, explaining how these scans might one day solve medical mysteries.

## SCHOOL OF NURSING AWARDED GRANT TO ADDRESS NURSING FACULTY SHORTAGE

Georgia Southern University's School of Nursing has been awarded a three-year grant for \$792,000 from the Health Resources and Services Administration (HRSA), of the U.S. Department of Health and Human Services.

The grant is designed to enhance the University's online Doctor of Nursing Practice (DNP) degree program to address the shortage of nursing faculty.

The project will prepare advance practice nurses in the DNP program with additional coursework in nursing education. The state of Georgia ranks number 44 in the nation in the number of nurses per population. According to America's Health Rankings, Georgia ranks 43rd of the 50 states in overall health indicators, such as poverty, infectious disease, obesity, hypertension, heart disease, diabetes and health disparities. Further, Georgia ranks among the lowest third in the nation in prenatal care, insurance coverage and access to primary care services. Even more serious than the shortage of nurses is the shortage in nursing faculty to prepare nurses to meet such serious health care needs.



"Of the 3.5 million nurses in the country, less than one percent holds the terminal (doctoral) degree to assume positions as faculty members in university settings," said Elaine Marshall, Ph.D., RN, professor, Endowed Chair and director of Center for Nursing Scholarship. "This grant will not only help to alleviate an enormous need, but it will build on the reputation and stature of Georgia Southern University."

Georgia Southern's online DNP program builds upon the foundation of the nationally recognized family nurse practitioner program which began in 1983. Georgia Southern was among only 40 out of several hundred applicants to be funded.

## PUBLIC HEALTH RESEARCH TO AID UNDERSERVED GEORGIANS

Some of Georgia's most at-risk citizens will benefit from work by Georgia Southern's Jiann-Ping Hsu College of Public Health (JPHCOPH) to improve their access to public health services.

The College has been awarded a \$100,000 grant from the Robert Wood Johnson Foundation to improve the quality of services from public health departments around the state of Georgia. Researchers from JPHCOPH will work with the state's health departments and the Georgia Public Health Practice-Based Research Network, housed at the JPHCOPH, to find ways to better address critical public health issues including obesity, diabetes and newly emerging infectious diseases.

"Georgia's health departments are on the front lines of our battle for good public health," said Lynn Woodhouse, JPHCOPH faculty member and researcher with the Georgia Public Health Practice-Based Research Network. "Our goal with this grant and our research is to find ways to help build a better public health system to more effectively and efficiently face the new health challenges of the 21st century."

The grant will support efforts to increase the use of quality improvement techniques that are specifically tailored for local public health agencies in Georgia.

## UNIVERSITY EXPANDS BIOMECHANICS RESEARCH

The Department of Health and Kinesiology in the College of Health and Human Sciences (CHHS) is

expanding its research in biomechanics with the hire of Li Li. Prior to joining Georgia Southern, Li was a 14-year faculty member at Louisiana State University (LSU), serving as director of the biomechanics lab and director of the LSU Peripheral Neuropathy Studies. His main research projects include posture and gait for people with peripheral neuropathy, dynamics and control of human gait transition and the effect of aging on movement stability.



In addition to continuing his line of research here at Georgia Southern, Li and his colleagues are also investigating increasing the physical capacities of youth afflicted with cerebral palsy. Additional University faculty from CHHS, the Jiann-Ping Hsu College of Public Health and strength conditioning specialists are working with the initial group of Statesboro, Ga. high school students in a physical education training program. "Children with cerebral palsy are a significant phenomenon in this country. We are promoting quality of life for these children in hopes that this program will help them become more physically capable," said Li.

## RESEARCHERS HATCH LEATHERBACKS IN SEA TURTLE PROJECT

The St. Catherines Island Sea Turtle Project, founded in 1991 by Georgia Southern Professor Emeritus Gale Bishop, has protected sea turtle nests on the barrier island and safely hatched more than 100,000 baby loggerheads. Bishop has been joined by faculty, students and other volunteers who have dedicated years to research, field work and study to ensure that endangered sea turtles successfully hatch and return to nest again on St. Catherines.



Last summer, the Sea Turtle Project documented a historic moment with the first nest of leatherbacks to successfully hatch on the island. Leatherbacks are commonly found in the state of Florida, with more than 500 nests discovered each year. The nest on St. Catherines was one of only four that hatched in the state of Georgia.

**HISTORY PROFESSOR DISCOVERS HIDDEN CHINESE TRADE ROUTES**

Georgia Southern University history professor Robert Batchelor, Ph.D., has uncovered centuries-old Chinese trade routes that have been hidden for nearly 400 years. He made the discovery while researching maps in Oxford University's Bodleian Library.



"The map is a unique artifact that tells the story of East Asian commerce as open, dynamic and driven by coastal merchant networks with aspirations to trade as far away as the Persian Gulf," said Batchelor. The map, known as the Selden Map of China, was donated to the Bodleian in 1659 by English legal philosopher John Selden.

While the map will prove invaluable to researchers who want to study Chinese shipping and trade history, Batchelor thinks the discovery also paves the way for a modern dialogue about China's relationship with the U.S. and other countries. "Many people don't realize that South Georgia's relationship with China goes back to at least the 1760s when Henry Yonge planted the first soybean crop in North America in Savannah with seeds brought from China. It's important to think like early Americans and merchant Chinese — reaching out to build relationships rather than walls," said Batchelor.

**PEACE HONORED WITH REGENTS' HALL OF FAME AWARD**

Georgia Southern University professor Karl E. Peace, Ph.D. was presented with the 2012 University System Board of Regents' Hall of Fame Award. Peace, a senior research scientist, professor of biostatistics in the Jiann-Ping Hsu College of Public Health (JPHCOPH), and Georgia Cancer Coalition Distinguished Cancer Scholar, was one of only three recipients to receive the honor. The award was established by the Board of Regents to honor those who exemplify superb leadership and support of higher education in the state of Georgia.



"We are extremely proud of Karl Peace for being recognized with this very prestigious award," said Brooks Keel, Ph.D., president of Georgia Southern. "Karl has made a tremendous impact in the field of public health through his generous endowment of the Jiann-Ping Hsu College of Public Health."

The well-known philanthropist has created 21 endowments at five institutions. Fourteen of these are at Georgia Southern, including five for students from his native community of Baker County, Ga. Besides endowing the JPHCOPH - the first school of public health in the University System of Georgia - he founded the Karl E. Peace Center for Biostatistics and the Karl E. Peace Public Health Library, and brought the Central Office of the International Chinese Statistical Association to the JPHCOPH. Peace is also founder and chair of the internationally renowned Biopharmaceutical Applied Statistical Symposium (BASS) - which generates funds to support graduate work in biostatistics.

Peace has made pivotal contributions in the development and approval of drugs to treat Alzheimer's disease, to prevent and treat gastrointestinal ulcers, to reduce the risk of myocardial infarction, to treat anxiety, depression and panic attacks, to treat hypertension and arthritis and several antibiotics.

**AHAD RESEARCHES MUSCLE HEALTH**

Electrical engineering professor Mohammad Ahad is engaged in research focusing on instrumentation design innovations by adapting a promising new technology known as Electrical Impedance Myography (EIM) to painlessly measure muscle health. He is collaborating with faculty in the College of Health and Human Sciences (CHHS) to collect data using EIM on athletes with concussions.

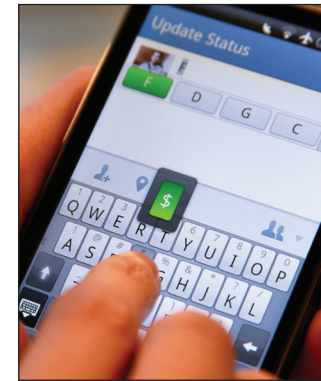


Ahad explained, "we hypothesize that brain injury will affect skeletal muscle impedance or electrical resistance. Impedance data collected routinely from the patient using this non-invasive technique will allow monitoring patient recovery through monitoring impedance changes."

EIM only takes a few seconds to measure and a patient can be measured every couple of days in the same position in the muscle, thereby providing consistent data from one testing session to the next in detecting changes in the condition of a muscle.

**SOCIAL NETWORKING SITES AFFECT PRINCIPALS HIRING DECISIONS**

College of Education professor Marlynn Griffin has published a study that looks at whether school principals are influenced by posts gleaned from social networking sites of graduates seeking teaching positions. "Your private life may not be as private as you think, especially if you are a K-12 teacher," said the educational psychology professor.



Taking language directly from posts of students enrolled in an initial education practicum course, Griffin looked for language and images that were inconsistent with the ethical standards held for teachers by professional organizations. The statements in the survey included vulgar, sexually explicit, violent and discriminatory language. Griffin found that principals did perceive that information on social networking sites would impact their hiring decisions, and said that further studies are needed.

**DEVELOPING SMART COATINGS FOR CORROSION PROTECTION**

Chemistry professor Weihua (Marshall) Ming has been awarded a \$360,000 grant by the Office of Naval Research for his research on smart coatings for corrosion protection. His project will give Georgia Southern researchers the opportunity to develop sophisticated, smart corrosion-detecting and anti-corrosion coatings that will be used on ships, aircraft and more for the military. The coatings could potentially save billions of dollars in maintenance costs for the U.S. Navy. Ming, the College's Distinguished Chair in Materials Science, serves as principal investigator along with co-investigator John DiCesare, department chair and professor of organic chemistry.



**PROFESSOR SEEKS TO LESSON DAMAGE FROM NATURAL THREATS**

A \$377,000 grant to University researcher Clark Alexander will lead to enhanced protection of the

southeastern coast from the threats of flooding, storms, hurricanes and erosion. Alexander is the director of Georgia Southern's Applied Coastal Research Laboratory at the Skidaway Institute of Oceanography.



The funds come as part of a \$1.06 million grant from the National Oceanic and Atmospheric Administration (NOAA) Regional Ocean Partnership to the Governors' South Atlantic Alliance (GSAA), an environmental organization headed by the governors of Georgia, South Carolina, Florida and North Carolina.

Alexander's project will work to enhance the capabilities of a software tool called AMBUR (Analyzing Moving Boundaries Using R), which will determine the coastal areas that are most vulnerable to natural hazards. The data, combined with economic factors, will determine the pros and cons of coastal development in vulnerable areas.

AMBUR was created by Georgia Southern professor Chester Jackson, and the project to develop the tool on a larger scale will last 18 months. Partners in all four states will gather data throughout the process.

**RECOGNITION FOR SUPPLY CHAIN RESEARCH**

Operations Management Professor Alan Mackelprang was named the winner of the 2012 Elwood S. Buffa Doctoral Dissertation Award for "Beyond Firm Boundaries: Exploring the Interdependence between Supply Chain Partners." The internationally competitive award encourages and publicizes outstanding dissertation research by selecting and recognizing the best dissertations written in the past year in the decision sciences.



The business professor had the opportunity to present his dissertation and receive the award during a special session at the Decision Sciences Institute's annual meeting in San Francisco, Calif. in November. The award is co-sponsored by McGraw-Hill and the Decision Sciences

## RESEARCH NOTES

Institute. In addition, Mackelprang was named to the Decision Sciences Institute's Hall of Fame.

### COE EXPLORES MOBILE TECHNOLOGY

The College of Education (COE) recently completed a yearlong iPad project to give faculty an opportunity to explore the creative use of iPads within their own classrooms, as a tool for use by teacher-candidates during their field experiences and for educational administrators.



Staying up-to-date on the latest trends in technology and its application throughout the field of education is a core mission at COE. Professor Judi Repman, director of the project, said the goal was to develop and implement innovative pedagogical strategies to meet the needs of today's technology-rich society.

The project culminated with a day of sharing and reflection called "Speed Dating with Apps," which allowed faculty and staff to share great apps they had discovered during the year and discuss ways to implement the iPads into the curriculum of COE.

### LAB EXPANDS STUDY OF ANTENNAS FOR WIRELESS PROPAGATIONS

Dr. Sungkyun Lim, a professor in the Department of Electrical Engineering, is expanding his research in the analysis and design of antennas for wireless propagations, after establishing the research laboratory for Antennas and Wireless Propagation in the College of Engineering and Information Technology (CEIT).

Lim and a team of graduate and undergraduates study electrically small antennas supergain arrays, artificial magnetic conductor (AMC) ground planes and EM wave propagations, expanding the research by developing applications such as RFID-tag/reader antennas, mobile-phone antennas, wireless energy transfer/harvesting, radar and propagation modeling.

Lim was awarded a Georgia Research for Academic Partnership in Engineering (GRAPE) grant for research on



wireless energy harvest for self-powered wireless sensors using dissipated electromagnetic fields. The GRAPE grant is funded by Georgia Power/Southern Company.

In the project, the professor and his research team are studying how to power wireless sensors to extend battery life using automatic wireless power-harvesting/transmitting systems. When this technology is developed, it will mean electronic devices such as cell phones or tablets won't have to be charged quite as often.

In November 2012, Lim received a second GRAPE grant for his project "Realization of cyber-security/intrusion risk free zone for IEEE 802.15-based wireless sensor technologies by controlling the propagation of RF signals." The goal of the project is to achieve physical cyber security for wireless sensors in power plants/buildings by controlling RF signals using directive antennas instead of omnidirectional antennas.

### INVESTIGATING GEORGIA'S HURRICANE HISTORY

Georgia Southern researchers Brian Bossak and Mark Welford are investigating Georgia's historical hurricane activity with the help of a \$129,664 grant from the Georgia Sea Grant, which receives funding support from the National Oceanographic and Atmospheric Administration (NOAA).



The grant will fund two years of study by Jiann-Ping Hsu College of Public Health (JPHCOPH) researcher Bossak and Welford, a professor in the Department of Geography and Geology.

The researchers revealed that NOAA's database on tropical storms in Georgia only dates back to 1851, and their research will expand the history to 1750. Preliminary data suggest the coast has historically experienced cycles of very high hurricane landfall activity, despite no major hurricanes hitting the state in recent decades. Their research could help explain the decreased number of Georgia hurricanes since 1850; in addition, it will generate information on the potential risks to the coast from major tropical storms in the future.

### CHANGING GEARS AT CAMP LAWTON

Lance Greene, the new historical archaeologist in the Department of Anthropology and Sociology, is now

the lead researcher on the Camp Lawton project near Millen, Ga. According to Greene, the first couple of years were more of an exploratory phase focused on defining the boundaries of the site, discerning the level of integrity or how well it was preserved, drumming up interest among local and regional groups about the historical importance of the site and beginning the task of documentary research. However, that is changing.

"Now, the mission turns more to one of directed research - we are defining a set of research goals that will direct us in our excavations," Greene said. "We don't go out and start excavating a lot of different areas of the site, but instead focus on a few areas that will answer the questions that are most important to us and to other interested parties."

Some of the questions to be answered include the quality of life for the Union prisoners versus the Confederate guards, why the camp was built in what was then Burke County and the treatment of African-American slaves who built most of the prisoner of war camp.

Greene said the spring and summer of 2013 should be a big year for Camp Lawton. The national PBS show "Time Team America" will air an episode about the site and an exhibit hall focusing on Camp Lawton will open on site in Magnolia Springs State Park. *Archaeology* magazine plans to publish an article on Camp Lawton and Georgia Southern will host an archaeological field school during summer term B.

### GRADUATE STUDENTS RESEARCH HEALTH ISSUES IN GHANA

Dr. Evans Afriyie-Gyawu, a faculty member of the Environmental Health Sciences Discipline and director of the Ghana Study Abroad Program in the Jiann-Ping Hsu College of Public Health, led a group of five graduate students on a Study Abroad trip to his native country of Ghana. The group engaged in HIV/AIDS prevention work, community health issues and studied environmental health concerns in the West African nation.

"This practicum was all about getting experience in the field," said Afriyie-Gyawu, about the partnership between Georgia Southern students and University of Cape Coast faculty and students. During the month-long trip, the group collected data and worked on studies including children afflicted with broncho-pneumonia,



HIV/AIDS patients and women with uterine fibroids. "In this clinic-based work, students were able to do comparative analysis between health-related issues in Ghanaian hospitals and those in our hospitals in the U.S.," said Afriyie-Gyawu. Additional studies included surveying and collecting data to determine the negative effects of scrap tires used to smoke meats, as well as water quality in the region and their impacts on public health.

This was the second trip to Ghana for JPHCOPH graduate students. Next summer, students from the University's Center for Addiction Recovery are planning to participate in the program by working with Ghanaians recovering from addictions to drugs and alcohol.



### PROJECT SERVES AS A TEST BED FOR POTENTIAL NEW ENERGY SOURCE

A program within the Allen E. Paulson College of Engineering and Information Technology (CEIT) melds the biofuels developed and processed by students in the College's Renewable Energy Lab with racing vehicles built in the Carruth Building into a single, self-sufficient research project - the Biodiesel Baja Project.

The project is led by mechanical engineering professors Brian Vlcek and Vladimir Soloiu. Vlcek oversees the building of the Baja vehicles while Soloiu supervises the production of the biofuels.

"The Bio Baja Project was a test bed for the fuels that we developed here on campus," Vlcek said. "It was to have our own vehicle that we ran our own fuels in, which kind of closed the loop."

Soloiu said the engine runs off of fuels made from cotton seed oil, poultry fat and peanut oil - all obtained from Georgia farmers and produced in the department's Renewable Energy Lab. "The Renewable Energy Lab is state-of-the-art. It has the most advanced combustion, emissions and biofuels in the Southeast," said Soloiu.



## STUDENT SPOTLIGHT



JOHNATHAN MARTIN



NICK KEISER

### GRADUATE STUDENTS RECEIVE AVERITT AWARDS FOR RESEARCH AND INSTRUCTION

The Averitt Award is the highest honor bestowed upon graduate students within the Jack N. Averitt College of Graduate Studies. This year's winners, Nick Keiser and Johnathan Martin, were selected for the categories of Excellence in Research and Excellence in Instruction.

Keiser, a graduate student from the M.S. Biology program in the College of Science and Mathematics, received the Averitt Award for Excellence in Research. He has won five awards for research and scholarship since his arrival at Georgia Southern – three from the Georgia Entomological Society and two scholarships from the biology department.

Keiser's graduate research investigated behavioral plasticity and predator-prey relationships in aphids. "I specifically decided to come to Georgia Southern to work with Ed Mondor, because I knew about his work in the ecology and evolution of aphids," said Keiser, about the professor of insect ecology.

Keiser's work focused on aphids and their behavior when predators are present. He specifically studied aphids' formation of colonies and their structure when they are at risk from predators. "With his ability to think about ecological/evolutionary topics from new perspectives, inquisitive nature and excellent people skills, there is no doubt that Nick will excel as a researcher and teacher," said Mondor.

Although he was awarded for his research work, Keiser is an accomplished teacher and active in professional service. He has assisted

faculty with manuscript review, taught three biology courses and volunteered to teach an additional section just for the learning experience. "Science is all about volunteering for research, working on a committee and answering questions about the natural world," said Keiser. His further plans include pursuing a Ph.D. in ecology and evolution at the University of Pittsburgh.

Johnathan Martin, a second year doctoral student in the Doctor of Psychology (Psy.D) program in the College of Liberal Arts and Social Sciences, received the Averitt Award for Excellence in Instruction.

In addition to Martin's full course load of academic work and his graduate teaching assistantship at Georgia Southern, he devotes 15 hours per week to a practicum at the University's Psychology Clinic by providing therapy for individuals ranging from children to the elderly. "We have a lot of clientele from the community and some that drive from over an hour away," he said about the affordable \$10 sessions provided. "We offer testing for learning disorders and therapy, both individual and group," he added. Martin also speaks to parents, grandparents and employees at elementary schools in presentations on how stress and anxiety affect our lives.

Additionally, Martin works as a psychometrist for Horizon Behavioral Health in Hinesville, Ga. to provide psychological testing and evaluations for children and adolescents, which includes screening for Attention Deficit Disorder, learning disabilities and various emotional problems.

Martin's latest accomplishment is a chapter on loneliness that he co-wrote with Dr. Jackson Rainer for the book *Rural Mental Health*. Martin said this volume applies to any practitioners -- including psychologists, counselors, social worker's or physician's offices -- working with rural clientele.



### HONORS STUDENT SELECTED FOR NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIP

Georgia Southern University Honors Program senior chemistry major Stephen Crooke of Claxton, Ga. has won the National Science Foundation Graduate Research Fellowship.

With this fellowship, Crooke will receive significant monetary support to fund three full years of study pursuing a research-based doctoral degree at an accredited U.S. institution. This prestigious award is given in recognition of his outstanding academic and research accomplishments as an undergraduate at Georgia Southern.

Crooke is a Paulson Scholar, and his research focuses on developing a more efficient and cost effective way of creating certain chemical compounds in synthetic sponges that have the same properties as sea sponges. His research will be used in the fight against cancer.

"Over the past four years, I was able to synthetically develop five separate compounds. Our group is in the process of screening these compounds for antibacterial activity, and in the near future, we will be sending them to the National Cancer Institute for screening against cancer cells," Crooke explains.

"Research of this nature is critical to the medical community due to the need for an effective treatment for cancer, and it also has important implications in the field of synthetic chemistry because of the new methodology introduced for the potential development of other therapeutic compounds."

In his research, Crooke worked closely with both Dr. Christine Whitlock and Dr. Michele McGibony, spending a significant amount of time creating biologically-active compounds in Whitlock's lab and testing the compounds in the lab with McGibony.

The Georgia Southern senior intends to earn his Ph.D. in biochemistry upon graduation, and says that his participation in the Honors program was a major influence on his undergraduate career at Georgia Southern. "The Honors Program's encouragement of undergraduate research led me to become involved with my research early in my academic career, and I am thankful for that. Collaboration with my professors and the Honors Program allowed me to accomplish much during my time at Georgia Southern, primarily culminating in this award," Crooke said.

### GRADUATE STUDENT PUBLISHES NEW FINDINGS ON COMPOSITION THEORY

A Georgia Southern graduate student's research contributing to the field of composition theory was published in *The Fibonacci Quarterly*, a well-known math journal.

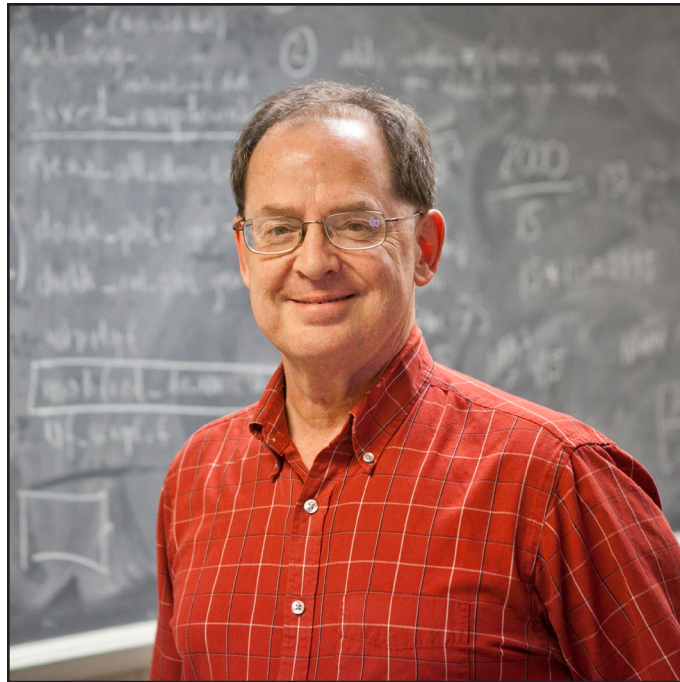
James Diffenderfer's article was published under the title "A Bijection Between two Classes of Restricted Compositions," in the fourth issue of the 50th volume of *The Fibonacci Quarterly*.



As Diffenderfer's thesis adviser, Dr. Andrew Sills explains it, "A composition of a positive integer  $n$  is simply a way to represent  $n$  as a sum of positive integers. For example, there are four compositions of the number 3:  $1+1+1$ ,  $2+1$ ,  $1+2$ , and 3 itself. The individual summands are called the 'parts' of the composition." The Peachtree, Ga. native decided to tackle the subject after consulting Sills, who said he has been extremely fortunate to be a mentor to "such a creative and enthusiastic student as James."

"To make the problem more interesting we construct classes of restricted compositions by placing constraints on the order, size, or amount of parts. The focus is then fixed on finding an efficient way to count the number of these restricted compositions for a given number," added Diffenderfer. "When I tackle my research I see it as a complicated puzzle that I am trying to solve."

Diffenderfer is pursuing a master's in pure mathematics, and teaching recitations for three sections of Calculus 2 courses as a graduate assistant.



## Mark Edwards

### *Callaway Chair Fosters Student Success*

Former Georgia Southern University Physics Department Chair Mark Edwards ('77) is the newest recipient of the Fuller E. Callaway Professorial Chair, which acknowledges his outstanding accomplishment and dedication to classroom education.

The Callaway Foundation, Inc. established the Fuller E. Callaway Professorial Trust in 1968 with the purpose of encouraging the enrichment of academic programs at Georgia's senior colleges and graduate schools by providing funds to establish professorial chairs in order to enable the institutions to retain and add superior faculty members.

During his 22 years at Georgia Southern, Edwards not only has taken a leadership role in fostering student learning and success, but also has led the development of an innovative approach to teaching physics called Studio Physics. The unique course integrates separate lecture and laboratory classes into a seamless educational experience, which is designed around active, inquiry-based learning. Because of this integrated approach, Edwards and his colleagues have seen a significant increase in student success in this difficult subject area.

In this new role, Edwards has much more time to initiate even more interdisciplinary research projects to expand his research portfolio. In addition, he plans to increase the involvement of both graduate and undergraduate students in his research.

Holding the Callaway Chair is different from heading the Physics Department, the distinguished professor explained noting that, "As Department Chair I had many

administrative duties, such as making sure that enough classes were scheduled and were sufficiently staffed, while holding the Callaway Chair is the same as a regular faculty member except with heightened expectations for teaching and research productivity."

"This is a terrific honor for Mark Edwards and for the University," said Georgia Southern President Brooks Keel, Ph.D. "Not only is he an outstanding teacher, but a scholar and noted researcher. He is a great example of the outstanding faculty members that work at Georgia Southern."

Now that he has settled into his new role, Edwards agreed it has allowed him to spend more time on what he called his "first love, which is physics research while still being able to spend time in the classroom. Both of these activities enable me to spend more time with students which I enjoy the most," he added.

Throughout his career, the University alumnus has been recognized with numerous honors. Edwards is a past winner of Georgia Southern's Excellence in Service Award, the College of Science and Technology Excellence in Service Award, the Excellence in Research and/or Scholarly Activity Award, a Georgia Southern University Foundation, Inc. Fellowship and is a Fellow of the American Physical Society. His research interests include the study of the behavior and applications of systems of ultra-cold atoms and in-particular Bose-Einstein condensates of trapped neutral atoms. He has also served as a visiting scholar at the National Institute of Standards and Technology (NIST) within the U.S. Department of Commerce.



## Timur Mirzoev

### *Impacting the Field of Convergence Technology*

College of Engineering and Information Technology professor Timur Mirzoev, Ph.D. is leading the way in the ever-expanding world of cloud-computing and virtualization education and research.

Mirzoev is a co-principal investigator of a \$4.4 million National Science Foundation (NSF) grant awarded to the Collin College Convergence Technology Center in Frisco, Tx., for tech-related workforce training. Georgia Southern is one of seven colleges and universities partnered with the Center on the NSF grant. The goal of the Center is to provide training for faculty and students in the high-demand field of emerging convergence technology in voice, video, image and data over secure networks.

The grant will capitalize on the resources offered through Georgia Southern's International VMware IT Academy Center and EMC Academic Alliance, as well as Mirzoev's certification as a VMware Certified Instructor (VCI). Mirzoev leads the University's Center and has the distinction of being the only VCI in the world that holds a Ph.D. and works in higher education. His worldwide training programs include professors, military officials and even FBI agents. "VMware is a very popular choice for government and the military, because it provides great efficiency and excellent ROI. However, virtualized data centers must have a completely secure and centralized shared storage for data. Storage is another major knowledge piece which our students get by participating in the EMC Academic Alliance program," he said.

VMware is a software company that offers cloud computing and virtualization solutions, which maximize unused capacity in computer servers and help companies reduce costs. "The software creates an efficient IT environment for a company, and different operating systems are run on a single server," said Mirzoev. One hundred percent of the Fortune 1000 use VMware products, and Georgia Southern students have the opportunity to earn a VMware Certified Professional (VCP) certification, providing an excellent opportunity to expand their job prospects.

"In addition to our students who are graduating with VCP or EMC certifications, Georgia Southern helps other college and university professors around the world to offer the same training and teach cutting-edge virtualization technology to their own students," he said.

Mirzoev also heads the University's cloud-computing research lab, which has 1.2 terabytes of RAM dedicated to running virtual machines for research and classes. The lab consists of 100-percent commercial equipment, allowing Mirzoev and his students to conduct research on server and network storage virtualization with practical, real-world applications.

"Our equipment at Georgia Southern is going to provide cloud resources to institutions that wish to teach VMware and EMC classes," he said. "The field of IT is constantly changing, and our work on this grant through the VMware Academy and EMC Academic Alliance allows us to be the leaders in IT education."



## Juan Luque *Tackling Low Cervical Cancer Screening Rates*

Georgia Southern University researchers in the Jiann-Ping Hsu College of Public Health (JPHCOPH) are improving health outcomes for Hispanic women after receiving a \$297,185 federal grant from the National Institutes of Health (NIH) titled “Salud es Vida (Health is Life): Reducing Access Barriers to Cervical Cancer Screening among Underserved Hispanic Women.” John (Juan) Luque, Ph.D., professor of community health in the JPHCOPH and his team are refining and testing a cervical cancer education program for underserved Hispanic women from migrant farmworker backgrounds, in an effort to fight cancer health disparities.

“In rural Georgia, there are numerous barriers to regular screening for underserved Hispanic women including shortage of providers, transportation challenges and burdensome costs for uninsured patients,” says Luque. According to statistics provided by the U.S. Centers for Disease Control, Hispanic women have the highest rates of cervical cancer of all racial/ethnic groups in the United States. Hispanic women are also more likely to die from cervical cancer than non-Hispanic whites.

In order to increase information about access to cervical cancer screening among Hispanic farmworker women, Luque is partnering with the Southeast Georgia Communities Project (SEGCP), a non-profit organization directed by Andrea Hinojosa in Lyons, Ga. The community health workers (or promotoras in Spanish) will have the educational tools to deliver this information to their fellow community members.

Luque and his team have also partnered with

Georgia Health Sciences University’s Gynecological Cancer Prevention Center and Department of Medical Illustration, to produce a short educational video describing the procedure for a Pap test and pelvic exam. During the program, the promotoras will present the video and share information using a cervical cancer education toolkit, consisting of a flipchart and brochures. Luque’s team developed the toolkit in a previous NIH pilot grant, and he is hopeful that this efficacy study will reach approximately 80 women.

“The hope is that this study will add to the evidence base for how important a community health worker can be in making sure that underserved women receive routine, yet often lifesaving, Pap tests,” said Luque. “Promotoras typically volunteer to work with women in low-income areas who often do not have adequate access to preventative health care. This study will demonstrate how researchers can partner with community partners and promotoras in a rural area to refine and test a cervical cancer education and outreach toolkit to reduce cancer health disparities.”

In addition to the Hispanic population, Luque is also evaluating a large cervical cancer screening initiative in Cusco, Peru. Along with researchers in the Georgia Health Sciences University Gynecological Cancer Prevention Center, Luque was awarded a \$143,912 grant to design and pilot a brief social marketing intervention to increase cervical cancer screening. The two year project, funded by the National Cancer Institute is titled “Implementation Evaluation of a Cervical Cancer Screening Initiative in Cusco, Peru.”



## Marc Moulton *Sculpting his Path to Success*

Sculpture Professor Marc Moulton had no idea he would become an artist when he first enrolled in college, but after acquiring numerous awards, an impressive submission record and public approbation of his quality productions, Moulton now admits he could not have imagined a better career.

The recipient of Georgia Southern University’s 2012 Award of Excellence in Research and/or Creative Scholarly Activity says while growing up in Utah, no one in his household ever discussed art or showed any interest in the subject. In fact, if not for a work-study position in Weber State University’s Art Department and a subsequent art class, he may never have found his true career path – creating large-scale sculptures and teaching at the university level.

“My choice of art happened along the way over a long period,” Moulton said. “I felt comfortable in the art classroom and my professors told me I was good at what I was doing. Of course, nobody knows what is going to happen to him or her but I certainly was propelled to follow some path; I just didn’t know which road I would take.”

Having discovered his path, the artist found he preferred the versatility of fabricating his outdoor art from metals like stainless steel, which he says require virtually no maintenance, can withstand nature’s elements of wind, ice, snow and rain, does not rust and cannot be easily vandalized, bent or scraped.

Moulton’s public art projects include works for corporations, schools and municipalities in several states. University patron Betty Foy Sanders chose his sculpture

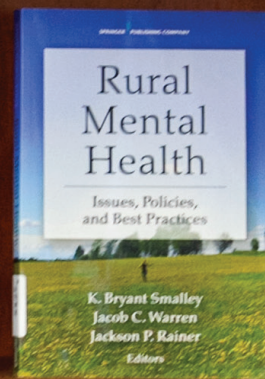
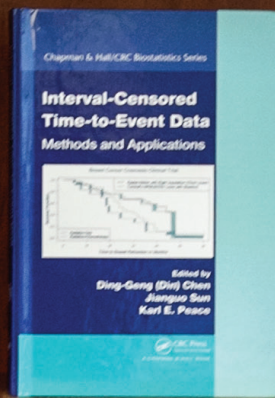
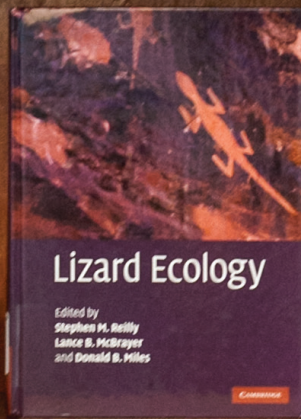
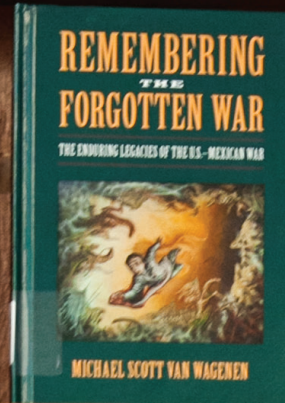
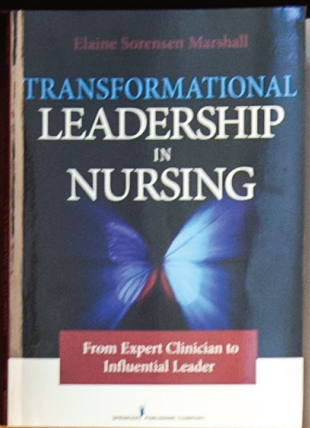
“Ascend” as the signature piece for the Center for Art and Theatre at Georgia Southern. His most recent work titled “Kernel” was installed at Georgia College and State University in Milledgeville, Ga. in 2011.

Currently the professor teaches a full load of classes at Georgia Southern, and is negotiating a contract with the city of Suwanee, Ga. to install a permanent display of the city’s 1,600 pound steel artifact from a World Trade Center Tower destroyed in the 9/11 attacks. His display would include a timeline of events as they unfolded on September 11, 2001, and at night, it would light up to project a dramatic image he described as the “ghost of lower Manhattan to show how the area used to look.” He added, “Once people know where that piece of scrap metal originated, it becomes a powerful thing.”

While Moulton’s work is influenced by the landscape of the mountains of Utah where he grew up, when he transforms a public space into something inspiring and uplifting, he says his body of work showcases other themes. “There is a personality to it. My character and my personality are rendered in each one because I am going to create what I know how to do and what I think I do well.” He explained, “I use lighting a lot in my work because it is dramatic and can establish a mood. It is the opportunity to see this sculpture as Mother Nature changes around it and the lighting will give you a different perspective or a different point of view.”

As Moulton sees it, public art is the opportunity to create or provide a more engaging, a more intelligent and enjoyable life and he asks, “Who doesn’t like that, who doesn’t like passion?”

# FACULTY PUBLICATIONS



**Karl Peace, Ph.D.**  
**INTERVAL-CENSORED TIME-TO-EVENT DATA: METHODS AND APPLICATIONS**



Karl E. Peace, Ph.D., senior research scientist and professor of

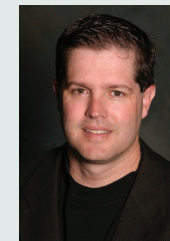
biostatistics in the Jiann-Ping Hsu College of Public Health has published *Interval-Censored Time-to-Event Data: Methods and Applications*. The volume covers the latest developments in the analysis and modeling of interval-censored time-to-event data, showing how up-to-date statistical methods are used in biopharmaceutical and public health applications. Biostatisticians from academia, biopharmaceutical industries, and government agencies discuss how these advances are impacting clinical trials and biomedical research.

*Peace, a Georgia Cancer Coalition Distinguished Cancer Scholar, endowed the Jiann-Ping Hsu College of Public Health, the first school of public health in the state of Georgia. He is the founding director of the Center for Biostatistics.*

**Michael Van Wagenen, Ph.D.**  
**REMEMBERING THE FORGOTTEN WAR**

History professor Michael Van Wagenen

investigates the Mexican War in *Remembering the Forgotten War*, published by the University of Massachusetts Press. Van Wagenen's book analyzes how the tools of collective



memory – such as books, popular culture, historic sites, heritage groups, commemorations and museums – have shaped the war's multifaceted meaning in the 160 years since it ended. Van Wagenen explores how regional, ethnic and religious differences influence Americans and Mexicans in their choices of what to remember and what to forget.

**Lance McBrayer, Ph.D.**  
**LIZARD ECOLOGY**



Biology professor Lance McBrayer served as editor on the book *Lizard Ecology*, which explores the evolutionary effects of how lizards feed. *Lizard Ecology* provides a review of foraging mode and serves as a reference book for herpetologists, evolutionary biologists, ecologists and animal behaviorists.

*McBrayer has completed studies on feeding behavior, foraging ecology and*

*locomotion in a variety of species. Central to his research is the study of how well organisms perform ecologically important tasks like biting, jumping or sprinting. McBrayer is also the curator of Georgia Southern's Herpetology Collection, home to roughly 37,000 specimens.*

**K. Bryant Smalley, Ph.D., Psy.D., Jacob C. Warren, Ph.D. and Jackson P. Rainer, Ph.D.**  
**RURAL MENTAL HEALTH – ISSUES, POLICIES AND BEST PRACTICES**



SMALLEY



RAINER



WARREN

Faculty members and co-editors Bryant Smalley and Jackson Rainer, clinical psychologists in the College of Liberal Arts and Social Sciences, and Jacob Warren, an epidemiologist in the Jiann-Ping Hsu College of Public Health have teamed up to address the needs of America's most underserved areas for mental health services. *Rural Mental Health* offers the most up-to-date, research-based information on policies and practice in rural and frontier populations. The researchers examine issues such as improving mental

health in rural practice and offer recommendations which can be adapted into current practice and training programs.

*Smalley and Warren are co-executive directors of the University's Rural Health Research Institute, an interdisciplinary hub of rural health research and outreach that spans five colleges within Georgia Southern.*

**Elaine Marshall, Ph.D.**  
**TRANSFORMATIONAL LEADERSHIP IN NURSING**

Professor of Nursing Elaine Marshall's book, *Transformational Leadership in Nursing*, was recognized by the *American Journal of Nursing* as one of two 2011 Books of the Year in the area of Leadership and

Management in nursing. The book stresses the importance of adopting interdisciplinary viewpoints that include physicians and other healthcare providers, business leaders, economists and patients in order to contribute to effective healthcare. The book is dedicated to the first Doctor of Nursing Practice (DNP) class taught by Marshall at Georgia Southern, and has been added to curricula of nursing programs nationwide.





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## ABOUT GEORGIA SOUTHERN UNIVERSITY

Through more than 100 years, Georgia Southern, a Carnegie Doctoral-Research University, has stayed true to one purpose: to advance the educational and economic aspirations of Georgians. A member of the University System of Georgia, it is one of the state's premier universities with more than 20,500 students, and is also one of the top choices in the state for new freshmen and HOPE scholars. Georgia Southern is the only college or university in the state to earn recognition as one of the top 10 most popular universities in the country by *U.S. News & World Report*.

Located just an hour from historic Savannah, Hilton Head Island and the Atlantic coast, Georgia Southern's 900-plus acre campus is nestled in the classic Main Street community of Statesboro. The city's host county of Bulloch continues to grow along with the University and is home to more than 70,000 residents.

The University's traditional residential campus includes three original 100-year-old red brick and white columned buildings anchoring a "historic district" that transitions into contemporary academic and residential buildings - many of which were completed or begun during the past decade's nearly \$300 million of construction and renovation projects.