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Ascension

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Welcome

This is the third edition of Ascension, the annual publication highlighting research and scholarship efforts at Georgia Southern University, and I could not be more excited to reflect on the efforts of our faculty and students. While the focus on collaboration is strong amongst the various colleges and departments, I am proud to share Georgia Southern’s most recent collaboration with the City of Statesboro. This partnership, along with a $1.1 million grant from the EDA, will allow Georgia Southern and the City of Statesboro to continue making its mark in downtown Statesboro with the development of the Innovation Incubator and Fabrication Laboratory (FabLab). This facility will offer small start-up companies a low-cost place to start and access resources that will help them grow and succeed while serving as an economic driver in southern Georgia.

In the previous edition of Ascension, I was honored to introduce Herty Advanced Materials Development Center and its alignment with Georgia Southern University. Since this pairing, Herty has continued great efforts to enhance materials research and development efforts and recently opened the nation’s first pilot pellet mill in Savannah. We were also fortunate to celebrate Herty’s 75th anniversary last May and provided guided tours of the recently renovated facility to many regional and state dignitaries and guests.

Our beautiful Statesboro campus also continues to expand in many complementary areas as the University continues to serve the region as a Carnegie Doctoral Research University, driving research and economic development throughout Southeast Georgia. This growth includes a $41 million Biological Sciences building, $18 million Dining Commons, $6 million Lakeside dining hall renovation, and University Park/Golf Course. Athletics broke ground on developing a $10 million Football Operations Center expansion and Student Affairs broke ground on Shooting Sports Education Center, assisted by a $3.3 million grant from the Department of Natural Resources. Plans are currently underway for the design/build of a $10 million Health Center and a long-awaited facility for our ROTC cadets is on the horizon.

The Georgia Southern University Concussion Research Program continues to receive extensive coverage for the Helmet Impact Telemetry System (HITS) program. The program provides for greater scientific understanding of sports-related concussions and combined with real-time detection and post-concussion monitoring as athletes are re-integrated into the classroom. HITS is the first line of defense to help keep the Eagles safe in the game.

Along with the some of the topics described above this issue features numerous faculty and students. Their dedication and continuous efforts is evident not only at Georgia Southern, but worldwide. I want to thank them all for setting the standard for research and scholarly works so high. As we continue to soar onward and upward, I am reminded there are no limits on excellence. I am pleased to share with you just a handful of stories and features and invite you to explore the culture of research and scholarship growing at Georgia Southern University.

CHARLES PATTERSON, Ph.D.
Vice President for Research and Economic Development, Dean, Jack N. Averitt College of Graduate Studies
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A GRANT OF NEARLY $1.1 MILLION FROM THE U.S. ECONOMIC DEVELOPMENT ADMINISTRATION (EDA) WILL ALLOW GEORGIA SOUTHERN AND THE CITY OF STATESBORO TO EXPAND THE UNIVERSITY’S CITY CAMPUS ON EAST MAIN STREET. It will help create an Innovation Incubator and an eventual Digital FabLab (short for fabrication laboratory) to stimulate an ecosystem of business innovation and entrepreneurship in southeast Georgia.

The business incubator will offer small businesses and start-up companies in Statesboro and surrounding communities, access to resources and other innovations that will help them grow and compete. The FabLab itself will be a place for people to design, build, test and introduce new products into the marketplace, thereby generating new jobs and advancing the city’s economic development. “If they can dream it, if they can develop a concept, our facility will provide the resources and the support to help entrepreneurs make their product from the ground up,” said Dominique Halaby, director of the Bureau for Business Research and Economic Development (BBRED). “We will work with them to help determine if there is any value in what they’ve created, and we will help them take it to market. We hope this will challenge people to think a little bit outside the box.”

The state-of-the-art facility will include office space, cutting-edge technology like 3D printers for modeling, electronic stations and other equipment and tools to help entrepreneurs construct working prototypes of just about anything they can imagine. The Statesboro FabLab will be among the first in the state of Georgia. Based on a concept by Massachusetts Institute of Technology Professor Neil Gershenfeld as a way to bring low-cost manufacturing to the masses, the FabLab has been replicated at dozens of universities in the United States and in remote regions of the world.

Charles Patterson, Ph.D., vice president for Research and Economic Development at Georgia Southern said numerous University faculty and students are engaged in entrepreneurial activities “creating technologies, devices and inventions which a university of our size and magnitude has the ability to license, patent and protect and spin out into companies.”

The FabLab and Innovation Incubator is a true University-community partnership. With the University’s
Research Foundation providing the grant funding, the City of Statesboro is contributing nearly $800,000 in funding to purchase two properties for the FabLab and business incubator. The City Campus expansion, which has a projected total cost of $1.9 million, will house BBRED, the Statesboro office of the Small Business Development Center and the University’s Center for Entrepreneurial Learning and Leadership. In addition, Halaby said Statesboro agreed to provide $50,000 annually for three years to help cover the ongoing operational expenses.

There will be more student engagement on the expanded City Campus as well. Students will have the opportunity to work with businesses and to participate in classes where they can begin to think differently and let their creativity run wild, Halaby said. “We are very excited to introduce this type of concept in Statesboro,” he added. “This is big on so many levels for Georgia Southern because it also allows us to be multidisciplinary. It is not just about the College of Business Administration. This will provide a platform to bring engineers, scientists and business professionals together more fully. This project demonstrates what we are capable of doing in a small rural area like Statesboro in southeast Georgia.”

IN ANNOUNCING THE GRANT, U.S. REP. JOHN BARROW EXPLAINED HOW THE EXPANSION PROJECT WILL BENEFIT ENTREPRENEURS WHO NEED SUPPORT AND GUIDANCE TO TURN THEIR IDEAS INTO SUCCESSFUL PRODUCTS. “THIS IS A TREMENDOUS OPPORTUNITY FOR THE SMALL BUSINESS OWNERS WHO ARE GOING TO FIND THE RESOURCES HERE THAT THEY NEED TO COMPETE AND TO GROW,” SAID BARROW. “IT’S GOING TO BE A HUGE OPPORTUNITY FOR GEORGIA SOUTHERN TO BREAK OUT AND BE A LEADER IN BUSINESS DEVELOPMENT.”
“THIS SPACE WILL HELP US TURN STUDENTS INTO SCIENTISTS AND INSPIRE THEIR IMAGINATION.”
BIOLOGICAL SCIENCES BUILDING OPENS

A NEW ERA IN SCIENTIFIC LEARNING AND TEACHING IS UNDERWAY AT GEORGIA SOUTHERN with last August’s opening of the $41.4 million Biological Sciences Building. In just two years, the woods at the corner of Old Register Road and Forest Drive were transformed into a state-of-the-art, 21st century teaching and research facility.

The 158,000 square-foot facility houses five active-learning classrooms, 10 teaching labs and 15 research labs for faculty and the more than 1,300 undergraduate and graduate biology students. The design encourages both collaborative and individual research projects.

“This space will help us turn students into scientists and inspire their imaginations and creativity,” said Steve Vives, Ph.D., chair of the Biology Department. “I think it’s great that the students are using the study tables and are hanging out in the building between classes. Our majors did not have this opportunity in the former biology building. I often see faculty and students talking and students studying together which was an emphasis of the building design. We’re very pleased with that outcome.”

The building also has a herbarium, specimen collections, a microscopy suite, animal care space, an aquatic lab, electronic display boards, a greenhouse and an insectary where insects can be raised and studied. The new herpetology and wet collections facility is home to two research collections (herpetology and ichthyology), plus teaching collections for herpetology, ichthyology, marine invertebrates and terrestrial invertebrates.

Lance McBrayer, Ph.D., the curator of the herpetology collection, said it contains at least 35,000 specimens, with the other collections adding approximately 2,000. “Several rare, threatened and endangered species are housed in the collections, including gopher tortoises, indigo snakes and flatwoods salamanders,” said McBrayer. “This facility is much larger and more centralized than former spaces, thereby making it much more useful and safer. In addition, the facility allows for room for growth in each collection and it has more bench space, which is now ventilated and thus safer for students and visiting researchers alike. In just about every way, this facility is light years ahead of our former space.”

The Biological Sciences Building will play an important role in educating the next generation of STEM (Science, Technology, Engineering and Math) leaders. U.S. colleges and universities have a goal of graduating an additional one million STEM majors in the next decade. “The key to meeting this goal is retaining students and keeping them interested in the fields,” said Dean of the College of Science and Mathematics Martha Abell, Ph.D. “This building with its state-of-the-art teaching labs and technology-enabled and active-learning classrooms will support our efforts to produce more STEM graduates.”

The building has LEED (Leadership in Energy and Environmental Design) Gold certification for its environmentally efficient design to help lower costs for electricity and water. A large high definition video wall in the atrium displays a dashboard, which monitors and displays the water and power usage of the building along with air quality and room temperature.
CONCUSSION RESEARCH
IMPACTS ATHLETES

THE BODIES OF GEORGIA SOUTHERN EAGLES FOOTBALL PLAYERS TAKE A POUNDING DURING A SEASON AND DURING COUNTLESS PRACTICES. By the nature of the game, football injuries happen; however, the University put a revolutionary system in play this season to protect the health of these student-athletes.

The Eagles are using new equipment to hopefully prevent concussions. Georgia Southern is the only collegiate football team in the state using the Helmet Impact Telemetry System (HITS). It measures and records every hit to the head a player receives in games and practices.

“The system worked really well, and we received some great data from HITS for our concussion research,” said Tom Buckley, Ed.D., associate professor of athletic training. “This is not a one year project. We will be able to track players and their hits from year to year to determine the cumulative effects of concussions.”

Georgia Southern has equipped 40 Riddell helmets with HITS which is produced by Simbex. It costs around $1,500 per helmet with funding from the Office of the Vice President for Research and Economic Development. It is a solid investment in safety by the University. “We want to do everything we can to prevent our student-athletes from suffering a head injury,” said Georgia Southern President Brooks A. Keel, Ph.D. “The addition of this monitoring equipment will hopefully reduce the risks our Eagle players face on the field.”

There are six sensors in the helmets that measure the severity of each hit to the head. Each hit typically lasts around 15-milliseconds and has the impact of being in a 20 - 25 mile per hour car wreck. The data collected is then transmitted in nearly real-time to a computer being monitored on the sideline during every practice and game.

If a hit reaches a certain threshold, a pager worn by a graduate research student and the head athletic trainer will receive a notification. “If I get a message saying a player took a hard hit, I’m going to be keeping a close eye on that player,” said Eagles Head Athletic Trainer Brandy Clouse.

“If that player displays any unusual behavior, I’m coming over to do a clinical evaluation to make sure that he’s not trying to hide it or downplay the hit and that it’s safe for him to continue playing.”

Each impact will also be time-stamped and can be synchronized with game video so coaches, athletic trainers and researchers can better evaluate the hits. “We can look at the body position, see what the athlete is doing and examine the force they experience,” said biomechanics professor Barry Munkasy, Ph.D. “We can then consider what can be done to reduce those hits by possibly changing techniques or teaching players what to do to lower their risks that will help improve their performance.”

HITS is not a diagnostic piece of medical equipment, but it is an early warning system. “At the midway point of the season, we had four players suffer concussions while wearing the HITS helmets,” explained Buckley. “We are now studying those impacts. We are looking at whether the magnitude or direction of the velocity had any bearing on what the outcome of the concussion was and whether the player’s cognition and balance were affected.”

HITS is a first line of defense to help keep the Eagles safe and in the game.
WORLD-RENOWNED PHYSICIST VISITS GEORGIA SOUTHERN
THE JACK N. AVERITT COLLEGE OF GRADUATE STUDIES HOSTED THEORETICAL PHYSICIST DR. MICHIO KAKU as the guest speaker for spring commencement in Hanner Fieldhouse. Kaku is an internationally recognized authority on physics and a New York Times best-selling author of *Physics of the Impossible and Physics of the Future*.

Kaku is a graduate of Harvard University and the University of California at Berkeley. He holds the Henry Semat Chair and Professorship in theoretical physics at the City College of New York, and has hosted several TV specials for the BBC, the Discovery Channel, the History Channel and the Science Channel.

As the co-founder of string field theory, Kaku is continuing Albert Einstein’s dream of completing the unified field theory — an equation that will summarize all of the physical laws of the universe. *Ascension* magazine discussed Kaku’s entry into the scientific world and what scientific discoveries the future holds.

**AM:** What was the beginning of your interest in science?

**MK:** “When I was a high school student in California, I built an atom smasher in my family’s garage for a science fair project. Every time I turned it on, I would blow out the circuit breakers. My poor mother always wondered why she couldn’t have a son who played basketball.”

**AM:** Who influenced your career?

**MK:** “My career started when I met Edward Teller — the father of the hydrogen bomb — at a national science fair. I was a kid with dreams and didn’t have a clue as to how I could realize these dreams. Dr. Teller helped me get a scholarship to Harvard University (the Hertz Engineering Scholarship).”

**AM:** What has been one of the secrets of your success?

**MK:** “I believe one key to success is to have a role model. Find someone you admire and find out why that person became successful. When I was young, I had two role models: Albert Einstein and Dr. Zarkov from the "Flash Gordon" series. When Einstein died I said, ‘That’s it for me. I want to help finish the theory of everything.’

“In Flash Gordon, Dr. Zarkov made the series work. He invented the starship and power weapons. After all, physics is at the root of the future. If you understand physics, you understand cities in the sky, ray guns and rocket ships. Physics is really the foundation for MRI machines, radar and transistors.

“My goal is to impart some of that excitement to students today. I want them to appreciate science and technology.”

**AM:** What is important for people to know about science?

**MK:** “Some people don’t like science because they feel that it is drudgery. A lot of people think that science is memorizing the parts of a flower, but science is actually based upon a handful of principles. This is what needs to be stressed to young people — not trivial details in a book. Personally, I want to know how far you can push science until it completely falls apart.”

**AM:** What are some technologies that will be developed within the next several years?

**MK:** “Science and technology have created many wonders and luxuries, and the world is becoming more technological. We invented the laser, we wrote the World Wide Web, we invented the television, microwaves and radar.

“In some of my work with the Discovery Channel, we took a film crew into the scientists’ labs to show viewers the technology of the future. We were able to give viewers an understanding of what is going to happen in the next 10, 20, 30 or even 50 years.

“In the future, people will be able to control computers with tiny brain sensors. We will be able to blink and go online...our glasses and contact lenses will be connected to the Internet. We will have driverless cars due to the power of the GPS system and robotic body parts. Computers will completely disappear — they will be everywhere and nowhere, like electricity.

“In fact, IBM is pioneering the technology of a robot doctor to reduce the cost of medical care, and in the future, patients will be able to talk to their doctor right in the wallpaper. Several universities are experimenting with this technology, and in approximately five years, we will have intelligent wallpaper. We can already grow noses, ears, skin, bone and the first bladder was grown four years ago. However, we will have the ability to grow other human organs, such as livers and kidneys, and this will revolutionize medicine.”
I²STEMe ENGAGES STUDENTS

GEORGIA SOUTHERN UNIVERSITY’S INSTITUTE FOR INTERDISCIPLINARY STEM (SCIENCE, TECHNOLOGY, ENGINEERING AND MATH) EDUCATION (i²STEMe), continues to make a broad impact on the lives of students in the region. STEM education at the University has grown to include the involvement of seven colleges at Georgia Southern and according to director Robert Mayes, a fellow from each college serves as a conduit for opportunities. “Each fellow is working on grants, and each of those grants involves faculty from all areas of the University,” he said, describing the growing interdisciplinary focus of the Institute and its influence in the education of students for generations to come.

“The STEM Institute has three missions: research and scholarly activity, teaching and outreach. We are actively developing projects in each of these areas,” he said.

“Our role with the Institute is to engage students and inform them about STEM. This summer we are partnering with three school districts. Five STEM teachers from each district will spend one week on campus with our professors, who will discuss nanotechnology and the scientific advances in the field. We will work with the teachers to develop classroom modules for their students,” he said.

During the past year, the i²STEMe has successfully received funding for several grants, including a Department of Education grant focused on innovative teaching in engineering. College of Education professor John Hilpert is exploring how engineering is taught at Georgia Southern and the impact this is having on students’ beliefs and attitudes about engineering. According to Mayes, Hilpert is using a hands-on based approach to studying engineering.

The Race to the Top Grant includes four school districts that are involved in creating and implementing an interdisciplinary STEM academic pathway. “Students in learning communities are exploring problems in their region and interacting with Georgia Southern faculty,” said Mayes. For example, one such study involves the blueberry industry. These plants are known to get a fungus and a lot of money has been spent to treat the blueberries. The students were looking for an economical solution, so they began having conversations with industrial farmers to see how this problem could be dealt with efficiently. The students are developing a drone that will scan the plants to detect where the actual fungus is located. This way, the farmers would only have to spray the plants that are actually infected,” said Mayes. He said that in other Georgia counties, students are focusing on environmental issues. “At Statesboro High School, students are studying water quality in the Ogeechee River. In Camden County, they are studying water quality and pollution in the St. Marys River and its impact on wildlife,” he added.

Mayes added that the Institute continues to support scholarships and outreach efforts, most recently through the STEM Fest held at Georgia Southern, which focused on the types of research being conducted at the University, while also featuring hands-on experiments to introduce STEM learning to students in the community. Moving forward, Mayes said that the i²STEMe is planning an interdisciplinary STEM summit this summer, that will include national experts discussing topics selected by fellows as well as a panel of Georgia Southern researchers.
HERTY OPENS NATION’S FIRST PILOT PELLET MILL IN SAVANNAH

GEORGIA SOUTHERN UNIVERSITY’S HERTY ADVANCED MATERIALS DEVELOPMENT CENTER HAS OPENED THE FIRST FULLY-INTEGRATED PILOT PELLET MILL IN THE UNITED STATES.

At a cost of nearly $2 million, the new Savannah-based facility will provide a much-needed platform for innovation in process technology and pellet design in the U.S. and will help meet rising global demand for biomass pellets in Europe and North America.

“We’re excited to have the first fully-integrated pilot pellet mill in the country operational to service the needs of the rapidly-growing pellet industry,” said Alexander A. Koukoulas, Ph.D., president and CEO of Herty. “Our pilot facility provides companies with extensive testing capabilities to evaluate feedstocks and mixtures of feedstocks on a pre-commercial basis, which can help producers lower costs, improve product quality, and develop co-products that can help enhance their financial performance. By offering this facility and testing operation, we hope to stimulate the development of energy pellets in the United States, which are increasingly being seen as a strong, renewable and clean energy source,” Koukoulas added.

With the introduction of the new mill, Herty will work with technology providers and developers to help validate a number of product development projects. The team will also support researchers working to enhance pellet design and will develop methods for lowering operating costs.

The pellets, formed from wood and bioenergy feedstocks such as miscanthus and switch grass, are highly regarded as an effective, alternative energy solution because of their relatively high energy density and ease of handling. Pellets can be easily integrated into existing electric power generating plants as a fuel. As a result, the pellet industry has witnessed tremendous growth as major European countries, which have adopted mandates for greenhouse gas emissions, are using biomass pellets at unprecedented rates.

Most of the growth in Europe has come from imports. According to a recent report from the U.S. International Trade Commission, annual global imports of wood pellets have grown from virtually zero to more than $1.5 billion during the last decade. However, research into improving the production of pellets, as well as optimizing pellet operation and composition has lagged behind industry growth. Developers, manufacturers and researchers will now benefit by having a flexible, integrated production facility that can produce pellets with properties that are consistent with those achieved in large-scale commercial facilities.
COLLEGE OF EDUCATION DESIGNS DIGI LAB
The College of Education has designed a learning environment that provides seamless integration of technology and opportunities to study and socialize in a group. The DIGI lab (which stands for De-centeredness, Interaction with technology, Group collaboration and Inquiry-oriented instruction) is designed to meet the needs of Net Generation students.

One of the creators, Associate Professor Julie Maudlin from the Department of Teaching and Learning, explained that the design offers a flexible classroom space to maximize engaging, student-centered learning opportunities, and provides a model of technology integration that COE students can apply in their future classrooms.

The DIGI Lab was modeled after the “Classroom Next” at Texas Wesleyan University. The classroom accommodates 24 students and is especially useful for instruction in mathematics, language arts and social studies methods, but will be available to all faculty via course scheduling requests and lab reservation through the IRC. Prominent features of this classroom include:

- Flexible seating for multiple configuration (small-group, group presentation and traditional lecture).
- Google Chromebooks for online collaboration on Google Docs, Popplet, Wikis, Blogs and other multi-user web applications.
- Short throw projectors (wall mounted) for maximum interaction with interactive whiteboards.
- Standard Level 1 upgrade to provide multimedia access (instructor workstation with PC, document camera, DVD).
- Four wallplate monitors that can be used in conjunction with two whiteboard screens to project and display digital presentations and documents.

TELFAIR NAMED CHAIR OF COMMUNITY HEALTH AND BEHAVIOR EDUCATION
Joseph Telfair, Dr.P.H., has joined the Jiann-Ping Hsu College of Public Health (JPHCOPH) as the Chair of Community Health and Behavior Education. He is the first recipient of the Karl E. Peace/Jiann-Ping Hsu Endowed Eminent Scholar Chair in Public Health. It was established in 2008 to among other things, significantly enhance the development of the JPHCOPH by providing resources for the College to recruit an outstanding scholar/teacher that could serve as a mentor for junior faculty as well as students within the Master of Public Health (M.P.H.) and Doctorate of Public Health (Dr.P.H.) programs.

Telfair has more than 25 years of experience in the health care field. He has published extensively in the areas of sickle cell disease, maternal and child health, HIV care, practice of evaluation-based research, cultural and ethnic diversity, community-based research and adolescent health. He received his Doctor of Public Health with emphasis in sociology, health issues of children, families and people of color from Johns Hopkins University.
Prior to joining Georgia Southern, Telfair served as a Department of Public Health professor at the University of North Carolina at Greensboro (UNCG).

PEACE HONORED AT SYMPOSIUM
Karl E. Peace, Ph.D., a senior research scientist and professor of biostatistics in the Jiann-Ping Hsu College of Public Health at Georgia Southern, was honored during a special awards ceremony held in November at the 20th anniversary meeting of the Biopharmaceutical Applied Statistics Symposium (BASS) in Orlando, Fla. The Georgia Cancer Coalition Distinguished Cancer Scholar was recognized for his numerous contributions to the statistics professions, including founding and directing BASS, which generates funds for students pursuing doctorate or master’s degrees in biostatistics.

Peace has devoted 20 years of service to the statistics profession through the conception and leadership of BASS, which is a premier statistical group. He is a well-known philanthropist who has created 21 endowments at five institutions.

FACULTY HONORED FOR TEACHING
Professor Dr. Delena Bell Gatch (’95) is one of only five University System of Georgia faculty members selected to receive the System’s most prestigious teaching award named in honor of the late Regent Felton Jenkins Jr., who served on the board from January 2006 until his death in January 2011. The Felton Jenkins Jr. Hall of Fame Faculty Award is given in two categories, the Regents’ Teaching Excellence Awards and the Regents’ Scholarship of Teaching and Learning Awards.

Dr. Gatch, a physics professor in the College of Science and Mathematics won the 2014 Regents’ Teaching Excellence Award for faculty in regional and state universities. She began teaching at Georgia Southern in 2001, after earning her doctoral degree in physics from the University of Georgia. The USG letter announcing her selection noted the review committee’s vote was unanimous. It also cited her “ability to gather data and adjust her teaching methods from a traditional teaching style to one that involved an active learning strategy in which students engage the material they study through reading, writing, talking, listening and reflecting.” Her outreach to colleagues in this transition also contributed to her selection for the award.

Dr. Gatch will be recognized during the USG Foundation’s annual “Regents’ Salute to Education” awards gala on March 22, 2014 at the World of Coca-Cola in Atlanta.

PROFESSOR STUDIES DEBRIS FLOW IN EUROPE
Department of Geology and Geography Chair Dr. Jeffrey Underwood and a team of geologists from Italy are conducting debris flow (landslide) research in the Dolomite Alps in Italy. They are investigating the relationship between the atmosphere and debris flow generation in the region. The geologists have installed an electric field meter (EMF) and five new rainfall gauges to better understand the types of rainfall events that trigger debris flows or landslides in the Dolomite Alps.

“Debris flows are really mean and nasty. The wall of debris can be as large as boulders,” said Dr. Underwood. “They can come down as fast as 40 miles per hour and will knock houses off foundations or split houses into pieces. They are really dangerous natural hazards.”

It is hard to develop an early warning system for debris flows because they strike so suddenly. However, Underwood and his team members hope their research will lead to the development of better debris flow warnings using storm characteristics such as number of lightning strikes prior to rainfall initiation. They also hope to be able to determine if debris flows are becoming more or less frequent and intense with global climate change. This project, including the sensors and much of Dr. Underwood’s travel, is sponsored by a grant from the Italian Ministero dell’istruzione, dell
‘universita e dela ricerca. Dr. Underwood is one of the first meteorologists to work on debris flows and his colleagues, Dr. Matteo Berti (University of Bologna), Dr. Alessandro Simoni (University of Bologna), and Dr. Carlo Gregoretti (University of Padova) are the three top debris flow researchers in the world.

GRADUATE CLASS PUBLISHES IN PSYCHOLOGY TODAY BLOG
College of Education assistant professor Jonathan Hilpert and his graduate students have explored the concept of emergence — a concept used to describe cohesive but unpredictable outcomes of interaction. Their work was published in Psychology Today, an online blog published by the American Psychological Association. "Emergence: It’s Not Just for the Birds!" was written by graduate students Deborah Bowers, Jerri Hendrix, Alexine Holmes, Tim Keag, Andrea Kinney and Kimberly Simmons (along with Hilpert).

Their results are focused on the need for teachers need to encourage improvisation in the classroom so new ideas can emerge from student interaction.

FACULTY HONORED WITH UNIVERSITY SYSTEM OF GEORGIA REGENTS’ AWARDS
College of Business Administration Professor of Management Misty Loughry, Ph.D., is one of only five University System of Georgia faculty members selected to receive the System’s most prestigious teaching award named in honor of the late Regent Felton Jenkins Jr. The award is given in two categories, the Regents’ Teaching Excellence Awards and the Regents’ Scholarship of Teaching and Learning Awards.

Loughry is the only winner of the 2014 Regents’ Award for Scholarship of Teaching and Learning (SoTL), which the University System of Georgia (USG) typically awards to two faculty members each year. Dr. Loughry has been at the University since 2007, and her selection as the sole winner was unanimous by the review committee. She was selected as a result of her work in helping first-generation college students succeed. Loughry’s research interests include using management research to enhance college teaching and student learning, team-member effectiveness, peer evaluation of teamwork, and controls in organizations, particularly peer control.

“I am honored to receive the Regents’ SoTL Award and happy for Dr. Delena Gatch, also from Georgia Southern University, who won the Regents’ Teaching Excellence Award,” Loughry said. “My colleagues and I have been working for more than a decade to develop web-based tools to support teamwork in higher education classes. Information about the tools and the research on which they are based is posted on CATME.org. I am grateful to the Board of Regents for offering the Regents’ SoTL award to recognize research that contributes to teaching and learning.”

Professor Loughry will be recognized during the USG Foundation’s annual “Regents’ Salute to Education” awards gala on March 22, 2014 at the World of Coca-Cola in Atlanta.

RESEARCH FOCUSES ON LITERACY EXPERTISE OF STUDENTS
Department of Writing and Linguistics professor Janice Walker, Ph.D. and visiting faculty member Leigh Ann Williams have received a grant from the Conference on College Composition and Communication (CCCC), one of the field’s most prestigious professional organizations, to conduct research related to first-year writing. The grant will enable the professors to further develop their inquiry on how students develop literacy expertise. Through a carefully controlled computer-mediated speak-aloud protocol, Walker and Williams’ research examines every keystroke and step that students exhibit in selecting, evaluating, and using information for various purposes. The grant ensures both local emphasis and national exposure for this Learning Information Literacy Across the Curriculum (LILAC) Project.

SCHUETHS EXAMINES EXPERIENCES OF MIXED-STATUS FAMILIES
April M. Schueths, Ph.D., assistant professor in sociology, examines the lived experiences of mixed-status couples (i.e., partnerships between citizens and non-citizens) with her most recent research focused on couples living primarily in the Southeastern United States, a geographic location noted for heightened anti-immigrant policies and practices. Schueths was awarded a Georgia Southern University, CLASS Faculty Research and Creativity Seed Grant for 2013-2014, entitled, “Holding Together While Being Pulled Apart: The Experiences of Mixed-Status Families in the Southeastern United States.” She has been interviewing couples since July 2013 and is expected to complete this project in the spring of 2014. Stories about families impacted by immigration are frequently featured in the media, however little scholarly work has highlighted the lived experiences of immigrants and their families, especially couples who are mixed-status. Contemporary immigration policies have made it difficult for citizens to love and marry the person of their choosing, especially if
the person is undocumented, all while remaining largely unknown to the public. This research is particularly important as mixed-status couples and their children face chronic anxiety and stress, prolonged separation, and financial hardships. Some of her work on mixed-status couples has been published in *Ethnic and Racial Studies* and the *Journal of Sociology and Social Welfare*. She is also co-editing a book, titled, *In Between the Shadows of Citizenship: Mixed-Status Families* with Dr. Jodie M. Lawston from California State University San Marcos and has a chapter in this volume entitled, “Life and Love Outside the Citizenship Binary: Mixed-Status Couples in the U.S.”

### RESEARCH ADDRESSES RESOURCES FOR YOUTH WITH DISABILITIES

Researchers from the College of Health and Human Sciences (CHHS) and the Jiann-Ping Hsu College of Public Health (JPHCOPH) are collaborating on a project that examines the differences in health-related quality of life, health status and access to health services of youth with disabilities in one rural county and one urban county.

Citing information from the Centers for Disease Control and Prevention, Professor Gavin Colquitt, Ed.D., said people with disabilities are more likely to experience difficulty in access to health care, be overweight or obese, have poor mental health and receive less social-emotional support. In a rural area, these difficulties may become exacerbated due to a lack of resources.

Colquitt and CHHS faculty members Ashley Walker, Li Li, Kristina Kendall and JPHCOPH Professor Moya Alfonso formed the interdisciplinary research team representing the fields of Adapted Physical Education, Biomechanics, Exercise Science and Community Health, to address these issues in the rural area surrounding Georgia Southern University.

They conducted more than 40 interviews with parents and service providers in both counties using interview guides developed from the National Survey of Children with Special Health Care Needs. Results indicated that families of children with disabilities faced many challenges. Service providers in the rural area reported facing complex barriers to providing services to families of youth with disabilities including cost, lack of insurance, and lack of transportation. Families in the rural area faced additional barriers to opportunities for physical activity within the community that in turn affected their motivation to access needed services. Although service providers in the urban area faced difficulties in providing services, many of their clients had at least partial access to the services they needed. Parents in the rural area did not have access to the specialized care their children needed, and felt disconnected to existing resources within the community.

Based on these formative research results, faculty have identified evidence-based programs that focus on both biomedical and behavioral health outcomes to meet the needs of families in rural Southeast Georgia and are preparing grant applications to facilitate the process.

### NURSING STUDENT WINS IN NATIONAL COMPETITION

Nursing student Nicole Crawford earned second place in the undergraduate poster competition at the Seventh Annual National Conference on Health Disparities held in St. Thomas, U.S. Virgin Islands. The 2013 conference focused on policies and programs to reduce health disparities, with several panels addressing issues of particular importance in the Caribbean region.

Her work titled, “Intimate Partner Violence: A Silent Phenomenon,” was based on her experiences studying abroad during the summer in Thailand. Crawford’s poster was chosen for its overall presentation, layout, appearance, cohesiveness and her explanation of research.

“I was ecstatic when my name was called as the second place winner in the undergraduate division. There were many potential candidates from various schools in the United States, such as Johns Hopkins University, Morehouse School of Medicine and Spelman College, as well as from U.S. territories like the University of the Virgin Islands,” said Crawford. “It was an honor to be amongst the few awarded and a privilege to represent Georgia Southern at such a prestigious event,” she said.
“Nicole’s competition was very high quality. She’s an outstanding student and to be one of the students selected from among schools across the nation is a pretty great thing,” said Kathryn Anderson, School of Nursing professor and Minority Health International Research Training (MHIRT) program director.

The senior from Hampton, Ga., is a member of the Black Student Nursing Association, the Minority Health and Health Disparities International Research Training Program and RUN2 Nursing.

PROFESSOR INVESTIGATES CLOUD COMPUTING SECURITY

Jordan Shropshire, Ph.D., a professor in the Department of Information Technology has been awarded a multi-year grant of $108,000 from the National Science Foundation (NSF) to improve the security of cloud computing systems. Shropshire said just as ordinary computers are susceptible to viruses and malware, clouds can also be infected, which is a serious threat, given the increased reliance on clouds. His research will develop and test security tools to address these threats and reduce security risks.

Shropshire’s project will provide an opportunity for two undergraduates, at least five graduate students and several high school students in south Georgia to work with cutting-edge information technologies. The professor said Georgia Southern IT students excel at technical problem solving in unstructured environments. “Despite their youth, they can be counted on to tackle complex problems with minimal supervision. Without them, this project wouldn’t happen,” Shropshire explained.

The graduate students will conduct original research and develop cutting-edge security solutions. Undergraduates will assist in the construction and administration of a cloud environment and students at participating high schools will perform remote testing and evaluation. Shropshire said everyone will build skills that will help them in the next phase of their IT careers.

This was the first time Shropshire had ever applied for a NSF grant.

RESEARCH GRANTS AWARDED

Professor of Mechanical Engineering Mujibur Khan was awarded a $153,000 grant from the National Science Foundation (NSF) that will enable Khan to acquire electrospinning equipment that will enhance the capabilities of the emerging group of nanotechnology researchers at Georgia Southern. The equipment will be used in a wide variety of research projects: from generating new avenues for lightweight ultra-tough hybrid fibers, cancer therapeutics, biocompatible nanofibers and multifunctional materials, to developing antimicrobial coatings and compounds with extraordinary thermal, mechanical and biological properties.

The Allen E. Paulson Chair of Renewable Energy at Georgia Southern was awarded a $360,000 Research for Undergraduates (REU) grant from the NSF. Valentin Soloiu, Ph.D., will use the funding to support summer research opportunities for engineering undergraduate students from across the United States in the field of Renewable Energy and Biofuels Combustion in Internal Combustion Engines (ICE) over the next three years. The grant will provide financial support to 10 students for 10 weeks each summer from 2014 to 2016, to conduct research on campus.

GEORGIA SOUTHERN JOINS SAVANNAH ECOSYSTEM

Georgia Southern is one of several organizations that have recently joined the Savannah Economic Development Ecosystem, a group focused on building innovative knowledge based jobs in Savannah.

Initiated by the Savannah Economic Development Authority, the Savannah Ecosystem formed last summer and in addition to Georgia Southern, is composed of various non-profits including the Savannah College of Art and Design, Savannah State University and Armstrong Atlantic State University, the City of Savannah, the Entrepreneurial Center, the Small Business Assistance Corporation, the Savannah Entrepreneurial Center and others. Representatives from each of these organizations meet monthly to discuss economic development opportunities and connect individuals to various resources.

Bea Wray, the director of The Creative Coast, a non-profit Savannah organization that stimulates economic growth, employment and business development, also directs the Savannah Ecosystem. “This group is a communication channel -- it brings together individuals who share common interests and are focused on workforce development,” she said.

According to Wray, the meetings include a guest speaker, and then provide a forum for each representative to share a summary of events about their organization, including information about future events and opportunities, all relating to economic development. “This gives members the opportunity to hear how we can attend, support or fund events,” she added. Since the formation of the group, Georgia Southern has hosted a tour of the proposed Fab Lab at City Campus as well as a tour of Herty Advanced Materials Development Center.
For John (Juan) Luque, Ph.D., professor of community health in the Jiann-Ping Hsu College of Public Health (JPHCOPH), research is so much more than his job – it is an “integral part of his identity as a scholar.” The Maine native, who arrived at Georgia Southern University five years ago, is the recipient of the 2013-14 Award for Excellence in Contributions to Research/Creative Scholarly Activity, which recognizes faculty who excel in their research efforts in addition to fulfilling full-time teaching responsibilities.

“It is an honor to receive this award,” said Luque. “I enjoy sharing my research with others at conferences, collaborating with fellow scholars and training undergraduate and graduate students in research methods.”

He is currently leading three research projects funded by the National Institutes of Health (NIH). “The Barbers Against Prostate Cancer Research Subproject” is one of two research projects that are part of the NIH-funded Center of Excellence on Health Disparities in Rural Populations. It aims to refine and test a prostate cancer screening educational program, and to train barbers to deliver the program among rural African-American men. It also intends to test the impact of the information on informed decision-making among the men.

Prostate cancer is the second leading cause of cancer death in men in the United States. “Moreover, African-American men have the highest incidence rate for prostate cancer and are twice as likely as white men to die from the disease,” said Luque who added that many black men do not have access to or do not regularly visit doctors or health centers, thereby depriving themselves of readily available prostate cancer information.

“The barbershop is a natural meeting place for black men to talk about a range of issues. Barbers are known as business leaders and opinion shapers in the community, and they have an important role to play as lay health educators,” Luque said.

His research involves sites in Statesboro and Milledgeville, Ga. Luque and a graduate assistant are currently revising and refining the training curriculum for the barbers.
The Averitt Award is the highest honor bestowed upon graduate students within the Jack N. Averitt College of Graduate Studies. This year’s winners, Lauren Deaver and Amit Arora, were selected for excellence in research and excellence in instruction.

Deaver, a graduate student from the M.S. Biology program, is the first woman and third biology student to win the award since its inception. She received the Excellence in Research award for her research on Cumberland Island, Ga., studying the nocturnal foraging of male and female Wilson’s Plover birds.

The Maryland native became interested in ornithology at the age of six, and later earned her bachelor’s degree in wildlife conservation and entomology at the University of Delaware. After completing her degree, Deaver moved to Florida to work as a wildlife biologist. “I worked with endangered birds and assisted in the recovery of specific populations,” she said. After working with rare species for six years, Deaver was in search of information analyzing data to answer questions about her work. She discovered Georgia Southern professor Dr. Ray Chandler’s webpage, which presented information about analyzing statistics, and later decided to pursue her graduate degree under his guidance at the University. “Dr. Chandler has been encouraging and a very challenging professor,” she added.

Deaver’s interest in conservation, combined with her study of Georgia’s list of endangered species, narrowed her research focus to the Wilson’s Plover, she said. “Wilson’s Plover is a state-threatened species and there is not a lot of information known about this bird,” she explained, about the coastal shore bird that is typically found from North Carolina to Florida and Texas.

Currently, Deaver exchanges ideas with more than a dozen other Wilson’s Plover researchers. During the course of her research, she has discovered that males are more successful at catching fiddler crabs than females during the daytime. In addition to her research, she also works as a teaching assistant for the ornithology lab and teaches a group of 14 students how to identify each family of birds through specialized trips to the Savannah Wildlife Refuge.

In the course of her research this year, Deaver made another significant discovery after sighting a northern lapwing in Statesboro. “It is from the same family as Wilson’s Plover,” said Deaver about the rare European bird. “This species has never been sighted this far south, and the last one was found in the 1970s,” she added.
Arora received the award for Excellence in Instruction for his work with the logistics program. Arora is pursuing his Ph.D. in logistics and has been teaching the principles of management in the area of business logistics since fall 2011. Arora’s concentration has focused on working on sustainability strategies in supply chain management and market oriented supply chain strategies. “I have focused on how to build a sustainability index for shipping services as well as the environmental performance of manufacturing organizations,” he said.

A native of Delhi, India, Arora spent many years within the supply chain in the automotive industry in his country for Hyundai Motors and Honda, and uses these personal business experiences in the classroom.

“I always try to incorporate my own experience in the classroom, because I think it is very important for students to learn about businesses,” said Arora, about sharing his corporate experiences working on product quality issues.

In the classroom, Arora encourages students to apply critical thinking skills during their study of the Wall Street Journal and Harvard Business School cases.

“We explore the challenging roles of CEOs and how they think the companies in question utilized their internal strengths and external opportunities. The students enjoy the process of transformation and being change agents themselves. I refer to this as integrative, transformative learning,” he added.

Arora credits his professor Dr. Jerry Berg, the department chair of management as the reason for his success. “Dr. Berg has been a great mentor, philosopher and guide for me. Whether it has been research or teaching, his work ethic has always inspired me,” he added.

NEW MILESTONE

STEPHANIE THOMAS EARN UNIVERSITY’S FIRST-EVER PH.D.

Stephanie Thomas, who was awarded Georgia Southern’s first Doctor of Philosophy (Ph.D.) degree in the Logistics/Supply Chain Management program, has joined the faculty at Texas Tech University.

“I knew when I started the doctoral program that this was a big step for the University. Although at the time, I had no idea that I’d be the first of my cohort to finish,” Thomas said. “I am proud of the training that I received from the faculty involved in the Ph.D. program and the research projects I worked on with faculty and other doctoral students.

The College of Business Administration graduate was among six students from the first cohort in August 2010. A second student defended her final dissertation in October and two more will defend theirs in the spring.

Prior to enrolling at Georgia Southern, Thomas worked for such leading companies as IBM, Lowe’s and Stanley Tools in a variety of logistics roles and said she was drawn to the University’s new doctoral program because it is “well known for its undergraduate program in logistics, and the marketing and logistics faculty are exceptional.”

Her dissertation titled “Competitive Versus Collaborative: Exploring the Negotiation Strategy Impact on Relational Outcomes in Ongoing Buyer-Supplier Relationships,” involved the strategies buyers and suppliers use to negotiate ways to work together and how they develop future relationships.

Thomas’s dissertation chair and professor of logistics Dr. Karl B. Manrodt, called his former student intellectually curious, methodologically rigorous and focused. “Not only has she presented at numerous conferences, she has multiple top tier journal articles accepted and in print,” he added.

Now that she is on the faculty at Texas Tech, Thomas credits Georgia Southern for laying the foundation for what she hopes will be a long and successful academic career.

In addition to the Ph.D. program in logistics and supply chain management, Georgia Southern’s commitment to logistics and the supply chain is also reflected in an articulation agreement that lays the foundation for students to complete a new 74 credit-hour associate of science degree in logistics management at Savannah Technical College. Students are then able to articulate or transfer their coursework in its entirety to Georgia Southern toward a bachelor’s degree in business administration, or logistics and intermodal transportation.
**STUDENT SCULPTOR SHOWCASES COUNTY HISTORY IN WINNING DESIGN**

TAKE A DRIVE DOWN SOUTH MAIN STREET IN STATESBORO AND YOU WILL NOTICE THE PICTURESQUE SIX-FOOT-TALL “BULLOCH COUNTY FAMILY TREE” EAGLE SCULPTURE PERCHED ON A COLORFUL WALNUT TREE OUTSIDE THE STATESBORO REGIONAL LIBRARY. Created by Scott Foxx, a graduate student in the Betty Foy Sanders Department of Art (BFSDoArt), the artwork is the eighth addition to the local public art project called Eagle Nation on Parade.

“I wanted a design that would allow for a lot of flexibility and additions without compromising the core of the sculpture,” Foxx said. “I decided on a tree because of the 400-year-old walnut tree that once stood outside the Bulloch County courthouse. Legend has it that the tree was planted by Spanish explorer Hernando de Soto and I felt it created a nice visual metaphor.”

The master of fine arts student collaborated with the Bulloch County Historical Society to create the eagle that incorporates the pictorial history of important Bulloch County people and landmarks. The county’s education, arts and cultural history are featured on one wing, and businesses, buildings and infrastructure are represented on the other. An emblem of the Creek Nation is displayed on the Eagle’s neck.

Painted in a folk-art style to pay tribute to artist Howard Finster, the fiberglass sculpture is sealed with automobile varnish so that it can withstand the outdoor elements since it will be on permanent display.

Foxx said it is gratifying that his artwork will be used as a teaching tool and to promote local history. In addition, he designed a coloring book about the Eagle for children.

“I created the coloring book in order to inspire children to study the details of the Eagle,” Foxx said. “The activities can all be completed by studying the information on the wings and base. The booklet also contains a family tree to teach the kids about creating their own historical document.”

He hopes the coloring book and the sculpture will serve as a teaching tool for years to come. “Bulloch County, for many children, and probably some adults, is seen as little more than the place where Georgia Southern is. Through this project, I learned a great deal about the history of the county and discovered numerous people and events that have made it a significant hub of Southern history dating back to before the Civil War,” he said.

“I hope that viewers, especially children, will realize they are a part of a larger Southern history and not just that little town between Savannah and Macon.”

Foxx said he gained valuable experience from the project. “Winning this commission gave me the opportunity to create a public sculpture which is important in the development of any master of fine arts candidate,” he said. “Working on this eagle gave me professional practice that a lot of students never get.”

The Savannah, Ga., native acknowledged he has been inspired and pushed by “amazing faculty” in the BFSDoArt and will pursue plans to become a college teacher and a working studio artist when he graduates in May.

“I have painted more in the past three years than I did in 10 cumulatively,” he said. “Great professors such as Jessica Burke, Derek Larson and Marc Mitchell have encouraged and pushed me. They won’t let you get away with lazy work, and I really respect that. They have such high expectations.”
SALLY BROWN

PROFESSOR FOCUSED ON LITERACY DEVELOPMENT FOR YOUNG READERS

Literacy development is a longtime passion for Georgia Southern University College of Education professor Sally Brown. For the past several years, she has conducted research aimed at exploring ways to help struggling elementary school students learning to read, especially those learning the English language.

Brown’s background in literacy stems from her 13 years spent in the classroom, reinforcing literacy skills in kindergarten through third grade students. “I worked with English language learners that struggled, specifically, Spanish-speaking students. I was bothered by the way other teachers treated them, so I became an advocate for immigrant students and their families,” she said about her experiences.

Instead of using traditional books, however, Brown’s research has used unique classroom approaches such as graphic novels and Barnes and Noble Nook e-readers. After receiving a grant from the National Council of Teachers of English, Brown began her research with a group of first graders using the graphic novel.

This genre resembles a comic strip with colorful art and text placed in speech bubbles, and is an innovative way to explore the reading, writing and thinking processes of young English language learners.

Graphic novels differ from traditional books in that there are a limited amount of words, and an abundance of pictures that help students interpret the text. “Graphic novels present stories told through dialogue, and they help kids that struggle with reading. These novels help students with the reading process; there are fewer words, and the graphic nature helps students comprehend text,” said Brown.

“For these students – especially the English language learners – I saw a lot of benefits. For example, they were able to use the pictures to develop the context of the story. So, instead of using words to describe a setting, the students are able to look at the picture and recognize the location.

“These students were struggling with decoding text, which affects their comprehension. The graphic novels left space in their brains to focus on comprehension instead of decoding. Students feel that a book is manageable, just by having fewer words and more pictures on the page,” she said. Some of Brown’s reading strategies included teaching students to look at punctuation marks, which helped them distinguish between the narrator and what a character is saying.

For the past two years, Brown’s research has continued with the same group of students, and she has found significant improvements in the literacy and technology development of the participants. The third graders have now advanced from the graphic novels to focus on digital writing with the Nook e-readers.

“The students are reading about American heroes, and then creating stories on Meograph. They can add the images and use notes they have taken on the Nook to create text and record audio,” she added. “One of my students uses Spanish as her first language. With the multimodal features on the Nook, she can tap on a photo and a word is repeated. For example, if there is a photo of a fish in a fish tank, she can tap on the photo and the word “fish” is repeated in English. The student has the ability to learn the English vocabulary and also read and record her own voice speaking these vocabulary words,” she said.

Brown anticipates her next phase of research will integrate poetry into literacy development. “The new grant I have applied for explores kinetic typography, which focuses on the ways students can use animation and movement to create meaning with poetry,” she said.
SUNGKYUN LIM

EXPLORING CUTTING-EDGE RESEARCH OF ANTENNAS AND WIRELESS PROPAGATION

Electrical Engineering Professor Sungkyun Lim, Ph.D., and his team of graduate and undergraduate students in Georgia Southern University’s Antennas and Wireless Propagation laboratory share a common goal of turning the lab into a nationally recognized research facility in the analysis and design of antennas for wireless propagations.

Lim said the new paradigm in network-centric wireless communication and sensing is creating new demands on next-generation radio frequency (RF) systems in terms of a more compact size, lower power consumption, radiation beam control and longer propagation ranges.

“This research is a cutting-edge field of study in that it provides a pathway into the future in the effort to send power wirelessly,” said Lim who earned his master’s and doctorate degrees in electrical and computer engineering from the University of Texas at Austin.

“Over the past hundred years, wireless communication developed with drastic speed and the revolutionary advancements in semiconductor technology have made our lives easier.” However, Dr. Lim explains, “Antennas, essential components in RF systems, remain one of the most difficult components to miniaturize without sacrificing performance. They have become the critical bottleneck in the miniaturization process,” he said. “For example, antennas for internode communication must meet stringent size limitations to match the other small sensor components in order to fit within the restricted package volume.”

Lim added that antenna design is a unique science, and described it as art based on science. “Antenna characteristics change because of the geometry, hence creative design based on physics is needed to make the antenna perform well, and creative antenna design is what makes my research so exciting,” he said.

Recent research has focused on electrically small antennas for networked wireless communications and sensing applications, including environmental monitoring, intelligent transport systems, and aircraft and satellite systems. Dr. Lim has developed novel design methodologies for electrically small antennas and tested them with digital radios and ad hoc networks in real-world communication environments. He has designed supergain arrays with close spacing between the elements and with electrically small antenna elements. As one of the applications of this work, Lim was awarded a Georgia Research for Academic Partnership in Engineering (GRAPE) grant from Georgia Power/Southern Company for research on “Wireless energy harvest for self-powered wireless sensors using dissipated electromagnetic fields.” Lim and his research team are studying how wireless sensors can automatically be charged wirelessly using electromagnetic fields and using electrically small supergain arrays.

He was awarded a second GRAPE grant for the 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 this second GRAPE project is to achieve physical cyber security for wireless sensors in power plants/buildings by controlling radio frequency (RF) signals using directive antennas instead of omnidirectional antennas.

In another industry grant for a project called “The GNSS competitive assessment,” Lim and his research team are investigating satellite wireless communication systems for better performance in tractor and combines.

Lim said he involves students in his work because it allows them to build their professional careers by presenting at conferences and writing their thesis or journal papers in the field of antennas and wireless propagation.
Dr. Juan Vargas, the new Associate Dean of Faculty and Research Programs at the Allen E. Paulson College of Engineering and Information Technology is as passionate about academia as he is about computer-based technology. He joined Georgia Southern in July, after nine years as a director and program manager at Microsoft and Google where he led research efforts to crystallize the “great promise of big data and cloud computing,” and helped bridge the “great gaps that exist between academia and industry.”

Vargas said he was eager to return to academia after learning so much during his corporate career and noted, “In just four years, a new generation of students who were born this century will come to college. They will be living a computer-based social network existence, which they mainly use for socializing and entertaining. To be successful contributors in the new highly interconnected world, our students must be agile problem solvers with solid foundations in science, technology, engineering and math.” He added it is incumbent upon educators to transform that “social network existence into educational experiences for lifelong learning and interdisciplinary collaboration, and empower students to learn anytime, anywhere, and provide them with the skills necessary to join the workforce of the 21st century.”

The native of Chihuahua, Mexico earned a bachelor’s degree in electrical engineering at the University of Texas at El Paso, a master’s in biomedical engineering from the Center for Research and Advanced Studies of the National Polytechnic Institute in Mexico, and a doctorate in biomedical and electrical engineering from Vanderbilt University.

Prior to his corporate career, Vargas spent 16 years as a professor of electrical and computer engineering and computer science and engineering at the University of South Carolina. Earlier, he launched a center for Computer Research for the largest institution of medical research in Latin America, and founded a Center for Graduate Studies and Research in Electrical Engineering and Computing, both in his native Mexico.

At Microsoft, the computer scientist worked with engineering and science departments across the United States, helping faculty/chairs/deans to identify education and research opportunities, establish new course offerings and organize academic events involving research, advanced computing and education.

While working at Google Research, he launched several research programs with international visibility and significant funding. Vargas is also a member of the executive committee that organizes the Cloud Futures Conference with the ACM and the IEEE, influential professional organizations in computing and in engineering.

Vargas, who focuses on Big Data research, explained his enthusiasm about the role of technology in education. “A comprehensive public university is a complex institution that provides intellectual leadership, nurtures innovation and economic opportunities, and exists as a living incarnation of lifelong learning. Science, Engineering, Technology and Math (STEM) play a crucial role in universities because scientific discovery has become a multidisciplinary and data-centric endeavor that increasingly relies on sustained computing innovation. Teaching and service are essential ingredients of enduring scholarly research. Technology will also play an increasingly unifying role in teaching and service. “

To explain it another way Vargas said, “In the 21st century the gold nuggets are data, information and knowledge at scales never seen before.”
MARSHALL MING
MING LEADS RESEARCH IN ANTI-CORROSION COATINGS

Dr. Marshall Ming, the College of Science and Mathematics Distinguished Chair in Materials Science and associate professor in chemistry, is leading the way in ongoing efforts to create a coating that can detect and potentially stop corrosion. Ming was awarded a three-year $360,000 grant by the Office of Naval Research allowing the chemistry professor and his team of researchers at Georgia Southern to develop sophisticated, smart corrosion-detecting and anti-corrosion coatings. The coatings, which will be used on ships, aircraft and more, are expected to potentially save billions of dollars in maintenance costs for the U.S. Navy.

“The economic ramifications are enormous,” said Ming. “Corrosion-related costs are almost half a trillion dollars annually. Over the last decade, research has focused on multifunctional nanostructured polymer materials and coatings,” he added. Ming also explained that in addition to the benefits of stopping corrosion on battleships and aircraft carriers, the metal coatings will also prevent the collapse of bridges, due to massive metal corrosion. “Our team is working to develop a technique that will show early metal corrosion before it is visible to the eye, and will alert maintenance crews to necessary repairs,” he said.

Ming’s areas of research also include smart polymer coatings, super-repellent, antimicrobial coatings, self-healing polymeric materials and anisotropic particles and polymer hybrid composites. Ming received his B.S. in materials chemistry and Ph.D. in polymer chemistry and physics from Fudan University. In 2012, he was awarded the Roon Award by the American Coatings Association for his research on smart coatings for self-healing corrosion protection.

Another component of Ming’s research involves the development of a self-cleaning coating for one of the largest coating companies in Latin America. “This industrial product can be used on any surface to keep it clean,” he said, “whether it is used as an outdoor architectural coating, for windows or electronic devices. This project has been evolving for the last decade, and we have successfully used fruit particles from raspberries to develop this product.”

Ming was also awarded a grant from the U.S. Department of Agriculture in an effort to enhance food safety. His research involves creating a surface or coating that repels bacteria for the National Institute of Food and Agriculture (NIFA), an agency within the USDA. “There have been numerous outbreaks due to food contamination. This coating could also be used for many other applications, including metals, glass and even shopping cart handles,” he said.

In addition to collaborating with fellow Georgia Southern researchers and universities around the nation, Ming is studying anti-fogging and frost-resistant properties. “Our researchers are teaming up to find an effective coating that can prevent fogging and frost from forming on various surfaces. For example, when a customer opens the door of a frozen food compartment in a grocery store, the glass is fogged. Other ways this research can be of great benefit is during winter storms. During a recent storm in the Midwest, more than 300,000 customers lost power due to an icy rain. We are researching ways to develop an effective surface that will prevent ice from accumulating.”
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.

For more information on supporting Research and Graduate work at Georgia Southern, please visit GeorgiaSouthern.edu/donate. The University offers multiple ways to show your support.

Foundation Fund Listings

0857 VICE PRESIDENT FOR RESEARCH
0476 Office of Research Services and Sponsored Programs
0867 Rural Health Research Institute
0271 Senior Companion Program
0951 STEM

JACK N. AVERITT COLLEGE OF GRADUATE STUDIES
0934 Office of the Dean
0859 Jack N. and Addie D. Averitt Memorial Graduate Scholarship
3603 Steven R. and Caroline O. Harless Graduate Studies Scholarship
3461 Women’s Network/George and Catherine Peacock Graduate Scholarship
3261 Katie and Tanner Miller/Van Tassell Family Graduate Scholarship
3482 G. Lane and Christine S. Van Tassell Graduate Scholarship
RESEARCH SYMPOSIUM 2014

APRIL 15  8AM - 6 PM
NESSMITH LANE CONTINUING EDUCATION BUILDING
Showcase your work! Students and Faculty from all disciplines are invited to participate. Posters and presentations will be accepted.

APRIL 15  7 PM
PERFORMING ARTS CENTER
Keynote speaker, Nobel Prize Winner and former Secretary of Energy Steven Chu.

APRIL 16
NATIONAL SCIENCE FOUNDATION VISIT AND FACULTY WORKSHOP

For more information and a full schedule of events, please visit:
GeorgiaSouthern.edu/Symposium14