The COSM Newsletter

Fall 2015

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News from the College of Science and Mathematics

Fall 2015

COSM Welcomes New Administration in the Dean’s Office

The COSM Dean's Office welcomes Dr. Lance McBrayer as the new Associate Dean of Faculty and Research. Dr. McBrayer holds a Professorship in the Department of Biology. He will work towards advancing our college's culture of academic excellence where distinction in teaching, scholarship and other creative works and service is expected and rewarded; and provide leadership for research programs, scholarly efforts, and strategic multidisciplinary research initiatives that further the College’s strategic plan.

COSM Awards of Excellence

Each year, the College of Science and Mathematics Award Committee recognizes and rewards outstanding contributions of COSM Faculty Members in the areas of Teaching, Research and Service. The College of Science and Mathematics also wishes to recognize the hard work and excellence of our staff members, who support our mission of education, research, and service. In their honor, we have established the COSM Award of Excellence for Staff.
At this year's COSM Fall Convocation, the following individuals were recognized:

Top Left: Dr. Hua Wang (Mathematical Sciences) COSM Teaching Award, Top Right: Dr. Marshall Ming (Chemistry) COSM Research Award; Bottom Left: Dr. Michele McGibony (Chemistry) COSM Service Award, Bottom Right: Dr. Nathan Takas (Chemistry) COSM Staff Award of Excellence
University Award of Excellence

**Dr. Marshall Ming** (Chemistry) was also a recipient of the 2015-2016 University Award for Excellence in Research/Creative Scholarly Activity. The Award for Excellence in Research/Creative Scholarly Activity seeks to recognize faculty who excel in their research efforts in addition to fulfilling regular full-time teaching responsibilities.

Department of Biology

Welcome New Faculty

The Department of Biology welcomes five new permanent faculty members and two new visiting faculty for Fall Semester 2015. New tenure-track hires include: **Dr. Christine Bedore**, sensory physiologist, who received her Ph.D. at Florida Atlantic University and was a postdoctoral fellow at Duke University, **Dr. John Carroll**, marine ecologist, who received his Ph.D. at Stony Brook University and was a postdoctoral fellow at the University of North Carolina at Wilmington, **Dr. Christian Cox**, evolutionary physiologist, who received his Ph.D. at University of Texas Arlington, and was a postdoctoral fellow at the University of Virginia, and **Dr. John Schenk**, plant systematist, who received his Ph.D. at Washington State University and was a postdoctoral fellow at Tulane University. **Dr. A. Loren Mathews**, marine ecologist, who received her Ph.D. from the University of Florida was also hired into a new Lecturer position. Dr. Mathews was formerly a visiting assistant professor in Biology. New visiting faculty include: **Dr. Craig Aumack**, phycologist, who received his Ph.D. from the University of Alabama at Birmingham, and was a postdoctoral fellow at Columbia University, and **Mr. Steven Riera**, ecologist, who received his M.S. from Georgia Southern University. We are excited to have such a highly qualified and creative group joining our faculty. The Department also welcomes back **Professor Sophie George** who has served as a Director at the National Science Foundation for the past three years.

Faculty Recognition

Faculty in the department were recognized for several accomplishments including **Dr. Edward Mondor**, Wells-Warren Professor of the Year and recipient of the NACADA Outstanding Advising Award – Faculty Academic Advising. **Dr. Alan Harvey** won first prize in the Education category, American Society of Plant Biologists, for his video “Avoiding Inbreeding the Jessamine Way”. **Dr.**
Laura Regassa was selected as the 2015 University Science Teacher of the Year for the state of Georgia by the Georgia Science Teachers Association. Dr. Lace Svec was selected by the Tri-Beta student organization as the Biology Professor of the Year.

Summer Course Offerings

The Department had good enrollment for summer courses this year and as is typical, were able to offer some special opportunities for students. The courses Arthropod Diversity and Arthropod Ecology of the Swiss Alps were taught by Drs. Lorenza Beati and William Irby. Dr. David Rostal taught a Biological Field Experiences course focused on turtles and Dr. Danny Gleason taught Tropical Marine Biology in Puerto Morelos, Mexico, which afforded the students the opportunity to observe and conduct research on coral spawning.

Graduate Research

Master of Science students conducted research from Puerto Rico to Florida to most regions of Georgia. Louise Zehr (advisor Dr. Vinoth Sittaramane) won best overall poster at the Southeast Society for Developmental Biology Meetings at Clemson University. Sarah Braswell (advisors Dr. Marina Eremeeva and Dr. Lance Durden) won the 2015 Georgia Entomological Society Scholarship and placed third in the best student paper competition. Ryan Day (advisor Dr. Subhrajit Saha) won first place for his poster presented at the Georgia Southern University Research Symposium.

Two teams of our graduate students won first and second place in a canoe tug-of-war contest, proceeds of which went to the Ogeechee River keeper organization. They also organized a faculty-graduate student visit to a Sand Gnats game in Savannah.

The Biology Organization of Graduate Students (BOGS) hosted a seminar and picnic for their 2015 recognized alumnus Mr. Tim Breen, Supervisory Fish and Wildlife Biologist for the USFWS. Tim is leading a team of biologists on the Everglades Restoration projects in south and central Florida.

Undergraduate Research

Undergraduate students were also well represented in awards and presented their research at several professional meetings. Ms. Kori Williams (advisor Dr. Vinoth Sittaramane) won best undergraduate poster at the Southeast Society for Developmental Biology Meetings for her presentation “Role of Autism Susceptibility Gene Topoisomerase 3B in Zebrafish Neural Development.”
Two senior undergraduate students (Melissa Parks, back; Holly Munro, front) visited Dr. Ed Mondor’s lab this summer, from the University of North Georgia in Gainesville. They spent several days learning the techniques for properly collecting and identifying insects of forensic importance, prior to beginning their senior undergraduate research project.

Teaching Fellowship

Alumnus Mr. DaRon Martin was chosen to be among the first 36 recipients of the Woodrow Wilson Teaching Fellowship in Georgia. The Fellowship is a highly competitive program which recruits both recent graduates and career-changers with strong backgrounds in science, technology, engineering and math — the STEM fields — and prepares them to teach in high-need secondary schools. As part of the program, Martin will receive $30,000 to complete a specially-designed master’s degree program based on a year-long classroom experience and in return, he will commit to teach for three years in the urban and rural schools in Georgia most in need of STEM teachers.

Distinguished Alumna of the Year

The Department welcomed back Ms. Susan Finger, 45th Distinguished Alumna of the Year, who gave a seminar “Integrating Biological Sciences into the Broader Scientific Community.” Ms. Finger, who retired after 30 years distinguished service, was the recipient of a Citation for Meritorious Service from the Department of the Interior and the U.S. Environmental Protection Bronze Medal Award for Commendable Service. She was recognized at the Georgia Southern University Alumni Awards Banquet as well. The Department was pleased that one of Susan’s mentors, Emeritus Professor Dr. Bill Lovejoy attended.
Remembering Dr. Don Drapalik

The Department was saddened by the passing of long-time botany professor Dr. Don Drapalik. Dr. Drapalik was well-liked by students and faculty and served from 1968 to 2003. Information regarding Dr. Drapalik’s contributions to Botany can be found here.

Department of Chemistry

This year, Chemistry hosted the NSF-REU: Collaborative Multidisciplinary Investigations Through Undergraduate Research Experiences (CEMITURE) program. CEMITURE scholars engaged in 10 weeks of intensive research and professional development workshops. One student also had the opportunity to conduct research in Ghana. A few highlights of the summer included research presentations by the students (SciPresent), a rigorous writing program (SciWrite), an all-day Analytical Workshop, a panel discussion with professionals in science led by Dean Abell and Dr. Afriyie-Gyawu, and outings to the Herty Advanced Materials Development Center and the George L. Smith Park. This is the third summer that Chemistry has held a professional development program for its student-researchers. With the NSF funding, the department can now extend this experience to students from other colleges and universities in the southeast.

The 2015 scholars were Michael Bachan (Mentors: Drs. Amanda Stewart & Rafael Quirino), Rachel Barham (Mentor: Dr. Evans Afriyie-Gyawu), Alexandria Carrasquillo (Mentor: Dr. Ji Wu), Jaclyn Gibson (Mentors: Drs. Shainaz Landge & Karelle Aiken), Jennifer Jenkins (Mentor: Dr. Abid Shaikh), Christian Lyle (Mentor: Dr. Hans Schanz), Anna Timberlake (Mentor: Dr. Mujibur Khan) and Ashley Williams (Mentor: Dr. Vinoth Sittaramane).
The CEMITURE planning team includes Dr. Ria Ramoutar (Chemistry), Dr. Shainaz Landge (Chemistry), Dr. Kania Greer (i2STEMe), Dr. Evans Afriyie-Gyawu (co-PI, JPHCOPH) and Dr. Karelle Aiken (PI, Chemistry).

**Georgia Southern Chemistry News Website Launches**

The Department of Chemistry's Publicity Committee recently launched their own news website. The Publicity Committee will update this website regularly with departmental news and happenings. Visit: https://sites.google.com/a/georgiasouthern.edu/gsu-chemistry-news/

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**Department of Geology and Geography**

**The 2015 Georgia Southern Sea Turtle Program at St. Catherine’s Island**

During the summer of 2015, fourteen enthusiastic Georgia Southern undergraduates participated in an important and record breaking year for loggerhead sea turtle conservation efforts on Georgia beaches. These biology, geology and geography majors were enrolled in a B-Term course package (Sea Turtle Natural History and Barrier Island Environmental Geology), offered by the Department of Geology and Geography, that includes ten days of field work during residence on St. Catherine’s Island, Georgia. The course package integrates multiple science disciplines in a format that includes place-based learning, civic engagement and service learning, and extended contact hours to produce a unique learning experience.

**NSF Hydrological Science RUI Awarded**

**Dr. Jeff Underwood** and **Dr. John Van Stan** were recently awarded a Research in Undergraduate Institutions (RUI) Grant from the National Science Foundation's (NSF) Hydrological Division. They will conduct research into how forest canopies affect a component of water resource management (rainfall interception loss) across an urbanization gradient. To accomplish this research they are collaborating closely with Dr. Gustavo Maldonado's BEaM lab in Civil Engineering at Georgia Southern and Jean-Francois Cote from Natural Resources Canada, to use terrestrial LiDAR (lasers) to reconstruct forest canopies on campus and at the Ogeechee floodplain site. The public abstract can be viewed here.
Scientists Study How Rising Seas Will Reshape Georgia Coast

Dr. Clark Alexander and Dr. Christine Hladik are working to correct problematic marsh measurements along the Georgia Coast.

Department of Mathematical Sciences

Student News

As part of a pilot program in the fall of 2014, Joshua Holloway became the first student in our MS program to be the instructor of record for a class. Joshua did an outstanding job teaching in both the fall and spring semesters. His outstanding teaching was recognized at the University level when he was awarded the Averitt Award for Excellence in Graduate Instruction.

At the Research Symposium in April, James Dow, Rebecca Holliday, and Demet Yalman, gave excellent presentations on results from their theses.

Alumni News

Jing Kersey, one of our recent MS graduates, currently teaches at East Georgia State College. In April, she was presented the award for Distinguished Faculty at the college. Jing is an Assistant Professor of Mathematics at East Georgia State College.

Faculty News

Hua Wang won the COSM Teaching Award and was recognized at the COSM Convocation in August.

Two of our faculty applied for and were awarded Educational Leave. Yi Lin will be on leave during the year to pursue his research in differential geometry. Shijun Zheng is on leave this fall collaborating with faculty at Brown University in partial differential equations.

We have several new faculty as well as several familiar faces in different roles. Stefan Müller is an Assistant Professor. He
received his PhD from the University of Wisconsin-Madison. Our other new Assistant Professor is Francois Ziegler who has been in a visiting position in the department since 2004. His PhD is from the University of Provence.

We hired five lecturers, two who are new to Georgia Southern and three who have been in visiting positions. Dr. Divine Wanduku and Dr. Yuting Zou come to us from positions in Florida and Michigan, respectively. Neelam Aggarwal, Dr. Jimmy Dillies, and Jackie Hoell are now lecturers after having served as visiting faculty since 2012.

Three former students accepted positions as regular, limited term faculty. Anthony Coggins and Ryan Morley completed their MS degree in the department this summer and were hired in a visiting role. Dr. Daniel Gray received his MS from the department in 2010 and completed his PhD at the University of Florida this summer.

The department is fortunate to have these outstanding new, as well as familiar, faculty members.

Department of Physics

Physics in the Community

Coach/Instructor Ashley August has been demonstrating physics in the community through coaching a local volleyball team. The team was composed of young women from various high schools around the county and was part of the club, Southern Slammers. The season lasted from January until May, but the players still remain in close contact with Coach Ashley as she attends home games at their respective high schools and meets some them for coffee, dinner, and even tutoring. When an individual thinks of sports the term physics rarely comes to mind, but throughout the season, Coach Ashley attempted to introduce and teach fundamental physics concepts as they related to volleyball; specifically, service angle, trajectory, force, the angle of incidence is equal to the angle of reflection as it pertains to passing, and how to use your momentum and center of mass efficiently to maximize your vertical when hitting (aka spiking). As great as it was getting to incorporate physics concepts into practice, what is even better is that when it comes to our team, our libero, Sarah Ledlow stated: “we’re like a big family...if one of us makes a mistake, we’re right there to help and encourage each
other.” We are expecting ninety percent of the team to return for next season, as well as Coach Ashley.

Georgia Southern Astronomers Visit Cornell and Travel to Atacama Desert in Chile

In July physics department professors Sarah & James Higdon traveled to Ithaca, NY, to conduct research with collaborators in Cornell University’s Astronomy Department. During their three week visit final plans were made for an upcoming observing run in Chile with the ZEUS-2 spectrometer and several observing proposals were submitted to world-class facilities such as the Karl Jansky Very Large Array (JVLA) radio telescope and the Stratospheric Observatory For Astronomy (SOFIA), as part of our research into star formation in galaxies in the near and distant universe.

Lemonade and Physics

Last year, Physics Instructor Ashley August, attempted to assess students’ knowledge gains of unit conversion, scientific notation, and significant figures through having them make fudge from a recipe given to them with absurd units; for example, butter was given in inches. This year, in order to improve the gains even more, students made their own recipes with outlandish units. A fun twist was that they would be giving their ridiculous recipe to other learning teams within the classroom to solve themselves! It was a great improvement to last year’s activity and definitely more refreshing.

Patent Application on “Compact Microfluidic Structures for Manipulating Fluids” Reaches Final Stage

Dr. Dragos Amarie of the Department of Physics and collaborators implemented a new microfluidic design and apparatus for complex manipulation of fluids at microscale. The invention (Pub. No.: US 2010/0290309, WO 2009/039283, PCT/US2008/076868) uses channels, chambers and other flow micro-components, some with dimensions as small as fractions of the diameter of human hair, and is capable of handling reagent volumes in the range of nanoliters (volumes a million times smaller than a rain drop).

Optimized design and novel combination of flow components allowed inventors to construct a miniaturized and versatile technology that opens doors towards collaborative research in diverse biophysics and biomedical areas like chemotaxis, cell culture and cell-stimulation assays, biochemical and biohazard analysis, drug screening, microdiagnostics, just to name a few.
Recent scientific meetings on patent claims, applications and state-of-the-art novelty, including one extended meeting with the patent examiners of the US Patent office, brought this patent application into its final stage. The project started in 2007 and links to a few scientific publications co-authored by Dr. Amarie in journals like Journal of Micromechanics and Microengineering, Analytical Chemistry and Journal of Physical Chemistry B.

Figure shows a schematics of an apparatus for generating two independent adjacent linear gradients with controlled parameters. With such a structure, which is only about 2 mm in length, cells are introduced from the top center and can be exposed to similar or dissimilar gradients from both sides, for example to evaluate complementary or competing chemoattractants.

**Physics Visit Swainsboro High School**

Matthew LePain, David Keene, and Dr. Maxim Durach visited a physics class of Kristopher Peebles at Swainsboro High School and gave a first-hand description of the benefits of being a Physics major at Georgia Southern University to high school students.

**Physics Attends APS Meeting**

David Keene and Matthew LePain attended the March 2015 American Physics Society (APS) meeting, along with Dr. Maxim Durach in San Antonio, TX where they presented 3 talks.