

# INSIGHTS

into Sustainable Engineering



WINTER 2013

**ENGINEERING SCHOOL OF SUSTAINABLE  
INFRASTRUCTURE & ENVIRONMENT**

**UF**  
UNIVERSITY of  
FLORIDA



DIRECTOR'S COMMENT

Dear Alumni and Friends,

As we are well into the academic year, I hope this newsletter finds you well. There has been a lot of activity and excitement here this past fall. To begin, our combined enrollment of Civil and Environmental Engineering undergraduates was 632 which places us among the top 10 largest enrollments among civil and environmental engineering programs in the country. Diversity continues to be a priority and the 2013 freshman class was comprised of 50% women, the largest on record. The quality of our undergraduates continues to far exceed national averages. During spring 2013, more than 95% of our recent Bachelor of Science graduates passed the Fundamentals of Engineering Exam (the national average is in the upper 70's) and 85% of our graduates from years prior passed the Professional Engineering Exam (the national average is in the low 60's). Twenty-eight of our best undergraduates were engaged in assisting faculty with teaching. We expect most these students to continue onward in our three master's programs and perhaps a few will be inspired to consider doctorates and ultimately academic positions.

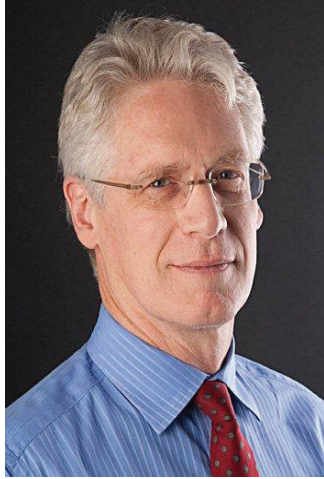
ESSIE's graduate programs in Civil, Environmental, and Coastal and Oceanographic Engineering continue to thrive and expand. According to the most recent data gathered by the American Society for Engineering Education, ESSIE's master's degree enrollment is the third largest in the United States after the University of Illinois and the University of Texas. And although

our doctoral program is only the 9th largest, it is indeed the 5th most productive in terms of graduates per faculty at public institutions following UCLA, Berkeley, Cal Tech, and Georgia Tech. Our faculty is committed to fund our students on research. This past fall 98% of our doctoral students were supported on contracts and grants and ESSIE had the highest percentage of support among all departments within UF's College of Engineering. As expected and desired, the quality of our graduates continues to be outstanding as evidenced by their many achievements described in this newsletter or recognized from outside sources. One such example of this recognition is from one of our Coastal and Oceanographic Engineering doctoral students, Miao Tian. Miao earned the distinction of submitting the most downloaded paper from the 2012 International Conference on Coastal Engineering.

ESSIE's faculty also continue to do well. Since 2011 we have hired three faculty in Environmental Engineering Sciences, one in Civil Engineering, and one in Coastal and Oceanographic Engineering. This past summer two of our distinguished faculty retired (see inside story). However, this year we are busy searching for three new faculty in Civil Engineering to fill positions in Materials, Geosystems Engineering, and Transportation. Theses faculty searches are part of a larger preeminence hiring plan led by the College of Engineering involving more than 30 new faculty hires College-wide.

Yes, it is an exciting time to be a part of ESSIE and we are all looking forward to what the future holds. If you have a story to tell or wish to give us an update, please share it with us. Feel free to contact me (352-392-9537 ext 1401; kirk.hatfield@essie.ufl.edu ) or Fran Murphree Richards (352-392-9537 ext. 1540; fmrichards@ufl.edu). You can also send an email to news@essie.ufl.edu. Should you find yourself in Gainesville, please stop in 365 Weil Hall and visit.

As always,  
GO GATOR ENGINEERING!



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if so, contact: news@essie.ufl.edu

TRANSITIONS

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ALL IN THE NUMBERS

According to the most recent data gathered by the American Society for Engineering Education from 2012, ESSIE ranks among the top ten largest programs in terms of number of tenure-track faculty and numbers of students enrolled as undergraduates, master's or PhDs. In addition, ESSIE's doctoral program ranks among the top ten most productive programs as measured using the number of PhD graduates in 2012, PhD graduates per faculty, and PhD graduates per faculty per time-to-degree.

| Department Size                           | Faculty Number |
|---|----------------|
| Texas A&M – College Station (Look)        | 56             |
| University of Texas – Austin (Cockrell)   | 55             |
| Georgia Institute of Technology           | 54             |
| University of Illinois – Urbana-Champaign | 48             |
| Purdue University – West Lafayette        | 45             |
| North Carolina State University           | 45             |
| Virginia Tech                             | 44             |
| University of Florida                     | 43             |
| University of California – Berkeley       | 42             |
| Massachusetts Institute of Technology     | 35             |

| PhD Graduates                                 | 2012 Graduates |
|---|----------------|
| Georgia Institute of Technology               | 36             |
| University of California – Berkeley           | 32             |
| University of Texas – Austin (Cockrell)       | 31             |
| Texas A&M University – College Station (Look) | 30             |
| University of Illinois – Urbana-Champaign     | 29             |
| University of Florida                         | 27             |
| Virginia Tech                                 | 25             |
| Stanford University                           | 21             |
| University of California – Davis              | 19             |
| North Carolina State University               | 19             |

| PhD Productivity                                 | 2012 Graduates/Faculty |
|--|------------------------|
| Lehigh University (Rossin)                       | 0.81                   |
| University of California – Los Angeles (Samueli) | 0.81                   |
| Stanford University                              | 0.81                   |
| University of California – Berkeley              | 0.76                   |
| California Institute of Technology               | 0.70                   |
| Georgia Institute of Technology                  | 0.67                   |
| University of Florida                            | 0.63                   |
| University of Southern California (Viterbi)      | 0.63                   |
| Carnegie Mellon University                       | 0.61                   |
| University of Illinois – Urbana-Champaign        | 0.60                   |

| PhD Productivity                                 | 2012 Graduates/Faculty/<br>Years to Graduation |
|--|--|
| Lehigh University (Rossin)                       | 0.21125  |
| Stanford University                              | 0.139029                                       |
| University of California – Los Angeles (Samueli) | 0.133703                                       |
| University of Florida                            | 0.133492                                       |
| Pennsylvania State University – University Park  | 0.132075                                       |
| University of California – Berkeley              | 0.121905                                       |
| Georgia Institute of Technology                  | 0.12   |
| California Institute of Technology               | 0.116667                                       |
| University of California – Davis                 | 0.107249                                       |
| University of Minnesota – Twin Cities            | 0.107248                                       |



# IT'S ALL ABOUT THE WATER



There are two competing theories about the direction that water flows. One theory, based on the laws of physics, says that water flows downhill. The other theory says that water flows uphill, towards money. While evidence exists to support both hypotheses, one thing is clear: the water demands of a growing population combined with forecasts of greater water scarcity driven by a warming climate make maintaining hydrologic resources while protecting natural systems an urgent sustainability challenge. Assistant professor David Kaplan's Watershed Ecology Lab ([www.watershedecology.org](http://www.watershedecology.org)) strives to understand connections between hydrology and ecosystems to help guide how we might better manage our vital water resources.

To test theories about the feedbacks between water management and ecosystem health, Dr. Kaplan and his students work in a variety of ecosystems, from oyster reefs, to coastal swamps and marshes, to pine forests and Florida's beautiful springs. "We do a lot of data crunching and modeling, so it's great to get out into the field as much as possible," said Dr. Kaplan.

A recent field campaign investigating how oyster reefs control coastal water circulation brought Dr. Kaplan to the Lone Cabbage Reef near Cedar Key, Florida (pictured above). "We see incredible differences in salinity between the landward and seaward side of these reefs, which means they're holding back fresh water that fuels critical estuarine ecosystem processes," noted Kaplan. Working with ESSIE Coastal faculty members, Drs. Arnoldo Valle-Levinson and Maitane Olabarrieta, as well as faculty in the Department of Wildlife Ecology and Conservation, Dr. Kaplan is developing data and models to show how lower freshwater flows and deteriorating oyster reef health combine to affect water quality in coastal ecosystems, and how we might best restore declining ecosystems. The research team recently received funding from Florida SeaGrant to expand their study.

This oyster reef research is one of several projects the Watershed Ecology Lab is pursuing to examine the sustainability of coastal communities and ecosystems. Sea level rise (SLR) is a growing concern ecologically and economically for coastal communities in Florida and around the world. Coastal regions are particularly susceptible to local changes in sea level resulting from increasing temperatures, changing winds and currents, and subsidence. PhD student Amy Langston is working on two projects, funded by the US Fish and Wildlife Service and the Florida Department of Economic Opportunity, to study the interactive effects of SLR, climate change, groundwater supply, and land use on saline and freshwater coastal vegetation communities (like the dying coastal forests pictured below). This study also includes the development of long-term adaptation strategies for incorporation into municipal policy and planning documents to help coastal communities preserve natural resources vulnerable to SLR.

While lab members love getting their feet wet, the group also works to understand water use in upland forest ecosystems. With growing populations fueling increased groundwater abstraction and forecasts of greater water scarcity in the southeastern U.S., identifying land management strategies that enhance water availability will be vital to maintaining hydrologic resources and protecting natural systems. Management of forested uplands for lower tree biomass, currently a priority for habitat improvement, may also increase water yield through decreased evapotranspiration (ET). Working with colleagues in the School of Forest Resources and Conservation at UF, Dr. Kaplan developed a statistical model of forest water use as a function of management strategy and forest structure. "The model predicts changes in the water delivery to surface and groundwater resources in response to varying management strategies across spatial scales from the individual stand to a regional watershed," says



UF/IFAS photo by Tyler L. Jones



Dr. Kaplan. The results, published in the Journal of the American Water Resources Association, suggest that pine stands managed at lower tree densities can have up to 64% more cumulative water yield over a 25-year rotation compared to systems managed for high-density timber production. In continuing work (see picture above), Dr. Kaplan and collaborators are expanding the current model to better understand the role of water use in young pine stands and the effects of prescribed burning on overall ecosystem.

*Written with photos by Dr. David Kaplan*



# TRACER TRANSPORT IN TIDAL INLETS



Aerial picture of the ebb delta region in New River inlet. The picture shows the Rhodamine WT distribution during the release done the 8th of May during the RIVET experiment. Image courtesy of Prof. Falk Feddersen and Prof. Robert Guza from SOI.

Dr. Maitane Olabarrieta, who recently joined ESSIE's Coastal and Oceanographic program, is conducting research on topics that cover diverse oceanographic and long term morphodynamic evolution problems that affect our coasts. By combining both measurement analysis and numerical modeling techniques, she studies processes with a wide variety of spatial and temporal scales. Her scope of study includes heat and momentum exchange processes during hurricanes and extreme storms, the generation mechanisms of meteotsunamis, short term estuarine processes, and the long term evolution of tidal networks and inlets.

In collaboration with researchers from Scripps Oceanographic Institute and Woods Hole Oceanographic Institute, Dr. Olabarrieta is analyzing how tracers (e.g., pollution, fecal indicator bacteria, sediment or biota) are transported in tide and wave dominant tidal inlets and adjacent beaches. The economic and environmental importance of tidal inlets is growing globally, and the management of these systems is no longer restricted to the maintenance of navigation channels. It also addresses new challenges, such as prediction of morphologic changes, water renewal and water quality. Her main goal is to analyze the effect of waves and wave induced circulation on tracer transport and dispersion. Waves can have an important effect during moderate and high wave conditions, which could have repercussions on the inlet ecology and morphodynamics. For example, the time history of a pollutant once it is released in a coastal system is relevant for evaluating its ecological impacts. The knowledge of the time and

spatial evolution of sediment transport is essential to understand the morphological evolution and the response to hydrodynamic forcing. Being able to predict the evolution of a contaminant, biota or sediment in tidal inlets is relevant and could lead to a more adequate management of these coastal environments.

In May 2012, a field experiment funded by the Office of Naval Research (ONR) was conducted in New River Inlet (North Carolina, USA), <http://blog.iod.ucsd.edu/RIVET/>. For 31 days researchers from different institutes and universities participated in one of the most extensive field experiments ever done in a tide-wave dominated inlet. Hydrodynamic (e.g. wave characteristics, current profiles, temperature and salinity distribution), meteorological, and sediment transport measurements were collected in different tide, wave and wind conditions all over the inlet. Prof. Falk Feddersen and Prof. Robert Guza, researchers from Scripps Institution of Oceanography (SIO), conducted several Rhodamine WT dye releases in the inlet area. The dye transport was measured by several techniques, including aerial hyper spectral images. The data collected revealed that during certain wave and wind conditions, the dye released in the inlet during the ebb tide was trapped in the ebb delta area and it was consequently transported in the alongshore direction within the surf zone. The observations would indicate that this tracer, analogous to a potential pollutant, would get trapped in the coastal region under certain hydrodynamic conditions, affecting the water quality of the adjacent beaches.



Dr. Olabarrieta is using the 3 dimensional COAWST modelling system (developed by Dr. John C. Warner at USGS) to model the hydrodynamic conditions and the dye dispersion during the experiment period. The model is able to include the feedback mechanisms between wind waves and tidal elevations and currents. It is essential to consider these feedbacks in wave-tide dominated environments such as New River Inlet. By comparing the measurements with the numerically derived results she will be able to ascertain how well these kind of models reproduce tracer transport in such energetic environments. Furthermore, she can determine the main dynamics and processes that control the different tracer transport patterns in tide-wave dominated environments.

This is an ambitious project focused on better understanding hydro-morpho dynamics. It addresses new challenges in regards to the prediction of water renewal and water quality processes, which are currently poorly understood in tidal inlets. It is vital that we understand the transport and dispersion processes in the inlet region because they can greatly affect the transport to the adjacent beaches and the inner estuaries. The effects will directly impact socio-economic and biologic systems including channel dredging, bathing water quality prediction, prediction of pollutant transport in inlets and estuaries and, transport of fish larvae and phytoplankton between the inner estuary and the offshore open sea region, among others.

Written with photos by Dr. Maitane Olabarrieta

## GREEN ELECTRONICS AND THE ENVIRONMENT



In April 2012 Dr. Luisa Amelia Dempere, an affiliate faculty member of the ESSIE, was appointed for three years to the academic seat of the EPEAT® Advisory Council. EPEAT® (Electronic Product Environmental Assessment Tool) is a global rating system for greener electronics that serves as a resource to identify environmentally preferable devices. The EPEAT system combines strict,

comprehensive criteria for design, production, energy use and recycling with ongoing independent verification of manufacturer claims. EPEAT® is managed by the Green Electronics Council, a non-profit organization based in Portland, Oregon, USA. Its vision is a world where the negative environmental and social impacts of electronics are continually reduced, and electronic products are designed to accelerate the world's transition to sustainability. EPEAT®'s Advisory Council has several working committees and now, in her second year as a member of the council, Dr. Dempere is a member of the Conformity Assurance Committee (CAC). EPEAT® operates a Conformity Assurance Program to ensure the on-going accuracy of the declarations in the registry and thereby maintain the credibility of EPEAT®. Some of the declarations in the registry include identifying materials used, use of recycled materials, end-of-life and disposal of products which are some of the areas of expertise of Dr. Dempere.

Dr. Dempere's involvement in EPEAT® demonstrates ESSIE's commitment to support green and sustainable engineering practices. Dr. Dempere is a member of UF's Sustainability Committee which works in conjunction with UF's Office of Sustainability. The University of Florida, through the Office of Sustainability, prepares and submits the Sustainability Tracking, Assessment & Rating System™ (STARS) report, a self-reporting framework for colleges and universities to measure their sustainability performance. STARS™ is a program of the Association for the Advancement of Sustainability in Higher Education (AASHE). One of the criteria used by STARS to gauge institutional sustainability efforts is the inventory of EPEAT® registered products.

In addition, ESSIE's Department of Environmental Engineering Sciences offers an on-line graduate certificate in Sustainable Engineering through the Electronic Delivery of Graduate Engineering (EDGE) program. One of the courses in the program taught by Dr. Dempere is "Materials and Sustainability"

where materials and products registries, certifications and accreditations are covered, including her experiences at EPEAT®. This brings to the course's students the latest information about industry's effort in green electronics and the development of a program which is now adopted by other countries like India, China and Brazil.



Written with photos by Dr. Luisa Amelia Dempere



# GOOD KARMA

## ESSIE Students Design Sustainable Wastewater Treatment System for Hare Krishna Spiritual Retreat

Krishna lunch—the vegetarian meal served by local Hare Krishnas on the Plaza of the Americas for over 40 years—may be a Gator tradition, but few UF students are aware that Alachua County is home to the largest Hare Krishna community outside of India. This fall, students in Dr. Kaplan's Wetland Treatment Systems course had the chance to put their engineering training to work (and improve their karma), by developing a sustainable wastewater treatment system for a spiritual retreat being built in this local community.

The New Raman Reti Spiritual Community is situated on a 127-acre property in Alachua that serves nearly 500 families. The community is planning the development of a spiritual retreat on the site, and hopes to avoid negative environmental impacts by including rainwater capture and ecological engineering for wastewater treatment in the site design. Dr. Kaplan's class became involved when project coordinator Miriam (Mukhya) Tassinare contacted the Environmental Engineering Sciences (EES) department to ask for guidance. "It couldn't have been better timing—design projects are a critical part of an engineer's education, and I was hoping to find real world projects for my students to work on," said Dr. Kaplan.

The students' challenge was to provide a sustainable

and environmentally conscious wastewater treatment design that was integrated with other agricultural and teaching initiatives at the site. To do so, the group designed a constructed wetland system to treat wastewater from a teaching barn and 14 retreat cabins. "Since our clients are so passionate about taking ecological responsibility, we had to make sure we were meeting treatment goals while also minimizing energy use and environmental impacts," said Eric Siegel, an MS student in EES.

The students' final design included three treatment stages: a sedimentation basin to remove particulates, a vertical flow wetland for removal of organic matter and nitrogen oxidation, and a horizontal flow wetland for denitrification. "We were designing for relatively low pollutant loads, so we were able to keep costs down, even when incorporating multiple treatment stages," noted EES PhD student Chris Moody.

"Our client wanted the option to beneficially re-use all water on the site, so our design also included an option for treated effluent to be stored for agriculture use," added EES MS student Jordan Capeloto.

To honor the Krishna ideal of living harmoniously with nature, the team designed the treatment wetland in the shape of the Om symbol, also known as pravava in Sanskrit,

to provide a place for meditation and reflection. The team also proposed educational stations to teach visitors about the uses and benefits of wetlands. "We hope this design will allow the community to enjoy the wetland as a treatment process as well as an aesthetically pleasing and educational garden," said Shannon Duffy, an ME student in Soil and Water Science.

The final design element was choosing wetland plants. "We chose plants that not only do a good job of treating water, but also have a cultural value," noted EES MS EDGE student Michael Gillham. For example, the team chose American lotus (*Nelumbo lutea*) for its ability to reduce suspended solids, organic matter, and nutrients as well as for its spiritual significance; in Indian cultures, the lotus represents enlightenment (bodhi), transcendence (brahman or nirvana), and bliss (ananda).

The design group met with their client several times throughout the semester and presented their final design to the Krishna community in December 2013. "I am extremely proud of our UF students for developing this creative and well-engineered solution," said Dr. Kaplan. The Krishna community is currently seeking funds to implement the project. (Picture above: Design team member (and Coast Guard Lieutenant Commander) Michael Gillham flies over the site on his way to deployment. The flyover provided aerial photos for the design team.)

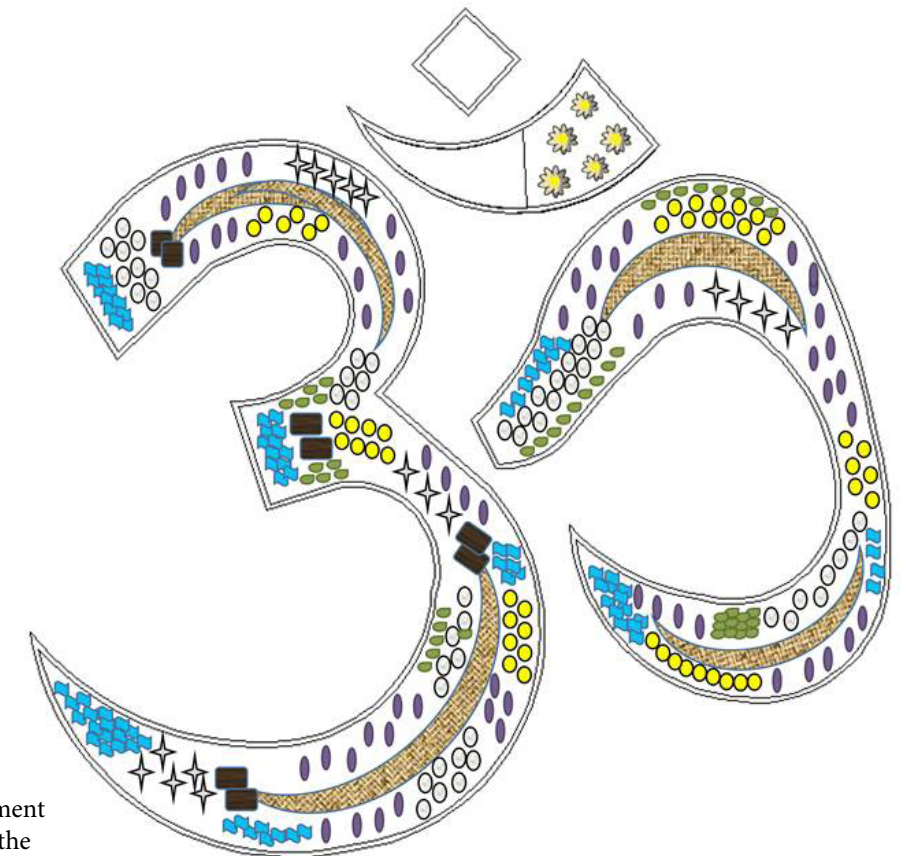


The Wetland Treatment Systems design team meets on-site with the client.



### Key:

- Lotus
- Common Reed
- Pickerselweed
- Duck potato
- Golden canna
- Blue flag
- Swamp lily
- Lemon bacoba
- St. John's-wort



Planting plan for the three-stage wetland treatment system. The system is designed in the shape of the Om symbol, which consists of four elements (counter-clockwise from top): Lord (unplanted meditation area), Infinity (sedimentation basin with lotus), Waking State (vertical flow wetland), and Dream State (horizontal flow wetland).

Written with photos by Dr. David Kaplan



# UFTI



The UF Transportation Institute (UFTI) has officially been launched with Director Lily Elefteriadou

On October 4, the College of Engineering launched the UF Transportation Institute (UFTI), an umbrella organization that houses existing transportation-related centers within the college, including the Transportation Research Center, the Transportation Technology Center (T2), McTrans, and the STRIDE Regional University Transportation Center. UF has had a long and successful history in transportation research and education, and the formation of the UFTI allows for greater opportunities for interdisciplinary collaboration to solve highly complex transportation problems. Research at UFTI involves the planning, design, operations, monitoring

“The goal of UFTI is to develop innovative solutions, and to cultivate a collaborative environment, in order to improve the transportation systems.”

-Lily Elefteriadou, Ph.D., UFTI Director



or optimization of transportation and other infrastructure systems towards achieving safety, sustainability, and economic efficiency. Current research initiatives focus on autonomous and connected vehicles, big data in transportation, transportation and air quality, electric mobility, and economic competitiveness.

“For decades, UF has developed a strong reputation for high quality transportation research and education in many diverse areas” said UFTI director Lily Elefteriadou. “Our traffic operations research and software products are used around the country and around the world. We study the economic benefits of infrastructure investments. We have public education programs advocating bicycle safety and seatbelts. We test emissions and alternative fuels. We have engineers designing autonomous vehicles that have competed in DARPA competitions. The goal of the UFTI is to develop innovative solutions, and to cultivate a

“This institute brings together talent from all over campus, positioning us to understand every aspect of the transportation challenges facing our country, and to solve them.”  
-Dr. Cammy Abernathy, Dean of the College of Engineering

collaborative environment in order to improve the transportation system.

Dr. Cammy Abernathy, dean of the College of Engineering, who was in attendance during the UFTI Launch Event, recognized the importance of collaboration among departments and the importance of such an institute. She said, “Transportation is a perfect example of how important it is to have interdisciplinary research. This institute brings together talent from all over campus, positioning us to understand every aspect of the transportation challenges facing our country, and to solve them.”

For more information on transportation-related research and education, visit the UFTI website at:  
<http://www.transportation.institute.ufl.edu>.

For questions or to get involved please contact UFTI Director Dr. Lily Elefteriadou, at [elefter@ce.ufl.edu](mailto:elefter@ce.ufl.edu)

*Written with photos by Dr. Lily Elefteriadou*



# GEOSYSTEMS



*Geosystems Engineering focuses on the responsible management of the earth's resources.*

[www.essie.ufl.edu/research/geosystems\\_engineering](http://www.essie.ufl.edu/research/geosystems_engineering)

Geosystems is a newly formed cross-disciplinary specialization within ESSIE. Our team of faculty, graduate students, postdoctoral researchers and staff is dedicated to innovating and developing sustainable geo-infrastructure and technologies. Our graduates are in high demand for various professions in infrastructure/ energy industries, R&D laboratories, academic institutions, and local and federal government agencies. We have strong established, professional relationships with state government agencies and with major design firms both in the U.S. and abroad. Additional information about this specialization will be available in our next issue.



## AWARDS &amp; RECOGNITIONS

Dr. Theodor Krauthammer named Theodore R. Crom Professor of Civil Engineering



ESSIE is pleased to announce that Dr. Theodor Krauthammer has been named the Theodore R. Crom Professor of Civil Engineering at the University of Florida. Dr. Krauthammer is Director of the Center for Infrastructure Protection and Physical Security (CIPPS). He obtained his Ph.D. in Civil Engineering from the University of Illinois at Urbana-Champaign. His main research and technical activities are directed at structural behavior under severe dynamic loads, including considerations of both survivability and fragility aspects of facilities subjected to blast, shock, and impact. His research has been supported by government agencies in the US and abroad. Dr. Krauthammer is a Fellow of the American Concrete Institute (ACI), a member of the American Society of Civil Engineers (ASCE), and a member of the American Institute of Steel Construction (AISC). He serves on ten technical committees of ASCE, ACI, and AISC. Dr. Krauthammer is the author of the book "Modern Protective Structures" that was published in 2008, and has written more than 470 research publications. He has been a consultant to industry and governments in the USA and abroad. Dr. Krauthammer's teaching background includes courses on structural design and behavior, structural analysis, advanced dynamics, protective structures, and numerical methods.

Dr. Chang-Yu Wu: New Environmental Engineering Sciences Department Chair



ESSIE is very pleased to announce that Dr. Chang-Yu Wu has accepted the appointment as Head of the Department of Environmental Engineering Sciences. Professor Wu received his BS from Mechanical Engineering Department at National Taiwan University and both MS and PhD from Department of Civil & Environmental Engineering at the University of Cincinnati. Following graduation, Dr Wu joined the Department of Environmental Engineering Sciences at the University of Florida in 1988. As an expert in air pollution control, aerosol technology and engineering education, he has published over 100 refereed journal articles, given 240+ conference presentations and ~60 invited lectures. His research has resulted in 3 US patents and 4 pending applications. His enthusiastic and high-quality teaching is widely praised by students. He has served several key leadership roles in professional organizations, such as Conference Chair of the 2009 AAAR (American Association for Aerosol Research) Annual Conference, Chair of the 2012 Special Symposium: Meeting Tomorrow's Challenges in Air Resources, Secretary of AAAR in 2010-13, Editor of Aerosol and Air Quality since 2011, and vice chair of the Editorial Review Board of the Air and Waste Management Association. Professor Wu has received several awards recognizing his accomplishments in education, research and service. He also successfully raised resources for the Dale Lundgren Air Resources Scholarship fund.



**Dr. David Kaplan** was published in the in the Journal of the American Water Resources Association (JAWRA) for study on how natural forests and pine plantations use water.

**Dr. Subbu-Srikanth Pathapati and Dr. John Sansalone** (right) recieved the 2013 Rudolf Hering Medal for their paper, "Modeling Particulate Matter Resuspension and Washout from Urban Drainage Hydrodynamic Separators," published in the Journal of Environmental Engineering.



Nanyang Technical University & University of Florida

Signing Ceremony of the Memorandum of Understanding (MOU) between MINDEF-NTU Protective Technology Research Centre, Nanyang Technological University and Center for Infrastructure Protection and Physical Security, University of Florida

The primary objective of this MOU is the development of cooperative efforts between NTU and the University of Florida, which will enhance the academic and research interchange between the two institutions. The photo on the right includes Professor Tay Beng Kang (left) and Professor Ted Krauthammer (right).



Dr. Tom Sputo elected fellow of ASCE

Dr. Tom Sputo has been recognized for his contributions to the Civil and Structural Engineering profession as a recognized expert in the area of structural steel design and construction by the Membership Applications Review Committee (MARC) of ASCE. He has practiced structural engineering as a consulting engineer for over 25 years. Additionally, he has served with distinction as an engineering educator and researcher at the University of Florida, serving as the Faculty Advisor to the UF ASCE Student Chapter and many of its associated activities. He has actively participated in structural code development activities with the American Iron and Steel Institute, the American Institute of Steel Construction, the American Welding Society, and the Steel Deck Institute. Congratulations to Tom!

Going with the Flow: Life Through Fluid Dynamics E4 Dr. Robert Thieke "Last" Lecture

"If you could only have one more lecture, what would you teach your students?" This is the question that was the premise for the UF College of Engineering's E4 Last Lecture series. When thinking about a "last" lecture, one may think of this series started originally at Carnegie Mellon by Randy Pausch. This lecture was indeed his last, and in his memorial this tradition continues to inspire students around the world. The College of Engineering may have changed the name to E4 (signifying the period after normal class hours and what knowledge can be given after), but the idea remains.

The College of Engineering has many goals for the series itself but one is to encourage everyone to come together as a community. The award is a way for students to express gratitude for the time the professor put into the students, as well as give the faculty member a chance to give these students an insight to their wisdom.

The selection process is based on student votes and nominees, who are then chosen by a council. After much discussion and many wonderful nominees, Dr. Rob Thieke was chosen to give

a "last" lecture. Now the department head for Civil and Coastal Engineering, Dr. Thieke has been teaching for 24 years here at the University of Florida. His talk was inspiring and quite humorous as he spoke about his own life as well as comparing it to examples of fluid dynamics. Overall, his talk was insightful and gave many of the future engineering graduates a lot to think on.

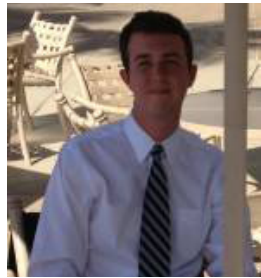
The Gator Engineering Ambassadors hosted the event. Libby Swanson was the Director for the E4 Last Lecture Series.





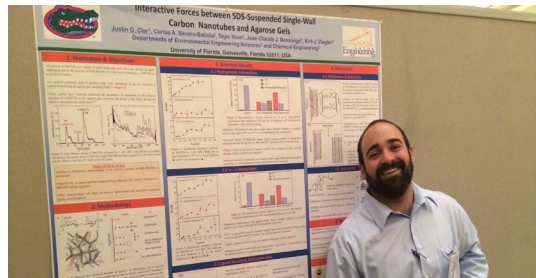
# FEATURED STUDENTS

EES PhD student Justin Roessler awarded ASME Materials and Energy Recovery Division graduate scholarship



Justin Roessler, a PhD student in Environmental Engineering, has been awarded a prestigious graduate scholarship from the American Society of Mechanical Engineers- Materials and Energy Recovery Division. The \$6,000 award recognizes one outstanding graduate student in the field of solid waste management.

Justin Clar, EES doctoral student under the mentorship of Dr. Jean-Claude Bonzongo, was awarded 1st place in two research poster competitions



Justin's first award was at the 6th Annual NanoFlorida Conference, held in Gainesville, Florida in September 2013. Justin's poster, entitled Interaction of Single-Walled Carbon Nanotubes with Hydrogels: Toxicological Implications, and co-authored by Carlos A. Silveira-Batista, and Kirk J. Ziegler, was selected as the best poster out of over 70 presentations!

In November, Justin was awarded 1st place in the Nanoscale Science and Engineering Forum Poster Competition held during the 13th Annual Meeting of the American Institute of Chemical Engineers (AIChE), in San Francisco, California. His poster was entitled Interactive Forces between SDS-suspended Single Walled Carbon Nanotubes and Agarose Gels and was co-authored by Carlos A. Silveira-Batista, Sejin Youn, and Kirk J Ziegler. The panel of judges deemed Justin's work as the best poster out of 80 presentations!

CCE graduate student Don Watson receives Eisenhower Graduate Fellowship



Civil and Coastal Engineering graduate student Don Watson has been awarded an Eisenhower Graduate Fellowship. The Dwight David Eisenhower Transportation Fellowship Program (DDETFP) awards fellowships to students pursuing degrees in transportation-related disciplines. This program advances the transportation workforce by attracting the brightest minds to the field through education, research, and workforce development. The DDETFP encompasses all modes of transportation.

EES Doctoral student Kelly Landry wins 2013 AEESP Conference Outstanding Student Poster Award



Kelly Landry, a doctoral student studying under the supervision of Dr. Treavor Boyer, was awarded first place in the poster competition at the biennial national conference of the Association for Environmental Engineers and Science Professors (AEESP), held at the Colorado School of Mines, Golden, Colorado in July, 2013. Kelly's poster, entitled DICLOFENAC REMOVAL IN URINE BY

STRONG-BASE ANION EXCHANGE RESINS, and co-authored by Dr. Boyer, was chosen by the panel of judges as the best poster in a field of over 200 posters.

Cruz Ortiz Jr. Receives SACNAS Award



Mr. Cruz Ortiz Jr. was awarded "best graduate student oral presentation" in the environmental science category at the 2013 national conference hosted by the Society Advancing Chicanos/Latinos and Native Americans in Science (SACNAS) this past October. His talk focused on mercury (Hg) uptake in terrestrial arthropods from the central California coast. Cruz is pursuing his PhD from the Department of Environmental Engineering Sciences under the mentorship of Dr. Chang-Yu Wu and Dr. Tara Sabo-Attwood.

SACNAS is a nationally recognized organization which hosts an annual national conference with nearly 4,000 attendees and has nearly 100 chapters across the United States. This year's conference was held in San Antonio, Texas.

ESSIE proudly congratulates Cruz on this achievement!

# STUDENT GROUPS

Transportation and Planning Student Group Won the 2013 ITE Collegiate Traffic Bowl



Transportation engineering and planning students participated in heated competition at the 4th Annual ITE Collegiate Traffic Bowl Grand Championship during the 2013 Institute of Transportation Engineers (ITE) Annual Meeting and Exhibit. The competition took place on August 6th at the Sheraton Hotel, Boston, Massachusetts, USA.

The ITE Collegiate Traffic Bowl is a competition amongst ITE student chapters with transportation planning and engineering topics for the clues, questions, and answers. In its fifth year, the Collegiate

Traffic Bowl Program has grown to feature the participation of student teams from 62 of 148 universities with ITE student chapters in the United States and Canada. These teams compete in section and district-level events for a chance to compete in the Grand Championship. More than 190 student members of ITE comprised the teams that competed in 2013.

In a hard fought battle that was decided by the final clue, the University of Florida team was declared the 2013 Grand Champion and received the \$2,000 (US) prize. Representing UF were students Miguel Lugo-Ortiz, Thomas Chase, Donald Watson and Ben Reibach. The University of Tennessee - Knoxville and Penn State University also advanced to the championship round and finished second and third respectively. All of the teams participating in the Grand Championship received, from ITE, a travel grant of \$2,000 (US) and complimentary student registrations to participate in the International Annual Meeting and Exhibit in Boston.

Photo by CCE PhD Student Miguel Lugo

Federal Alliance for Safe Homes Announces University of Florida 'MitiGators' as Winners of RenaissanceRe \$20,000 Challenge



The RenaissanceRe \$20,000 Challenge is an academic competition presented by the Federal Alliance for Safe Homes (FLASH) and sponsored by RenaissanceRe in honor of the RenaissanceRe 20th anniversary to provide solutions that encourage natural disaster mitigation in the Florida residential housing market. The competition of Florida's college and university students focuses on severe weather mitigation and encourages them to become a positive force for change through their efforts. The University of Florida team's

winning proposal was a "Resilient Residence" smartphone app that guides homeowners on safety retrofits specific to their homes based on the Florida Public Hurricane Loss Model.

Read more about Federal Alliance for Safe Homes Announces University of Florida 'MitiGators' as Winners of RenaissanceRe \$20,000 Challenge - BWGeeksWorld by www.broadwayworld.com. The 'MitiGators' were also featured in the Orlando Sentinel for their "Resilient Resident" App, which allows homeowners to check the hurricane safety of their homes.



UF's team members are (pictured above): Craig Dixon, Daniel Smith, David Rouche and Austin Thompson. Their faculty advisor is Dr. David Prevatt.

Coastal and Oceanographic Engineering PhD student Jackie Branyon wins 3rd place at the COPRI/PIANC PORTS'13 conference

Coasts, Oceans, Ports, and Rivers Institute (COPRI) UF student chapter members Uriah Gravois and Jackie Branyon were selected as finalists in the PORTS'13 conference's student paper competition. Uriah and Jackie traveled to Seattle, WA to present their papers titled: "Investigation of the Design and Dredging Maintenance for a Rural Marina in Cedar Key, FL, Jackie Branyon"

"Analysis of Long Term Tide Gauge Records in Florida, Uriah Gravois"

This was an amazing learning and networking experience for the COPRI UF chapter members. Jackie Branyon was awarded third place for her presentation. More details about their experiences were published in the COPRI quarterly newsletter.



**COASTS, OCEANS, PORTS & RIVERS INSTITUTE**  
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# BEGINNING A NEW CHAPTER



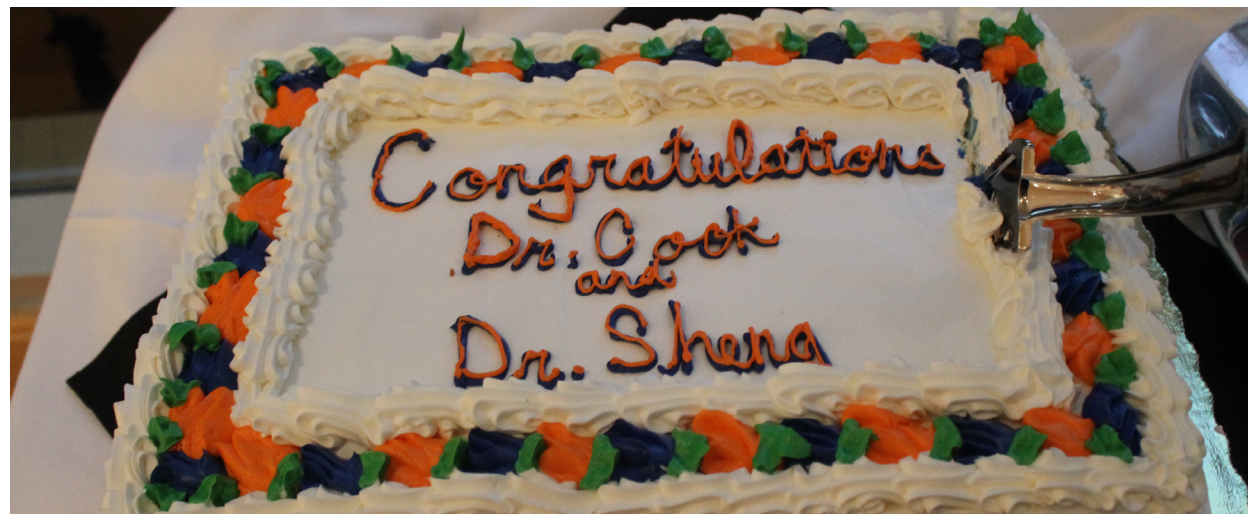
## Professor Peter Sheng

Professor Peter Sheng, (pictured on left) who retired in August from a long and illustrious service to the school's Department of Civil and Coastal Engineering, joined then Department of Coastal and Oceanographic Engineering in 1986 as an assistant professor. At the time he brought novel expertise in marine physics applied to coastal and estuarine waters of Florida. He received his PhD in 1975 from the Case Western Reserve University in Cleveland, where, as part of his doctoral work, he developed a numerical code to model the movements of water, suspended particles and dissolved matter by wind and tide. His initial work on Lake Erie was later expanded to other areas when he was an associate in the firm ARAP in Princeton, New Jersey, in which a small group of experts was exclusively involved in high quality modeling for applied research and engineering.

At UF he continued to widen his modeling domain, including major bodies of water in Florida such as Lake Okeechobee, Tampa Bay and Indian River Lagoon. The large-scale and comprehensive models developed by his group were able to address important environmental impact issues such as oil spill, storm water surges, coarse and fine particle movements, unwanted rise in turbidity and contaminants on sea grass, biota and so on. This work often included extensive field measurement campaigns which, together with high levels of funding, benefitted a large number of students and research associates he was able to support. This funding also was a major source of funding for the Coastal Engineering Laboratory.

Until the end of his tenure his academic activities remained a significant component of the research and student guidance work in the coastal and oceanographic engineering graduate program. Peter taught courses specializing in ocean physics and developed extensive academic contacts with similar programs, especially in China. Overall, he was exceptionally successful in procuring research in a highly competitive environment, and training high quality doctoral students, many of them as expert modelers such as himself.

Article Written by Dr. Ashish J. Mehta



Photos taken by Nancy McIlrath-Glanville

# HAPPY RETIREMENT!

## Professor Ronald Cook

Dr. Ronald A. Cook, P.E. (pictured with his sister, Sandy Brown, wife, Kathy Caldwell, and mother, Midge Cook) retired from the University of Florida Department of Civil and Coastal Engineering after a 24-year career as a researcher, educator, and advisor. Prior to joining the faculty at UF, he worked for 4 years in construction and 11 years in engineering design. Dr. Cook's fields of specialization are structural behavior, structural systems, connections to concrete structures, and the performance of structures under wind loading.

Dr. Cook is an active contributor to the rules that govern how we build safely and economically. He was elected a Fellow of both the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE) and the American Concrete Institute (ACI). Dr. Cook is past chairman of ACI 355 Anchorage to Concrete and ASCE 7 Subcommittee on Wind Loads. He is also a member of ACI 318 Building Code Requirements for Structural Concrete and ASCE 7 Minimum Design Loads for Buildings and Other Structures; these committees write the U.S. national design standards for structural concrete and structural building design, respectively.

Dr. Cook has received numerous honors and awards during his years at UF. He held the Byron D. Spangler Professorship from 2008 to 2011, which is awarded to faculty members in Civil Engineering who show outstanding service to the civil engineering profession. Dr. Cook also received the ACI Speaker of the Year Award (Educational Activities Committee, American Concrete Institute, 2007), and the ACI Delmar L. Bloem Distinguished Service Award in 2006. This award recognizes exceptional leadership on ACI technical committees and is typically awarded to a current (or recent) chair of a technical committee in recognition of outstanding performance. He was also selected as Alumni of the Year by the Department of Civil Engineering at the University of Tennessee in 2005.

Dr. Cook's internationally recognized achievements have been in the areas of connections to concrete and wind engineering. His time in engineering practice followed by concrete and wind research at UF led to the development of much needed national code provisions in both areas. His most distinctive work has been in the area of connections to concrete and includes the development of consensus standard provisions now implemented by ACI 318, ACI 349, ACI 355, and the International Federation of Structural Concrete design guidelines. These provisions have helped fill a void that was not previously addressed in a comprehensive manner in either steel or concrete design standards.

Over the years, Dr. Cook has taught numerous structural engineering and construction courses at both the undergraduate and graduate level. His passion is teaching design courses where he could bring his industry experience to the classroom, equipping students with knowledge that is not found in textbooks.

Another of Dr. Cook's contributions is his very capable mentoring of graduate students. He sees the best in his students, helping them to grow personally and professionally by entrusting them with substantial responsibility for their research projects. When problems inevitably arise, he shares his positive outlook and enjoyment of problem solving with his students to help them avoid being overwhelmed or discouraged. His students have characterized him as brilliant and articulate when giving advice and explaining engineering concepts. Much of the work his students produced under his guidance has found its way into practice at the Florida Department of Transportation (FDOT), ACI, ASCE, and elsewhere.

As much as Dr. Cook is respected for his many accomplishments as an engineer, he has left an equally indelible mark with his warmth and compassion. His long and distinguished career at UF has had a positive influence on the profession, as well as the many students, staff and faculty who have the pleasure of knowing him. We wish him well in his retirement with his lovely wife (and Past-President of ASCE) Kathy Caldwell.

Article Written by Dr. Trey Hamilton







## Dr. Townsend Capstone Class Project: Honduras

## ALUMNI NEWS



**Above: Univeristy of Florida and Central American Technological University (UNITEC) Students**

Dr. Timothy Townsend and his Capstone class recently went to Honduras for a research study of waste and landfills. These photos are from his trip and shows ESSIE and the University of Florida making its mark in a positive way around the world.

*Photos credited to Dr. Townsend*

**Garbage unloaded at the Tegucigalpa landfill**



UF Students conducting waste composition study



UF Students giving a presentation to the mayor at local municipal office

### Dr. Yonghua Yang and Dr. Eric R. Allen (Posthumously) Receive Arthur C. Stern Award Biofiltration control research stands apart to collect prestigious award.

Taylor & Francis and the Journal of the Air & Waste Management Association (JA&WMA) are proud to announce Dr. Yonghua Yang, a research engineer with Envirogen, and Eric R. Allen (posthumously), formerly a professor in the Department of Environmental Engineering Sciences at the University of Florida, as the recipients of the 2014 Arthur C. Stern Distinguished Paper Award. Their prize-winning paper, which was published in 1994, developed a quantitative knowledge of the principle and operation of a microbial biofilter system for removal of hydrogen sulfide from waste gas streams and determined the operating parameters necessary to optimize the performance of such a biofilter system.

JA&WMA Technical Editor-in-Chief Dr. S.T. Rao, goes on to state, "The paper by Yang and Allen is a significant contribution to the biofiltration technology literature and it continues to be cited by many researchers nearly 20 years later."

Dr. Yang and Dr. Allen's winning paper entitled "Biofiltration Control of Hydrogen Sulfide 1. Design and Operational Parameters" is available by following this link.

The Arthur C. Stern Award is awarded annually to an author(s) for their outstanding contribution to JA&WMA in the fields of air and waste management.

### Dr. Ying Li Recognized As One Of The Top 25 Most Cited and Recieved NSF CAREER Award

ESSIE Professor Dr. Chang-Yu Wu and EES Alumnus who graduated in 2007, Dr. Ying Li co-authored a paper that has been recognized as one of the Top 25 Most Cited articles published in the Journal of Applied Catalysis B.

Dr. Ying Li also received the NSF CAREER Award in the Catalysis and Biocatalysis Program. The project is entitled CAREER: Integrated CO<sub>2</sub> Capture and Catalytic Conversion to Solar Fuels Using Hybrid Multifunctional Materials.

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