Welcome From the New Dean

It is my pleasure to be writing this note as the new Dean of the School of Science and Mathematics. I joined The Citadel in August 2012, after serving as department chair of physics at Wright State University in Ohio (where else?!) for eight years. Having been in the position for a few months now, I can say that it is every bit what I expected – from the clear mission, to the outstanding people (faculty, staff, students), to the challenges and opportunities. I should thank my predecessors, Dr. Chuck Groetsch, the founding dean, and Dr. Spike Metts, the interim dean, for giving the School a great start. My vision is to take the School to the next level, with signature programs and faculty and student achievements that will be recognized state-wide, nationally, and internationally.

We remain committed to being at the forefront of STEM education in the region. This includes improving science literacy, preparing science and mathematics teachers, educating the future researchers and educators, and helping train tomorrow’s workforce. I was recently at a regional STEM meeting where one school counselor asked what The Citadel is doing to help with the shortage of STEM teachers; clearly, we need to do a better job advertising our academic programs. It is, of course, difficult to provide an affordable first-class education when state funding is below 10%. A large part of my duty as Dean is to help our departments identify additional resources for helping us carry out our mission.

We have had an annual newsletter since 2008 and I certainly look forward to continuing this tradition for reporting on news and events from the past year. I encourage you to read about all the great things our faculty and students do. I do want to welcome a couple of new assistant professors who started in 2012: Dr. Rigoberto Flórez (PhD, Mathematics, SUNY Binghamton) and Dr. Michelle Richardson (PhD, Sports Management, University of New Mexico). We also welcome three new staff members to the School, Ms. Margaret Gannon (fall 2011) in MACS, Ms. Ijuana Gadsden (fall 2012) in HESS and Deborah Howard (fall 2012) in Physics. Last but not least, I would like to thank Dr. Dena Garner for serving as interim department head of HESS last year and congratulate Dr. Harry Davakos on his appointment as the new department head of HESS.

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The recipient of the 2012 Distinguished Alumnus award of the School of Science and Mathematics is Dr. James D. Bearden III ('65). Dr. Bearden is the Vice President of Clinical Research for Spartanburg Regional Healthcare System; Managing Physician for the nationally recognized Gibbs Cancer Center; and Director of the Bearden-Josey Center for Breast Health. He is board-certified in Internal Medicine, Clinical Oncology and Hematology; he is the first Board-certified oncologist in South Carolina.

While at The Citadel, Dr. Bearden was President of the Pre-Medical Society. Dr. Bearden graduated from MUSC in 1969 and has served as an adjunct professor there. He has also worked in adjunct faculty positions at Wake Forest University Cancer Center in Winston-Salem, N.C., and the University of Texas Science Center in San Antonio, Texas. Dr. Bearden has made significant contributions to the medical profession by publishing a large volume of articles in scholarly journals.

Bearden is a Certified Principal Investigator by APPI and has served as a Principal Investigator for one of eight continuously funded CCOPs in the country. He is also Principal Investigator for one of only 10 sites funded by the National Cancer Institute’s Community Cancer Center’s Program. He has been affiliated with the M. D. Anderson Cancer Center since 2005. At Spartanburg Regional, he served as Medical Director for the Hospice Program for 10 years. He is a Past President of the Spartanburg Medical Society and is a Senior Partner and President of Palmetto Hematology Oncology Associates. He has also served as President and founding Board Member of the South Carolina Oncology Society.

Only one of two community physicians on the National Cancer Institute’s steering committees for Multiple Myeloma and SX-QOL, Bearden has served as a member of the American Society of Clinical Oncology Cancer Prevention Committee, as well as a member of the Executive Committees of both the Southwest Oncology Group and the Alliance Oncology Group. Bearden is a Research Affiliate of Hollings Cancer Center and was Chairman of the Cancer Care Committee at Spartanburg Regional from 1976 to 2010. A former member of the Spartanburg Regional Healthcare System Board of Directors, Bearden is a Charter Founding Member of Carolina Alliance Bank and is an Elder and prior deaconate at 1st Presbyterian Church in Spartanburg. He is also on the Board of Trustees and was a former Vice Chairman of the Board for Spartanburg Day School. Dr. Bearden served his country through a military career that included 10 years of active duty and 10 years of reserve duty and retired as a Navy Captain.

He has been awarded the Distinguished Alumni Award by the Medical Alumni Association of the Medical University of South Carolina. He is a recipient of the Order of the Palmetto and the Betty Ann Moore Award in honor of extraordinary service in the fight against colon cancer. Dr. Bearden currently practices in Spartanburg, where he has lived with his family for more than 30 years.

Outstanding Student Award

Each spring, the School selects one cadet to receive this award for outstanding academic achievements. There are always numerous seniors who qualify and it is never an easy decision to select the most outstanding one. For 2012, the awardee is Shanna M. Couch (HESS). One can read about her Citadel accomplishments in the HESS section. In addition, she has been honored with an NCAA Postgraduate Scholarship following her graduation this past spring. Couch, who is currently pursuing her doctorate of physical therapy at the University of Kansas Medical Center, was one of just 29 female student-athletes nationally, and the first in Citadel history, to receive the prestigious award.
New Director for The STEM Center of Excellence

I am pleased to announce the hiring of a new director for the STEM center, Ms. Glenda P. La Rue. Ms. La Rue has an MS in Civil Engineering from Virginia Tech and was most recently the Program Director of the College of Engineering Diversity & Outreach Office at The Ohio State University. In her previous position, she was responsible for a variety of tasks including K-12 outreach, recruitment and retention, and also increasing the representation of women in engineering. Her role will be to promote STEM education in all its form at The Citadel working with the Schools of Education, Engineering and Science and Mathematics, and with the community.

Seed Fund for Student and Faculty Research

This past year, the School received a generous donation from Dr. Hap McSween ('67) to help establish an umbrella fund to support student and faculty research. We are very grateful for his vision that this is one of the primary needs in our School. Over the last few years, faculty in our School have increased their efforts at providing a research experience to the undergraduates with a small but effective summer research program. The donation by Dr. McSween provides us with the incentive to seek further funds in order to endow a research fund for both student and faculty research.

2012 Undergraduate Awards

School Awards:
School of Science and Mathematics Outstanding Student Award for outstanding academic achievement in the School of Science and Mathematics. Shanna M. Couch – HESS

Thomas Francis McGarey Award for outstanding achievement in the field of natural science.
Charles Preston Payne – Biology, Evan Aguirre – Physics

Dr. Francis Eugene Zemp Award for the highest scholastic rating for a graduating senior continuing on to medical school. William Welch - Biology

Biology:
Outstanding Freshman Award—Rosemary Eggers
Outstanding Sophomore Award—Grace Raines and Ryan Rhodes
Outstanding Junior Award—Stiles Harper
Outstanding Senior Award—Charles Preston Payne

Chemistry:
Outstanding Freshman Award—Bradley Mueller, Joshua Arp, Barrett Bradham and Samuel Huntington
Outstanding Sophomore Award—Stiles Harper
Outstanding Junior Award—Benjamin Cook
Outstanding Senior Award—Anna Fuzy and Dolph Eich
Analytical Chemistry Award—Frederick Shriner

Wideman Scholar—Samuel Huntington (freshman), Kyle Page (sophomore) and Nicholas Hasty (junior)

American Chemical Society Award—Joshua Edwards

Health, Exercise, and Sport Science:
NASPE—The National Association for Sport and Physical Education (NASPE) Outstanding Major of the Year Program. Shanna M. Couch, Bonnie J. Ramage and Paul J. Wasilchak

The Keith Hamilton Award—Senior HESS Major best demonstrating outstanding academic achievement and potential for future professional growth.— Alexandria R. Burns

Mathematics and Computer Science

George E. Reves Award—For Superior Ability and Outstanding Achievements in Computer Science and Mathematics
Gordon C. Finlay (Computer Science) and Chinnaphon Uttaraparwanich (Mathematics)

Physics:

Outstanding Freshman Award—Levi G. Southerton
Outstanding Sophomore Award—Ryan J. Boodee
Outstanding Junior Award—Daniel K. Pittman
Outstanding Senior Award—Evan M. Aguirre

Teaching Assistant Award—for excellence as student teaching assistant or physics tutor.
Kurt L. Lichtenstein

National Physics Honor Society SPS— for Junior or Senior Physics Majors or Applied Physics Minors displaying an outstanding academic record in physics.
Eric S. Berman, Daniel K. Pittman and Djordon L. Porter
The donation of the “Indian Hut” property by V. Lee Faircloth (Mathematics, ’67) has been a catalyst for several educational and research activities over the past year. The property consists of 544 acres of bottomland forest habitat near Georgetown, including an idyllic stretch of over one mile of Black River shoreline. Cadets and graduate students enrolled in Ecology, Invertebrate Zoology, and Field Methods courses took field trips to the property for experiential learning opportunities. In-depth observations of wildlife and flora in and around the property were made on these trips. In addition, Dr. Joel Gramling and graduate student Kristie Burr developed a GIS Wetland Habitat map of the property that has been geo-referenced to the National Wetlands Inventory database. This will allow for a more systematic study of habitat diversity on the property. Dr. Gramling has also started to compile a list of plant species found on the property. Dr. Paul Nolan and graduate student Sarah Diaz (pictured above) are currently conducting a survey of birds using the property.

**Student Accomplishments**

Student accomplishments for the 2011-2012 academic year included Preston Payne being awarded the Thomas Francis McGarey Award for outstanding achievement in the field of natural science, William Welch was awarded the Dr. Francis Eugene Zemp Award for highest scholastic rating for a graduating senior continuing on to medical school. Outstanding Biology major awards went to Rosemary Eggars (Freshman), Grace Raines and Ryan Rhodes (Sophomores), Stiles Harper (Junior) and Preston Payne (Senior). Cadets Ronald Willis and Mark Pierce, and graduate students Pamela Corwin and Jonte Miller were inducted into the Charleston Chapter of Sigma Xi this past Spring.
**Publications**


**Presentations**


Sarah A. Latshaw, Paul M. Nolan, and John A. Gerwin. “Using the habitat preferences of painted buntings (*Passerina ciris*) to guide restoration initiatives on a developing barrier island in South Carolina.” Annual meeting of the Ecological Society of America, Austin, TX, August 2011.


**Faculty Grants**

Joel Gramling—Department of Defense Cooperative Agreement —Monitoring of the rare plant *Lindera melissifolia* at the Marine Corps Air Station in Beaufort SC ($7,943)

NASA (SC SpaceGrant Consortium) –Use of remotely-sensed data to analyze locally-collected data on the hammock islands of the Lowcountry. Education reform (K-12) and the importance of experiential learning for educators and students. ($7,140)

Commission on Higher Education – Improving Teacher Quality (ITQ) Grant - “Developing Highly Qualified Middle and High School Level Science and Mathematics Teachers through Project-Based Learning” ($76,000, in collaboration with School of Education)

Commission on Higher Education – Improving Teacher Quality (ITQ) Supplemental Grant 2012– “The Kiawah Island Chinese Tallow Tree Survey Institute” which was proposed through The Citadel School of Education. ($52,160, in collaboration with School of Education)

John Zardus -Continuation of a National Science Foundation grant, year 4 of a 5 year award, Phylogeny on the Half-Shell -- Assembling the Bivalve Tree of Life, $25,816, Senior Collaborator (P.I. Gonzalo Giribet - Harvard University).

John Weinstein- BP/Florida Institute of Oceanography. The Deepwater Horizon Oil Spill: Assessing Impacts on a Critical Habitat, Oyster Reefs, and Associated Species in Florida Gulf Estuaries. Subcontract through Florida Atlantic University, $20,706, year 2 of 2.
The Chemistry Department welcomed twenty freshman majors in August after saying congratulations to five graduates in May. The faculty continues to stress the importance of involving students in research as part of their education at The Citadel. Six students participated in research projects this summer. The faculty and students presented and published their research, received awards and are active in the community. The department has submitted its periodic report to the American Chemical Society for the review to retain certification. Construction upgrades and repairs of Byrd Hall are underway.

Bryd Hall Renovations

Interior and exterior renovations to Byrd Hall began this summer. The building was surrounded by barriers making the normal things like delivering nitrogen gas interesting. The exterior stucco has been repaired and the building coated thanks to funding from the TCF. Faculty, staff and students endured the noise and disruptions this summer and the beginning of the fall semester and now the external part of Byrd Hall looks great. Additionally, funding has been provided to upgrade the analytical chemistry laboratory as well as a research laboratory. Four hoods will be added to improve the ventilation on the third floor of the building. These improvements are expected to be started later this fall and completed in the spring of 2013.

Research Focus

The faculty has received grants from the Citadel Foundation and the South Carolina Space Grant Consortium (SCSGC). Dr. Holly Bevsek received a grant from the SCSGC to investigate "Reaction of Methane with Hydrogen Peroxide Adsorbed on a Martian Soil Analog". Dr. Bevsek, Dr. Blanton, Dr. Dorko and Dr. Adair received grants from the Citadel Foundation (TCF) to support their research projects. Dr. Bevsek’s TCF supported research project involves reactions of nitrogen oxides in carbon nanotubes. Dr. Dorko’s research project is a theoretical investigation of beryllium sulfide and magnesium sulfide clusters as possible hydrogen storage materials. Dr. Blanton’s research examines chiral catalysts and reagents for use in novel asymmetric syntheses. Dr. Adair’s research is to develop, validate, and optimize sample collection and preparation techniques for quantification of biologically and environmentally relevant metals.
Student Accomplishments

This summer we had 5 students involved in research with our faculty and 1 student participating in an internship with MeadWestvaco. Joshua Neeper (rising senior), Holly Horton (rising sophomore), Ben Cook (rising senior), Rick Shriner (rising senior), and Sam Harbison (rising junior) participated in undergraduate research with Dr. Hemingway, Dr. Bevsek, Dr. Dorko and Dr. Adair. Matt Hill (rising senior) worked with scientists in the Oilfield Chemicals Division of MeadWestvaco. They were involved in the following research projects: Dr. Holly Bevsek organized a biweekly lunch time research meeting for the faculty and students from Chemistry and Physics to share their work. The students highlighted recent results, successes, and challenges and offered support and helpful tips to each other.

This “group” meeting was funded by the Chemistry Department and the Dean of the School of Science and Mathematics. Students working with faculty in the department received small stipends from the Jane Allan and Samuel Adam Wideman Student Research Fellowship.

New Technology

In the spring, the department purchased an Inductively Coupled Plasma - Optical Emission Spectrometer (ICP-OES) with funds from the Provost’s Office, the Dean’s Office and the Chemistry Department Restricted Fund (donations to the department through TCF). The ICP-OES is used to quantify multiple elements simultaneously and over a wide range of concentrations. This instrument will be used by the students as well as by Dr. Adair in her research to develop, validate, and optimize sample collection and preparation techniques for quantification of biologically and environmentally relevant metals and metalloids in representative matrices at relevant concentrations and to apply element specific detection of heteroatoms or elemental tags to produce more accurate biomolecule quantification methods. This summer two of our students used this instrument in their research.

Publications


Health, Exercise, and Sport Science News

Faculty

Tim Bott served as SCAPES – past president (SC Professional association for Teaching and Coaching). Also attended a coaching education program conducted by a local sport organization, and reviewed the curriculum for a local company, Stretch and Grow Charleston, and provided them with an analysis of the content related to movement education and fitness. Stretch and Grow Charleston currently provides physical education and physical activity for preschool children in the area.

Harry Davakos was appointed Chair of HESS department, July 1, 2012.

Wes Dudgeon completed data collection for 2nd year of NIH-funded grant investigating the effects of home exercise interventions in persons living with HIV/AIDS.


Michelle Richardson was appointed as Assistant Professor of Sport Management, replacing Dr. Linda Schoonmaker who retired after five years at The Citadel. Dr. Richardson brings in a zest for teaching and a knowledge and experience of the sport industry, through various positions she held over the years in industry.

Dena Garner and Lori Williams were appointed Directors of Exercise Science and Teaching program respectively.

Finally, the HESS department offers now three Bachelor degrees in: Physical Education – Teaching, Sport Management, and Exercise Science. In addition, it offers three Graduate programs: M.A.T. in Physical Education, M.S. in HESS (Exercise Science), and a Graduate Certificate in Sport Management – Sales and Marketing.

Student Accomplishments

Shanna Couch graduated in 2012 with a perfect 4.0 GPA and was named the first honor graduate of the Corps of Cadets. Additionally, she was the 2012 Outstanding Student of the School of Science & Mathematics, and an Outstanding Major of the Year for the National Associations of Sports and Physical Education. Shanna was also a member of the Women’s Soccer team. Besides majoring in Health & Wellness, Shanna also minored in Biology and she began work in her doctor of physical therapy degree at the University of Kansas Medical Center last June.

Alexandra Ray Burns was a participant in the Honors Program, and she was named second honor graduate of the Corps of Cadets. This is the first time that two female cadets shared the top academic honors, and both coming from the same academic department. Burns served as 4th Battalion Academic Officer. She has been accepted in the College of Pharmacy at MUSC, where she started in the fall of 2012.


**Presentations**

**Bott, T. & Norris, D.** (2011, November). *Attention Deficit/Hyperactivity Disorder and Motor Competence, a developmental perspective*. Annual South Carolina Alliance for Health, Physical Education, Recreation and Dance Conference, Myrtle Beach, SC.


**Davakos, H.** *Economic Impact of 2011 Cooper River Bridge Run*. International Conference of Sport Management, Athens, Greece, July, 2011.

**Dudgene, W.** *Suspension Training Improves Muscular Endurance, Muscular Strength, Cardiovascular Fitness and Body Composition in College-Aged Females*. Presented at National Strength and Conditioning Association Meeting in Las Vegas, NV.

**Garner, D.P.** (November, 2011). *Use of mouthguards in athletics*. Southern District/South Carolina Alliance for HPERD Convention, Myrtle Beach, SC.

**Garner, D.P.** (November, 2011). *Use of mouthpiece in golf to improve performance*. Southern District/South Carolina Alliance for HPERD Convention, Myrtle Beach, SC.

**Garner, D.P.** (June, 2011). *The effects of mouthpiece use on gas exchange parameters during steady-state exercise in college-aged men and women*. American of Dental Sleep Medicine Conference, Minneapolis, MN.

**Garner, D.P., Scheett, T.P., Dudgeon, W.D., McDivitt, J. and Rodriguez, M.A.** (February, 2011). *Increases in VO2/kg, VCO2, and VO2 with mouthpiece during steady state runs*. Southeast Regional Chapter of American College of Sports Medicine, Greenville, SC.


**Werner, P., & Williams, L.** (2011, November). *Using traditional folk dance to teach creatively*. South Carolina Alliance for Health, Physical Education, Recreation, and Dance Conference and Exposition, Myrtle Beach, SC.


**Williams, L., & Kirchner, A.** (2011, November). *What’s your approach to improving children’s fitness?* South Carolina Alliance for Health, Physical Education, Recreation, and Dance Conference and Exposition, Myrtle Beach, SC.


**Werner, P., & Williams, L.** (2011, November). *Using themes to develop units of work in gymnastics*. South Carolina Alliance for Health, Physical Education, Recreation, and Dance Conference and Exposition, Myrtle Beach, SC.


**Faculty Grants**

Mathematics and Computer Science News

Faculty

In August 2012, Dr. Rigoberto Flórez joined the Department of Mathematics and Computer Science as an assistant professor. Rigo received his Ph. D. from the State University of New York at Binghamton under the guidance of Professor Thomas Zaslavsky.

Effective with the start of the 2012-2013 academic year, Dr. George L. Rudolph was promoted to associate professor, and Dr. Shankar M. Banik was awarded academic tenure and promoted to associate professor.

Dr. Leslie S. Cohn is on sabbatical for the fall 2012 semester, and Dr. Mei-Qin Chen will be on sabbatical in the spring 2013 semester.

Student Accomplishments

Cadet Chinnaphon Uttaraparwanich and OC Gordon C. Finlay were the winners of the Reves Award for the 2011-2012 academic year for “Superior Ability and Outstanding Achievements in Mathematics and Computer Science.” The Reves Award is given annually in honor of the late George E. Reves, former professor and department head. Both Cadet Uttaraparwanich and OC Finlay were Electrical Engineering majors. Cadet Uttaraparwanich earned a minor in Applied Mathematics, and OC Finlay earned a minor in Computer Programming. In addition to their outstanding academic record in this department, both have been very active in department activities outside the classroom.

Publications


Publications, Continued


Presentations


Stephen Cotter “How College is Different From High School”, Summerville HS Mathematics Department, 22 classes, Summerville, SC, November 2011.

Rigoberto Florez “Projective Representation of Non-Representable Matroids (of Biased Graphs)”, The Combinatorics Seminar, Binghamton University, Binghamton, NY, May 2011.

“A Representation of the Bias Matroid in a Projective Plane”, Combinatorics Seminar, Department of Mathematics, University of South Carolina, Columbia, April 2011.

Chuck Groetsch “Inverse Problems and Regularization Theory I & II, a short course for postdocs and doctoral students, Texas A&M University, College Station, Texas, 21-22 May 2011.


Upasana Kashyap “The Maximal W-Dilation and Morita Equivalence”, AMS Special Session on Recent Progress in Operator Algebras, AMS Central Section Meeting, University of Nebraska-Lincoln, October 2011.


Faculty Grants

Physics News

Undergraduate Research Focus

A team of three students completed the first prototype of the Atsa Armrest Camera (AAC). The AAC is the first version of the Atsa Suborbital Observatory, which will be an astronomical telescope mounted to a manned commercial suborbital space plane. Fit and function testing were completed at XCOR Aerospace in Mojave, CA, using the engineering test bed cockpit of XCOR’s Lynx spaceplane. The students were funded through the South Carolina Space Grant Consortium’s Palmetto Academy Program, and represented three different institutions in South Carolina.

A cadet physics major conducted experiments for the Laser Desorption Infrared Spectroscopy program at NASA’s Jet Propulsion Laboratory under Caltech’s Summer Undergraduate Research Fellowship Program during the summer of 2012.

A physics major from the College of Charleston worked in The Citadel Physics Department undergraduate research labs on setting up an experimental system for performing laser-induced fluorescence measurements of mesoscopic systems, particularly carbon nanodots. He designed and tested electronics for operating an electrospray ionization system for loading the ion traps that will levitate and store the nanodots. He also set up a vacuum chamber for housing the experiment and fabricated an ion trap from a printed circuit board.

Student Accomplishments

Cadet Honors

Cadet Erik Pratt received the first place Sigma Xi student research award for his study of the compound double pendulum. Cadet Pratt worked with his research advisor Prof. J. Berlinghieri in developing an innovative method for recording angular positions of the two arms of the pendulum which allowed for the analysis of the onset of chaotic motion.
Publications


Presentations


P.R. Briggs, E. Aguirre, L. Solliit; "A New Algorithm for Assigning Fluxpoint Energies to Solid State Detector Passbands"; Fall 2011 AGU (San Francisco); SH31B-2014

L. S. Solliit. E. Aguirre, P. Briggs; "Toward A More General Technique to Infer Ionic Charge States of Solar Energetic Particles"; Fall 2011 AGU (San Francisco); SH31B-2019

P.R. Briggs, E. Aguirre, L. Solliit; "A New Algorithm for Assigning Fluxpoint Energies to Solid State Detector Passbands"; Fall 2011 AGU (San Francisco); SH31B-2014

L.S. Solliit. E. Aguirre, P. Briggs; "Toward A More General Technique to Infer Ionic Charge States of Solar Energetic Particles"; Fall 2011 AGU (San Francisco); SH31B-2019


Faculty Grants

Scott Yost - U.S. Department of Energy grant DE-PS02-09ER09-01 2010 – 13, Precision Studies of Hadronic and Electro-Weak Interactions for the LHC $74,000 for 3 years. (The third year)
The Citadel receives less than 10 percent of its operating budget from state appropriations. Other revenue comes from student tuition and fees. We could not offer the caliber of education that we do without the generous support of those who believe in the college's mission to develop tomorrow's leaders. To learn how you can help support the School of Science and Mathematics at The Citadel, please feel free to contact any of the officials listed above.