

Radford University College of Science and Technology Newsletter

From the Dean's Desk – December 6, 2013



As 2013 draws to a close and we near the New Year, we take a moment in this edition of “From the Dean’s Desk” to welcome new members of our University Community, explore new research ideas and discover new opportunities to enhance the Radford experience within the College of Science and Technology. We will continue this exploration of what’s new in 2014 as we return in January.

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COLLEGE OF SCIENCE AND TECHNOLOGY AWARDS NEARLY \$90,000 IN GRANTS FOR FACULTY RESEARCH AND PROJECTS

Enhancing research opportunities and the student experience will be the focus of a combined \$89,813 in awards made to RU Faculty in November for use during the remainder of the 2013-2014 academic year. Projects include improving the student experience within the classroom with alternative delivery methods and a continuation of the “flipped classroom” experiments that are being conducted in several classes throughout the college, new initiatives for outreach and engagement, and new research projects. These programs and the faculty supporting them exemplify the dedication of the CSAT community to moving forward to consistently improve the Radford experience.

Programs awarded:

Effects of water quality on *Aedes albopictus* – Dr. Tiffany Carpenetti

Induction of CYP4f3 by statins in liver – Dr. Peter Christmas

Calcium Oxylate Crystals in Abscission – Dr. Gary Cote

Effects of royal jelly and methoprene in cockroaches – Dr. Anthony Curtis

SEM of trematode parasites – Dr. Jeremy Wojdak

Influence of a flipped classroom on math anxiety and achievement – Dr. Anthony Dove

Radford University Biome Integrative Exchange Sites (RUBIES) – Dr. Anthony Curtis

Scientific Outreach and Research Engagement (SCORE) – Dr. Jason Davis

Alternative course delivery for BIOL 322 – Dr. Sara O’Brien, Dr. Anthony Curtis, Dr. Eric Weigel

Flipping the Classroom – Biology 231 Course Revision – Dr. Tara Phelps-Durr, Dr. Robert Sheehy

DARE: Enhancing Security Awareness and Training – Dr. Prem Uppuluri, Dr. Jeff Pittges, Dr. Joe Chase, Dr. Art Carter

We will be featuring each of these outstanding programs as they develop over the course of the spring 2014 semester.

RADFORD UNIVERSITY DEPARTMENT OF INFORMATION TECHNOLOGY ANNOUNCES CISCO NETWORKING ACADEMY PARTICIPATION

The Department of Information Technology at Radford University has announced that it is integrating the Cisco Networking Academy into classes within the networks concentration. Cisco Networking Academy is a global education initiative from Cisco Systems which offers networking programs, like the (Cisco Certified Network Associate) CCNA and (Cisco Certified Network Professional) CCNP courses to help prepare students for certification exams.

“The network concentration in the department aims to produce graduates who will become next generation leaders in computer network fields by teaching both in-depth concepts and hands-on skills” stated Dr. Hwajung Lee, Associate Professor of Information Technology. “Integrating the Cisco Networking Academy is expected to help students practice more hands-on projects, prepare the Cisco CCNA exam, and pick up rapid changes in the network industry.”

With this new course enhancement, students will receive a Cisco Networking Academy certificate on the completed Cisco class with a passing grade. In addition, students can get a discount voucher for Cisco CCNA exam registration.

CISCO SYSTEMS



Networking Academy

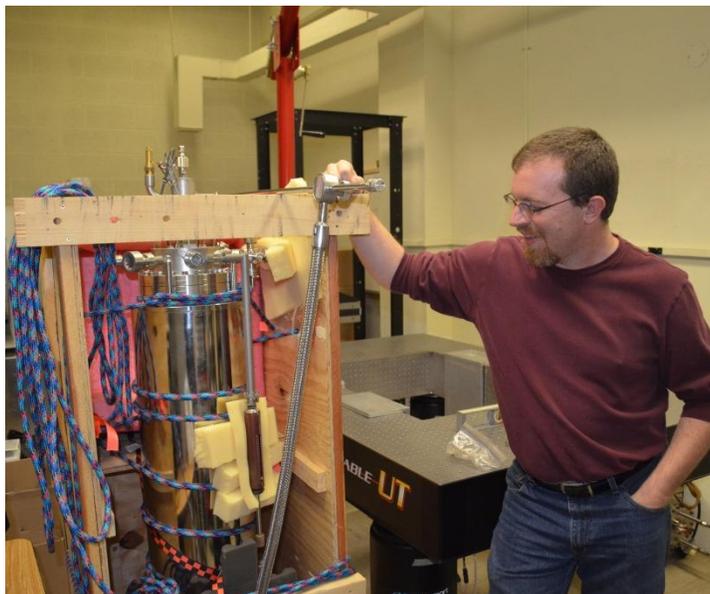
The first Cisco Networking Academy class was integrated in two network classes in fall 2013 and other Cisco classes, which help students prepare CCNA, CCNP, and CCNA security exams, are in the process of being added to the curriculum.

[Learn more about the Department of Information Technology.](#)

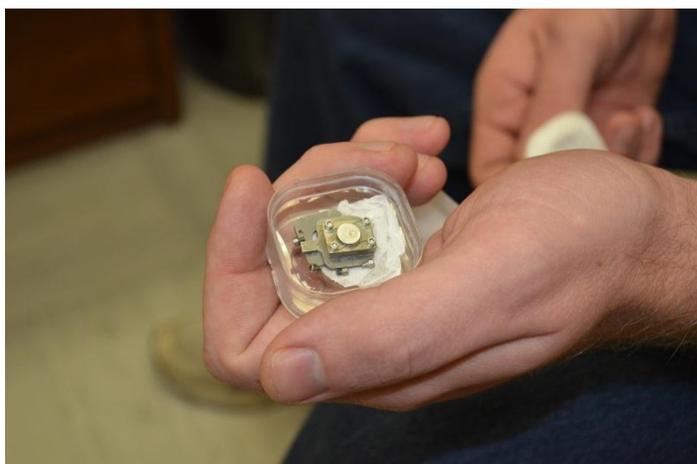
NEW TO RU: DR. SHAWN HUSTON AND DR. MATTHEW CLOSE

Two new members of the College of Science and Technology faculty for fall 2013 are Dr. Matthew Close in the Department of Biology and Dr. Shawn Huston in the Department of Physics. We sat down recently to learn a little more about their individual journeys to Radford University.

Dr. Shawn Huston grew up in Winchester, Indiana, which he recalls as about 1/3 the size of Radford. "I was at the University of New Orleans for the first 3 years of my undergrad degree and transferred my senior year due to Hurricane Katrina" states Dr. Huston. "I graduated from Ball State University in Muncie, IN, near my home town, with a B.S. in Physics (2006). BSU expedited the admission process and let me start classes 2 weeks into the semester. They also didn't charge for the first semester. I attended North Carolina State University for my graduate work and received my Master's (2009) and PhD (2012) in physics."



Dr. Huston unpacks equipment in his lab in Curie Hall.



Dr. Huston with a small piece of silver used as a surface to explore molecular adhesion.

Dr. Huston worked at North Carolina Wesleyan College as an adjunct instructor from 2010-2011 and at Appalachian State University as a Visiting Research Professor from 2011-2013. "I transferred out of Civil Engineering to Physics because I loved solving physics problems" recalls Dr. Huston.

Dr. Huston explores very big ideas within very small areas. "My research is in the area of surface science" says Dr. Huston. "The tongue-in-cheek way I describe it is that I study things sticking to other things.

A more accurate description is that I study molecular adsorption to ultra-smooth metallic and semiconducting surfaces at the nanoscopic scale. "

Dr. Huston's research involves the use of a special kind of microscope, called a scanning tunneling microscope, which allows him to visualize how molecules arrange on a surface which has implications

for anyone who uses consumer electronics as his study may help speed the way for organic components in phones, televisions and computers. “ I investigate what causes specific arrangements and the impact these arrangements have on the electronic properties of molecular thin films that have potential uses in flexible, green and low-cost electronics” says Dr. Huston. “Examples of devices that currently use this technology are organic light emitting diodes (OLEDs), which are commonly used in the displays of personal electronic devices and televisions, and organic photovoltaics. One of the fascinating things about my research is that I can actually see individual atoms that make up the surface of my sample.”

When he is not investigating the world on a micro level, Dr. Huston is frequently outdoors. “ My wife is an instructor in the chemistry department here at Radford. Outside of work, we love hiking and camping. We have an 8 year old and a 4 year old. As a result I have been carrying kids on our hikes for the last 8 years. I’m ready to get the monkey off my back” says Dr. Huston jokingly.

“Our favorite place to go is Acadia National Park, which I highly recommend. It’s great for families with young kids because it is a mountainous island. You get the thrill of summiting mountains (<1600 ft) and the option of going to the beach as well. We’re hoping to take a trip out west to visit the parks there at some point in the future. I have never been west of Texas, so I’m excited by the chance of getting a look at the Rockies.”

Dr. Huston is currently setting up his equipment in Curie Hall and looks to ramp up his research in Spring 2014.

A new member of the Department of Biology faculty this fall, Dr. Matthew Close, grew up in the South Norfolk Borough of Chesapeake, Virginia and attended Old Dominion University for his undergraduate degree. “At the time, I had interests in Archaeology and Biological Anthropology, and decided to major in Biology with a minor in Sociology with an Anthropological emphasis, the only Anthropology option at



ODU at the time” recalls Dr. Close. “I thought of pursuing graduate degree (possibly even an M.D./Ph.D.) after graduation, but wanted to gain some research experience prior to doing something like that.”

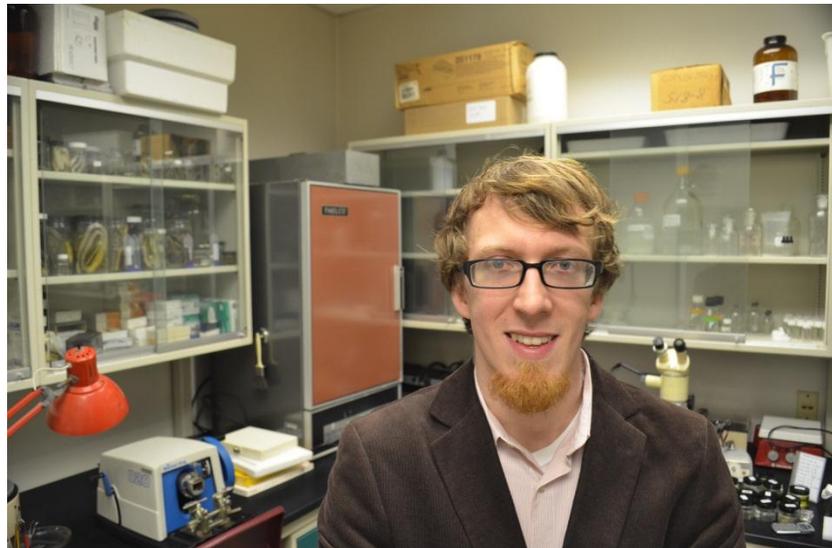
During his junior year of college, Dr. Close had the opportunity to take part in a three week archaeological excavation in central Mongolia. “My brother was teaching English in China at the time and I basically spent that summer doing field research in Mongolia and traveling across as much of China as possible” states Dr. Close. “The experience was great, but it did not lead me to pursue graduate work in Anthropology. I instead returned and decided to focus more on Biology. In

my senior year at ODU, I took a Herpetology course from Dr. Alan Savitzky and that's when my interest in biology really began." Dr. Close says that he has always been fond of living things, but there was something about the biology of reptiles and amphibians in particular that gave him a much more holistic view of the subject. "As I read more books and papers and even met more herpetologists, I realized that biology was about much more than one's specialty, and I really appreciated that one could be a physiologist but also have a good handle on taxonomy, systematics, ecology, conservation, etc."

Following graduation from ODU in 2003, Dr. Close first taught a high school biology summer class and served as a substitute teacher before accepting a position as a Field Research Assistant for the Maryland Department of Natural Resources Wildlife and Heritage program. "I spent the Summer and Fall of 2004 living in Church Creek, MD and daily walked the sand ridges of the Delmarva Peninsula conducting herpetological surveys and trapping, identifying, measuring and cataloging reptiles, amphibians, small mammals and beetles" recalls Dr. Close." It was quite an amazing position, and one that helped to generate lots of questions. The position was contractual and had a defined end date, and it forced me to get serious about graduate schools."

In the spring of 2005, Dr. Close was admitted to Lehigh University in Bethlehem, Pennsylvania where he spent the next seven years working with one of the world's experts on snake morphology, Dr. David Cundall, earning a Ph.D. and, at the same time, marrying his fiancé and raising a family.

Dr. Close's research is in the field of functional morphology and focuses broadly on the relationships between structure and function in living organisms and the ecological and evolutionary contexts of these relationships. "I am interested in 1) how anatomical structures are built, both macroscopically and microscopically, 2) how these structures work in living organisms, and 3) how anatomical structures vary in space and through time" says Dr. Close. "My graduate work explored the form and function of the soft tissues in the snake lower jaw within the context of macrostomy ("macro-" meaning large and "-stoma" meaning mouth), the ability to ingest relatively large prey. By comparing the anatomy and histology of snake



Dr. Close in his Reed Hall lab.

lower jaws stretched to different degrees, I was able to determine the effect of stretching on the soft tissues of the lower jaw and to generate new hypotheses about how extreme levels of extension and subsequent recovery are permitted. "

Moving forward, Dr. Close hopes to discover how different species of snakes differ in their degree of lower jaw extensibility and whether these differences have any ecological or evolutionary patterns. “The fact that a great majority of the more than 3000 snake species are able to ingest relatively large prey is fascinating, and I am excited to spend a lot of time and effort to figuring out just how they do it. Because this is a complex question, I am thrilled to be at Radford University, working with colleagues from such diverse research backgrounds” he says.

Music is an important part of Dr. Close’s life outside the lab. “I took piano lessons when I was younger, and played cello in middle and high school orchestra. I had some formal training in cello during college and occasionally played at weddings or performed with friends. When I was in middle school, my church youth pastor taught me how to play blues and rock guitar and I never gave it up. I played rhythm guitar and bass guitar in bands during high school and college. I am not particularly good at any instrument, but I still enjoy playing with friends, colleagues and even strangers if the occasion arises. I also do not have a particular style of music that is my favorite to listen to or play.”

Dr. Close spends most of his off-campus time with his wife, Emily, and their two daughters, Olivia and Clara. “I love my family. They have supported me and my crazy ideas from day one. I was just in the



cadaver lab until 11:30pm working with students who were studying for a practical and thinking to myself, ‘You know, my family really cares about what I care about. There are so many late nights and times I have to run up to the lab. Not every academic has this kind of support, and I (and hopefully my students) am grateful for it.’”

Dr. Close is a big believer in community and people. “A large portion of the things I have learned in life have not come from books or lectures, but from the stories and lessons that people that I have been surrounded by have shared with me” he recalls. “I really value these relationships, and regardless of whether I totally agree with my family, friends, colleagues, students and/or neighbors, I still enjoy eating and drinking together, working together, playing music together, conversing with one another and serving one another.”

HEAVENLY HOLIDAY STORIES FEATURED IN SPECIAL RU PLANETARIUM SHOW

As the holidays approach, explore the heavenly stories in the RU Planetarium's traditional Christmas show, "Tis the Season."

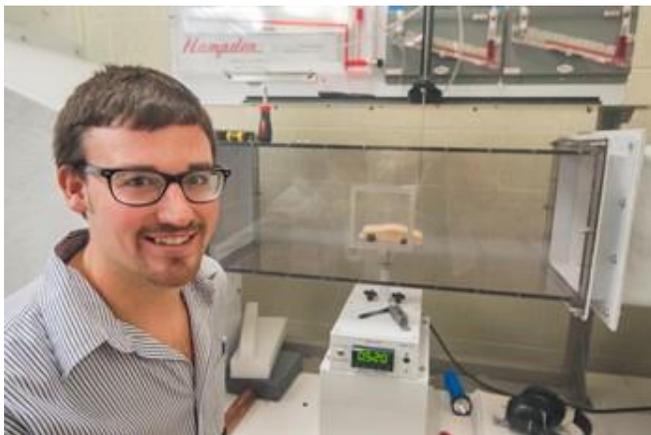
Produced by Loch Ness Productions, "Tis the Season" describes the legends associated with the stars and constellations that appear during the Christmas season, such as Orion the Hunter, Taurus the Bull, and Leo the Lion. Other traditions and legends featured in the festive star show are the Star of Bethlehem, Jolly Old Saint Nick, holiday lights and candles. The 35-minute show is narrated by Noah Adams of NPR's "All Things Considered."



"Tis the Season" will be presented on Tuesday and Thursday at 7:30pm and Saturday at 10am through Thursday, Dec. 19. The RU Planetarium is located on the ground floor of Curie Hall in Room 43.

To learn more, [please visit the planetarium home page.](#)

WDBJ7 PROFILES RU UNDERGRADUATE PHYSICS RESEARCHER



Radford University Senior Physics major, Brian Uthe is utilizing the wind tunnel in Curie Hall to explore the effects of golf ball style dimples on wind drag with automobiles. His research involves making small indentations into wooden car models and testing changes to the scale performance of the car. Thus far, his results are promising and could have real-world implications.

Recently, he shared his work and early results with WDBJ7 reporter, Orlando Salinas.

To learn more, [please view the story on the WDBJ7 website.](#)

SEARCHING FOR EL DORADO – BRINGING A LEGEND TO LIFE THROUGH GOLD AND DIAMOND PROSPECTING IN GUYANA



On Tuesday Dec 3, Mr. Ed Blackford, Operations Manager for the Dream Hole Mining Company, shared his experiences in building a road through the rainforest in Guyana on the northern coast of South America. The lecture, sponsored by the Museum of the Earth Sciences, featured information about Mr. Blackford's efforts helped provide access to a diamond and gold mine.

To learn more about Mr. Blackford's amazing journey, [please visit a recent story by Catherine Van Noy in the Roanoke Times.](#)

[The Museum of Earth Sciences lecture series continues in the spring 2014 semester.](#)

COLLEGE OF SCIENCE AND TECHNOLOGY SENIOR FEATURED IN RADFORD UNIVERSITY "MY CHOICE" CAMPAIGN

James Whorley is a senior from Gardnerville, Nevada majoring in Geospatial Science and Computer Science in the College of Science and Technology

After serving two tours in Iraq in the U.S. Army, James decided the time was right attend college and earn a bachelor's degree in computer science. After researching universities and meeting with faculty at a number of institutions, Radford University became James' choice.

James' interest in technology began at a young age.



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"My interest in computers and how they worked was sparked by my sixth-grade math teacher, who started an after-school computer club," he said. "He got computer parts and worked with the students to assemble the computer and load the operating system. Ever since then I've been interested in working with computers."

Not long after James' first semester at Radford University, he began to learn more about the geospatial science department.

"My job in the U.S. Army was sometimes referred to as a Geospatial Analyst so I wanted to see if any of my experience and training would go toward earning a minor in geospatial science," he said. "After meeting with the chair of the department, I was convinced that declaring a second major was the best choice."

As a non-traditional student with a young family and having served his country before beginning his education, James has developed a drive to push himself academically and professionally. Knowing the challenges facing veterans, he wanted to help them achieve their academic goals. He joined the university's Veterans Student Organization and quickly became involved with establishing an on-campus center to serve military and veteran students. He now works for the center, planning events and helping to field questions from military students and their dependents.

After graduation, James hopes to find a career in federal or state law enforcement.

For more, please visit the original story at

<http://www.radford.edu/content/radfordcore/home/admissions/my-choice/james.html>