

FROM THE DEAN'S DESK – October 3, 2017

THE RADFORD UNIVERSITY ARTIS COLLEGE OF SCIENCE AND TECHNOLOGY NEWSLETTER



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GEOLOGY WELCOMES NEW STUDENTS WITH FIELD TRIP



The Geology Department welcomes new students each fall with a field trip to begin the academic year. Provost Dr. Graham Glynn joined the group this year during the first weekend after classes began for a trip through Giles County to Bluefield Virginia/West Virginia.



Dr. Jon Tso sharing his thoughts on the geology of the area.

Photos by George Stephenson



Dr. Skip Watts describing the geology of Giles County.

MATHEMATICS EDUCATION IN MALAWI

Drs. Patti Talbot (CEHD) and Jean Mistele (ACSAT) led a group of 8 preservice teachers (STEL – early education, elementary education, special education, and middle school mathematics), and 1 inservice teacher on a Study Abroad Trip to Malawi. The Malawi Study Abroad began in 2005 when RU and VT collaborated on this new adventure. Since then, the Malawi Study Abroad program engages students in activities that immerse the students in the Malawi culture, language, education system, and customs found in this warm hearted developing country. The trip includes two to three weeks visiting Malemia Primary School in a small rural village in the Domasi community.

This year Radford went solo and Dr. Mistele included a new component, undergraduate Mathematics Educational research. The students chose from Standard 1 through Standard 7 for their research project.

Dr. Mistele provided a broad framework for their projects since the undergraduates have not engaged in their educational course work at the time of the trip. The students examined such issues as how teachers support struggling learners, the flow of discourse in the classroom, and how praise impacts motivation, to name a few.

The students presented their research at the second annual Global Education Conference hosted by CEHD, RU World Ready? on August 19, 2017. Their posters were displayed in the halls so that all conference participants had an opportunity to chat with the students about their projects. Some of the RU students participated in an additional presentation session, sharing their experiences implementing an inquiry based STEM project with Standard 7 students. The project was based on a true story of a Malawi teenage boy (*The Boy Who Harnessed the Wind*) who built a windmill to tackle the drought besieging their country in the early 2000's.



Back row: (L->R) Tabitha Nelson, Alyson Gokey, Catherine Turner, Dr. Patti Talbot (STEL- Education Leadership) Valerie Wallace, Nina Ghafari, Emily Warren, Felicia Freedman.

Front row: (L->R) Kim Rygas, Dr. Jean Mistele (Mathematics and Statistics), Erin McGuigan.

RADFORD UNIVERSITY AWARDED NSA GRANT TO BOOST CYBERSECURITY OUTREACH

Radford University is the recipient of a \$140,250 National Security Agency (NSA) grant that will enhance the university's robust cybersecurity outreach.

Titled "Pathways in Cybersecurity at Radford University," the grant follows five additional NSA grants that have enabled the university to take the lead in training kindergarten through 12th-grade (K-12) level educators and students in cybersecurity since 2013. The grant is part of the research efforts underway in the Center for Information Security at Radford University to use novel pedagogical techniques to spark a passion for cybersecurity among middle-school to undergraduate students.

Professor Prem Uppuluri, coordinator of the Center for Information Security, along with Professor Joe Chase, are leading the first efforts in Virginia to incorporate cybersecurity into Science, Technology, Engineering, Art and Math (STEAM) education at the elementary through high-school level (K-12). With the latest grant, the university will collaborate with Ellen Denny, curriculum coordinator for Radford City Public Schools; Rebecca Onuskanich, the founder of the National Cyberwarrior Princess program; and more than 20 teachers in K-8 schools and 50 teachers in grades 9-12 across the state to create cyber-focused lesson plans, assessments and SOLs at each grade level and provide them with the necessary knowledge and skills to teach security. Undergraduate students in cybersecurity at Radford will take part in this project as research assistants.

"Our goal is simple: given the ubiquitous nature of technology, we want to make cyber-awareness and security skills as much a second-nature to a new generation of students as reading and writing skills," Dr. Uppuluri explained.

Such intentional and innovative training would ideally motivate students to consider cybersecurity careers, which are in high demand. Virginia alone currently has 36,000 job openings in the field.

"Imagine the recruitment pipeline of potential, highly-motivated Information Technology majors this will create," Dr. Uppuluri said.

The Pathways in Cybersecurity grant will also continue the university's efforts to teach cybersecurity to K-12 teachers. Chase and Uppuluri worked on Virginia Department of Education-sponsored panels to develop new curriculum in cybersecurity for K-12 school systems. The panel's work resulted in the development of two official cybersecurity courses for Virginia state public schools: Cybersecurity Fundamentals and Cybersecurity Software Operations, Advanced.

"We will use this experience to ensure that teachers who go through our program will have the knowledge and skills to teach these courses," Dr. Uppuluri said.

More than 50 teachers are expected to be supported through the Pathways in Cybersecurity grant. To give perspective, Uppuluri explained, "With this number, we will have taught almost 100 teachers in K-12 in Virginia over the last two years."

The Pathways in Cybersecurity grant is a welcome addition to Radford University's rich resume of cybersecurity accreditations and initiative. These include the creation of the multiple award-winning Cyber Defense Club in 2012. The university offers a dual enrollment course for high school students in cybersecurity and hosts the [RUSecure CTF Contest](#) for high school and community college students. The RUSecure CTF Contest will be offered for the fifth time this year providing education, motivation, competition and scholarships to the participating teams.

In 2016, the university was designated as a Center of Academic Excellence in cyber defense education by the NSA and the Department of Homeland Security (DHS). In addition to its acclaimed Department of Information Technology faculty, staff, students and undergraduate and graduate degree programs and curricula, the university also offers a Department of Defense (DoD) 8140 compliant undergraduate certificate in Information Security that prepares students to meet tomorrow's cybersecurity challenges by covering five of the seven domains defined in the NICE Cybersecurity Workforce Framework.



From left: Suzanne E. Spaulding, DHS Under Secretary for the National Protection and Programs Directorate; Associate Professor of Information Technology Prem Uppuluri; Danny Kemp, Radford's Vice President for Information Technology and CIO; Jeff Pittges, Department of Information Technology Chair in 2016 and Dr. Leonard T. Reinsfelder, Commandant of the NSA National Cryptologic School.

Just this month, the university introduced a new competency-based education program with a goal of increasing the skills of the Commonwealth's diverse workforce. The groundbreaking program, called Innovative Mobile Personalized Accelerated Competency Training (IMPACT), is the first of its kind among four-year public institutions in Virginia. IMPACT will officially begin Oct. 1 with an initial focus on cybersecurity.

Story by Mary Hardbarger

DEPARTMENT OF INFORMATION TECHNOLOGY ANNOUNCES RUSECURE CTF CONTEST 2017-2018

The Department of Information Technology (DIT) at Radford University will once again host the RUSECURE Capture The Flag contest for high school and community college students. Managed by DIT faculty and students, the contest is part of an overall effort to improve cybersecurity literacy across the Commonwealth.

The entire event, from the preliminary round to the on-campus finals, challenges high school students to perform at extraordinary levels. These contests will challenge students in a wide variety of topic areas including anatomy of an attack, an introduction to networking, cryptography, forensics, web security, and Windows/Linux security. The preliminary round provides an opportunity for students to learn a



***RUSECURE 2017 Champions:
Thomas Jefferson High School for Science and Technology.***

great deal of material in a short period of time, motivated by challenges and supported by hints, videos, and other educational materials. The qualifying round provides an opportunity for students to test their mettle against their peers and continue to hone their skills. Earning their way to the on-campus finals should provide an experience they will never forget as they learn to construct a network and then defend it from expert penetration testers.

Students cover a wide variety of topic areas, including the anatomy of an attack, an introduction to networking, cryptography, forensics, web security and Windows/Linux security. Event co-chairs are Dr. Joe Chase and Dr. Prem Uppuluri.

The on-line preliminary round runs from October 28th - November 11th 2017.

This will be a two-week, virtual contest with hints and educational materials available. The purpose of this contest is to educate, motivate and reward students interested in cybersecurity.

The on-line qualifying round takes place from March 17th - March 31st 2018 and is much more rigorous. Like the fall contest, this will be a two-week virtual contest. However, unlike the fall contest, hints and educational materials will not be provided with each question.

The top seven teams in this qualifying round will advance to the on-campus RUSECURE CTF Final Round on April 28th with the caveat that no more than two teams from any one school may advance to the finals. In the case that one school has more than two teams in the top seven, the next highest ranking team will advance.

Teams registering for this contest must include at least three team members including the captain and must include a faculty member as a coach. Teams are limited to at most five student members. The

registration for each team member must include their name and their e-mail address. Incomplete registrations will be removed prior to the contest.

Teams are allowed to include students from multiple schools. If a team consists of students from multiple schools, select the multiple schools option on the second question and we will be in touch to get more information. Teams with students from multiple schools will also be required to have faculty coaches from all of those schools.

The top 7 teams from this event will be invited to campus for the finals.

The on-campus finals take place on April 28th 2018 at Radford University. Finalists will participate in a variety of activities including a Capture the Flag contest. Scholarships will be offered to all finalists based upon placement in the contest.

The event continues to grow in popularity and stature across the region. In 2016-17, 289 high school and community college students participated in at least one round of the competition, representing 70 teams from 32 different schools.

Registration is coming soon and more information is available at <https://www.radford.edu/content/csat/home/itec/rusecure-ctf-contest.html>

OPPORTUNITY AVAILABLE TO SHARE RESEARCH ON CAPITOL HILL IN WASHINGTON DC

Applications can now be submitted for CUR's annual Posters on the Hill program in Washington, DC. This competitive event gives students the opportunity to showcase their research to congressional members, meet with their representatives, and learn about advocacy for undergraduate research. Applications will be accepted from September 6, 2017, to November 1, 2017.

Each year, 60 top student research projects are selected out of hundreds of applications. Accompanied by their faculty mentors, students have the opportunity to present their research on Capitol Hill, attend field trips to important institutions in the D.C area, and participate in an orientation and advocacy training session to prepare for their congressional visits.



To submit, visit CUR's 2018 Posters on the Hill submission webpage. The submission deadline is November 1, 2017.

http://www.cur.org/conferences_and_events/student_events/posters_on_the_hill_2018/

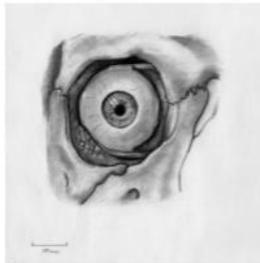
SCIENTIFIC ILLUSTRATION TO BE FEATURED IN ART SHOW

Radford University Biology students who took Dr. Jeremy Wojdak's Scientific Illustration course in Spring 2017 produced some wonderful drawings and paintings of biological specimens. Their work is being featured in a new show at McConnell Library's Andrew Ross Gallery. The opening reception will be held Tuesday, October 3 at 4pm, and the show will run from this Thursday through October 19.

SCIENTIFIC ILLUSTRATION

BIOLOGY STUDENTS LEARNING SCIENCE THROUGH ART

Andrew Ross Gallery, McConnell Library
September 28 – October 19



Opening Reception Tuesday, October 3 at 4:00pm
Hosted by the Graduate Art Student Association

RADFORD UNIVERSITY

McConnell Library

Department of Art

Department of Biology

STUDENTS CATCH CRITTERS AT SELU CONSERVANCY

Students in the Vertebrate Zoology course took to the water recently to perform fish and reptile surveys on the Little River. The Little River borders Radford University's Selu Conservancy, a tract of land well-utilized by multiple departments to conduct field experiments and hold indoor/outdoor classes.

Students assisted with setting and checking turtle traps, capturing eleven painted turtles during the one evening survey.



Radford University students along the Little River.



One of eleven painted turtles captured during the survey.

Following documentation of the specimen, students gathered on the dock to complete a group release of the turtles. The zoology students also surveyed for fish using multiple techniques, and captured bluegill, longear sunfish, and minnows.

Hands-on field classes and research experiences like this one are great opportunities for students to take standard textbook learning and apply it to the real world around them.



Students releasing painted turtles back into the Little River at the Selu Conservancy.



Students with 11 captured painted turtles, just before group release.

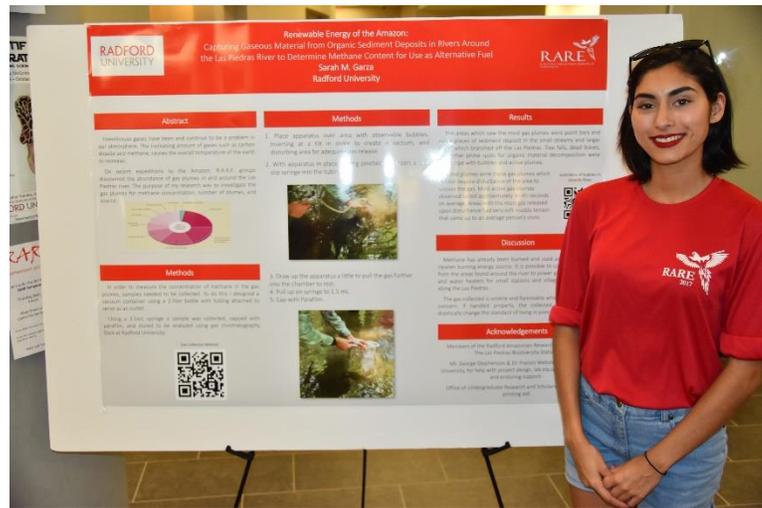
Story by Karen Powers

STUDENTS SHOWCASE RARE EXPERIENCE DURING SYMPOSIUM

Students who participated in the Radford Amazon Research Expedition to Peru had the experience of a lifetime that included visits to exotic locations, team building, exploration, and research. On Thursday, September 28, they shared these experiences during the RARE 2017 Symposium in the Center for the Sciences.

The event began with a poster session on the Main Street level of the building where individuals and teams showcased the work they conducted in Peru. Projects ranging from the collection and examination of gasses along the rivers in the area to the impact of sound waves on the animal population were shared. Many of the projects were designed to assist the local population of the region.

Later in the evening, the group went inside room M73 for a roundtable question and answer session as well as a preview of RARE 2018 and a guide to involvement.



Sara Garza with her research poster.

Twenty-nine students, along with four faculty members, participated in the 2017 Radford Amazonian



Poster topics were diverse ranging from science and technology to tourism and dance.

Research Expedition (RARE). Due to increased interest, the program conducted two journeys in 2017 with one team traveling in May followed by a second team in July.

RARE has not only grown in popularity since the inaugural group of 10 student-researchers embarked in summer 2015, it has evolved into a life-changing opportunity for students from all areas of study. This summer's participants include majors in psychology, sports medicine, biology, criminal justice, anthropology, geospatial science, dance, nursing, visual arts and computer science. Learn more at www.radford.edu/rainforest.

100 GIRLS OF CODE EVENT HELPS EMPOWER YOUNG WOMEN IN INFORMATION TECHNOLOGY

Robots, planets, bits, and bytes were the subjects of the day on Saturday September 30 as girls from across the New River Valley gathered at Radford University to take part in a “100 Girls of Code” event. The mission of 100 Girls of Code is to achieve gender parity in STEM fields by introducing more young women to code and computer engineering at a young age. The organization seeks to inspire more girls to pursue a future in STEM by providing young women an opportunity to create and gain confidence in what they create.

100 Girls of Code invests in young women by providing free workshops introducing them to the world of computer science and engineering, where they create with code and engage in hands-on, innovative thinking. Our workshops are led by programmers who are experts in their fields and academically-trained but most importantly, they are “girls of code” themselves.



Creating planets via code.

Students at the Radford University event used blue solo cups to create simulated instructions for robot movement as well as creating planets online in the computer labs.

Renee Alarid, Associate Director of Creative Services at the Moss Arts Center helped coordinate the event along with Dr. Jeff Pittges from the Department of Information Technology. She chose the robot cup activity because of its simplicity and familiarity for the girls. “Using the cups before they code helps the girls become more comfortable with algorithms that they need to learn to work with Information Technology.”

The program concluded with a visit to the Radford University Planetarium where the girls learned about the celestial objects visible in the night sky at this time of year as well as a tour across the solar system.



Girls of Code participants and the college students who assisted them from Radford University and Virginia Tech.

INTERNATIONAL STUDENT FINDS HER NEW HOME AT RADFORD UNIVERSITY

There was no doubt that this decision would bring new opportunities, but leaving her family and culture would be the tough part. Rashna Neupane, 26 is an international student from Nepal.

“I was nervous and worried about being able to adjust well in a place where the lifestyle and society are completely different, now I can proudly say that joining this program at Radford University has been one of the best decisions of my life,” Neupane said.



Neupane was born in a village on the outskirts of Palpa, Nepal and was raised in the capital city, Kathmandu. While receiving her Bachelor of Science in Computer Science and Information Technology, Neupane managed her time and participated in software development workshops and worked as a computer programmer intern.

After obtaining her bachelor’s degree in 2014, Neupane worked as a Java programmer at an information technology industry. While enhancing her professionalism with each new project, Neupane desired to further her education. While she was searching for graduate programs to suit her academic interest, Neupane learned about Radford’s Data and Information Management degree.

Neupane made it clear why she chose the DAIM program, “I was fascinated by the infrastructures and experiential opportunities that DAIM offers. What encouraged me to enroll in the program was the platform it provides to students to apply their skills in IT industries, giving opportunities to develop a strong network, and offering hands-on experience.”

As Neupane left Nepal to live in the U.S., there were feelings of anxiousness and fear. Fortunately, Radford assisted her with this, “When I first arrived, the international office at the university assisted me with adapting to the change. The cooperative and friendly environment made me feel like I wasn’t in a new place”

Neupane indicated that although she was new to Radford, the friendly students, professors, and peaceful environment gave her comfort.

During her first year of the DAIM program, Neupane worked as a graduate teaching assistant for an introductory level IT class at Radford. She was then offered two positions outside of the university and now works as an application development intern at InteractiveGIS, Inc. in Blacksburg, Va.

Although Neupane has not officially decided what she would like to do after graduation, she hopes to stay in the Blacksburg area for a few years to gain more experience and eventually move back to Nepal.

Neupane’s advice to students considering the DAIM program, “I believe DAIM will open doors to help you achieve your career goals and build a strong foundation to shape your future. This program would be the best choice to form your career and it would truly be a once in a lifetime opportunity for anyone to pursue their academics at Radford University.”

SUMMER RESEARCH CELEBRATION TO BE HELD OCTOBER 10

This past summer, seventeen amazing student-faculty collaborative projects were funded through the Summer Undergraduate Research Fellowships (SURF) program. Now they are all coming together to share their findings through several sessions during the Summer Research Celebration on October 10th in Hurlburt Hall.



Oral Session 1: 11:00 am-12:15 pm

1. James Board - "Modeling Tick Populations Through Differential Equations"
2. Kimber Cheek - "The Effects of Cranial Growth and Architecture on Pediatric Blunt Force Trauma Survivability"
3. Melissa Kesterson - "Effect of Phenazine Derivatives on Mosquito Survival and Virus Replication"
4. Alex Atwood - "The Detection and Quantification of Trenbolone in Laboratory, Field, and Tissue Samples Through Use of High Performance Liquid Chromatography"
5. Laura Purser - "Study of the Removal of Pollutants from Water Through the Synthesis and Characterization of Biorenewable Polymers using DL-Lactide"

Poster Session 1: 12:30 pm – 1:45 pm

1. Chelsey Dietzel - "Physical and Behavioral Study of the Amazonian Freshwater Stingray"
2. Adaisha Cole and Lizzy Kunde - "An Interprofessional Examination of the Effects of Music Therapy and Speech Language Pathology on the Development of Play Skills in Young Children"
3. Nicole Diambra - "How Dance Travels: Dance in the Amazon"
4. Tayler Lewis - "Computational Modeling of the AS1/AS2 Complex"
5. Camille Hamway - "The Effects of Animal-Researcher Interaction on Brain Stress Levels in Rats"

Oral Session 2:

2:00 pm – 3:15 pm 1. Kris Moore - “Synthesis and Encapsulation of Organic Pollutants in Aqueous Environments”

2. Evan Cowling - “Synthesis of Novel Xenophilic Metal Clusters”

3. Conner Philson - “Impact of Anthropogenic Environmental Disturbances on Primate Feeding Behaviors Measured Via A Custom-Designed Micro-Computer Enabled Feeding Device”

4. Dharmindra Dulal - “Effects of Nonylphenol on the Development of Mosquitofish”

5. Morgan Bishop - “Arch Form and Function Effects on Knee Pain in Collegiate Track and Field and Soccer Athletes”

Poster Session 2: 3:30 pm – 4:45 pm 1. Matt Koldewey - “Lateral Movement Changes Resulting from Training on the Better Movement Systems Suspension System Exercise Machine”

2. Lauren Boush - “The Effect of Physical Activity on Pain and Social Interaction in Persons with Cerebral Palsy”

3. Justin Archer - “Learning to Fly (with flies): The Effects of Vespa Amino Acid Mixture on Mitochondrial Defect Induced Locomotion Disorders in *Drosophila Melanogaster*”

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