THE BRIAR CREEK ASSOCIATION for Watershed Solutions (BCAWS) is taking its first step to improved water quality with a plan that looks at climate, geology, soils and biology. At the same time, the project is providing research opportunities for Bloomsburg University students majoring in environmental science.

The Briar Creek watershed encompasses approximately 33 square miles, spanning parts of Columbia and Luzerne counties. The creek flows into the Susquehanna River, which in turn flows into the Chesapeake Bay. By monitoring Briar Creek, BCAWS aims toward a cleaner Chesapeake Bay.

“Better quality here means better quality there,” says Ben Franek, BCAWS secretary and geosciences instructor at Bloomsburg University.

Franek is one of the major contributors to the Briar Creek Watershed Coldwater Conservation Plan. He grew up in Pennsylvania and completed doctoral research on Briar Creek. In the plan, Franek outlines the stream characteristics in four sections: climate, geology, soils and biology. Research into climate is especially important, says Franek, since changes in climate affect the availability of water.

BCAWS compiled data from 1899 to 2010 to come up with average monthly precipitation and monthly temperature data. The geological section focused on the watershed’s bedrock. The solid rock at or near the surface — and the surficial geology — the unconsolidated solids at or near the surface. Researchers also outlined the soil types at each monitoring station and discussed the watershed’s importance to a variety of birds, mammals and fish.

With a comprehensive knowledge of Briar Creek, the BCAWS team began its water monitoring process. The watershed was divided into seven sub-watersheds, each with at least one monitoring site to assess both water quantity and quality. The main branch of Briar Creek and East Branch Briar Creek had multiple sites.

While chest-deep in water at one of the remote monitoring sites, Franek says he was reminded of how tranquil Briar Creek can be. His face-to-face encounter with a mink passing along the bank was a sign of the stream’s good health. “The peacefulness was remarkable,” says Franek.

BCAWS members conducted assessment at each site bi-weekly from September 2011 to October 2012. Generally pH, electro conductivity and total dissolved solids levels were acceptable, though water temperatures were high at times, according to Cold Water Fishes designation. Findings for the visual assessment varied from poor to fair and, at times, the creek exceeded acceptable amounts of lead and nitrate.

The BCAWS team was made up of local volunteers and BU students, including Samantha Pfister, a senior from Perkasie. Pfister, along with BU faculty members Cynthia Venn and Christopher Hallen, conducted in-house lab tests on water samples for pH, conductivity, turbidity, total acidity, total alkalinity and dissolved oxygen. She has been accepted for graduate school at the University of Pittsburgh and continues to collect background research on the watershed.

Students also participated in the onsite monitoring, and the application of problem solving, research skills and theory makes them highly marketable for future work opportunities, Franek says. “The pride in their faces and their professionalism is impressive,” he adds.

The Briar Creek Association for Watershed Solutions prepared the Briar Creek Watershed Coldwater Conservation Plan in conjunction with the Columbia County Conservation District. The Coldwater Heritage Partnership provided funding for the conservation plan. For more information, visit coldwaterheritage.org.
STUDENTS IN THE PHYSICS and engineering department shot for the sky when they took on Professor Nathaniel “Ned” Greene's latest project. The project involved building an automated solar tracker control and monitoring system on campus at the end of the fall 2012 semester.

“The core of this work is getting the solar data from the sun and presenting it to the public,” says project adviser and associate professor Ghassan Ibrahim. “We now have a unit that is accessible to students to operate on, research on or use for educational purposes.”

The system was a senior design project completed by four students: Adam Reedy, Zhengyan Zhou, Joe Crossin and Jeff Ulshafer. While these projects are typical in the department, this was the first of this scale to be installed and manufactured.

“Every year students need to come up with an industry-like project and then develop it,” says Ibrahim. “They must use everything they’ve learned in their four years here and also include something new that they have explored on their own.”

The students were responsible for installing the solar panels, controlling them, and tracking the sun to predict the amount of power that can be created every minute of the day under different weather conditions.

The panels, installed outside Benjamin Franklin Hall along Second Street, will send data to the solar kiosk, located on the campus side of the building.

“Other places do solar tracking,” says Ibrahim. “What made ours so significant was that nobody had ever used something as small as a 100-watt panel to track the sun and use it mainly for educational purposes.

“Not many institutions have success predicting the power as accurately as we did. The system the students built exactly predicts the power available, down to the last watt.”

While impressive, this proved to be a challenge for the students. Since no such system existed, they had to build the electronics and mathematical formulas that would automatically track the sun and come back with all of the data Greene was requiring.

Greene and Ibrahim built an industrial environment in order to make the project as real as possible.

“Dr. Greene played the role of the consumer, and we played the role of the manufacturer,” says Ibrahim. “The students had to keep the customer happy. So they had challenges not only with production, but product management interfacing with the customer.”

When the project was completed, the students wrote a report and presented it to the faculty, who critiqued their work.

“The students felt a great sense of achievement because their project worked,” says Ibrahim.

While the system will be able to provide power to a small portion of campus, it will mainly be used for educational purposes when the kiosk is installed this spring. It is expected to be operation for the summer session.
KARL KAPP AND HELMUT DOLL of the instructional technology department recently presented a workshop and provided information about games and gamification for the Mexican conglomerate, Grupo Salinas.

Grupo Salinas is made up of diverse companies, including Banco Azteca, a financial services firm; Grupo Elektra, a retail store; Grupo Iusacell, a telecommunications company; and TV Azteca, one of the two largest Spanish-language television program producers in the world. Grupo Iusacell was Mexico’s first nationwide provider of 3G mobile services.

The professors were invited to Mexico City for the presentation after a Grupo Salinas employee read Kapp’s book, *The Gamification of Learning and Instruction*. The two-day workshop included information on instructional game design, gamification techniques and how to work with specific software to create games.

Kapp and Doll also met with high-level company executives, including Ricardo Salinas Pliego, president.

**Beta Beta Beta inducts new members**

NEARLY THREE DOZEN new members of Beta Beta Beta Biological Honor Society were inducted during a ceremony in November 2012. Beta Beta Beta, known as Tri-Beta, is a society for students dedicated to improving the understanding and appreciation of biological sciences and extending boundaries of human knowledge through scientific research.

New initiates, regular members, are: Alexis Albertson, Ryan Austin, Taylor Ball, Gabriel Barrile, Corey Bower, Emily Broach, Stefani Cannon, Heather Cleary, Katrina Conrad, Tina DiMarco, Devin Dreisbach, Laurel Downs, Marc Francola, Kelsey Harm, Julianne Heater, Bridget Krecko, Ian McAndrew, Gretchen Moore, Dana Palermo, Alison Reigle, Renee Ritali, Ashley Robertson, Vincent Saraceno, Meredith Salmon, Amber Shifflett, Marcus Sullivan, Michael Tekin and Heidie Warren.

New initiates, associate members, are: Adam Bertino, Thomas Blass, Jennifer Hensley, Keaghan McNaughton, Stephanie Murphy, Eric Rahner and Christopher Yoch.

**Students honored for freshman performance**

FOUR STUDENTS were recognized for academic achievement during their freshman year by BU’s Chapter of the Honor Society of Phi Kappa Phi. Receiving the award at a November ceremony were current sophomores: Katherine Hawkins, biology; Ashley Kerstetter, medical imaging; and Adam Kul and Myrle Newcomer, both health sciences. Phi Kappa Phi is the nation’s oldest, largest and most selective honor society that recognizes and promotes academic achievement in all fields of higher education.

**Senior presents at annual meeting**

KYLE J. HIGGINS, a senior health physics major, presented a paper, *Calibration of the Gantry Angle of Linear Accelerators Using X-ray Produced Images*, during the 57th annual meeting of the Health Physics Society in Sacramento, Calif.

Higgins worked on the project under the guidance of Dr. Andrew Jones and Jared Treas from the radiation oncology department at Geisinger Medical Center, Danville, and Naz Afarin Fallahian, assistant professor of physics and engineering technology at BU.

A member of Sigma Pi Sigma, the National Physics Honor Society, and the Society of Physics Students, Higgins is vice president of the local chapter of Kappa Mu Epsilon, the university mathematics honor society. His interests include the effects of ionizing radiation on the human body, intensity-modulated radiation therapy, image-guided radiation therapy and proton therapy.
Simpson elected to board

DAVID SIMPSON, associate professor of the physics and engineering technology department, was elected to a three-year term on the Health Physics Society’s board of directors. The Health Physics Society is the professional organization dedicated to assuring excellence in radiation safety and the nine-member board serves as its governing body.

Simpson will join the board at the annual meeting in July. His initial assignment will be the oversight of the Professional Development School Committee, Program Committee and Continuing Education Committee.

Saying ‘thank you’

(Editor’s note: Bruce Wilcox, associate professor of chemistry and biochemistry, shares a note he recently received from Chase Smith ’08.)

I just wanted to catch up and let you know of a success story stemming from your guidance.

I have now been teaching physical science at Western Wayne School District in northeast Pennsylvania for the last five years. I was offered a job immediately after graduating from Bloom. In addition to revamping their science program into an inquiry based system, I also am coaching basketball and baseball for the school. I also run the Junior Academy of Science Program which has the students completing their own research projects and presenting their findings to a panel of judges.

Looking back at my time at Bloomsburg, I remember fondly your patience with me despite my occasional laziness and lack of initiative. If I only knew what I know now about education, I would have taken my college education much more seriously!

Ultimately I write this email to thank you, and the rest of the chemistry professors that dedicated their time to help me get where I am today. I am praising the work that you do and the level of education that I received on a daily basis at my school.

— Chase

Invited to Lecture

SWAPAN MOOKERJEE, professor of exercise science, right, gave an invited lecture, Investigating Muscle-Brain Hemodynamics and Oxygenation Trends during Exercise with Near-Infrared Spectroscopy, at the American College of Sports Medicine Mid-Atlantic Region meeting in Harrisburg. He presented results of collaborative research projects conducted with Yagesh Bambhani, University of Alberta, Edmonton, Canada, and partially funded by a BU Research and Disciplinary Award. Also shown are presenters from the Cerebral Blood Flow Response during Exercise symposium — Carson Smith, University of Maryland, left, and Michael Falvo, Department of Veterans Affairs, New Jersey.

SIX BU STUDENTS recently became new members of the Lambda Chapter of the Kappa Mu Epsilon national mathematical honor society. The initiates are, front row from left: Gene Tunney, Brooke Shannon, Alison Mack, Kristie Darrah, Kelly Barko and Louisa Andrew. Back row are, from left: Eric Kahn, faculty, recording secretary; Edward Arnold, president; Kyle Higgins, vice president; Courtney Heiser, treasurer; William Calhoun, faculty, adviser; and Jack Kelly, secretary.