Two department chairs are among seven new faculty members who bring outstanding academic qualifications as well as a focus on teaching undergraduate students to the Pott College of Science and Engineering.

Dr. William Elliott, previously associate professor of geology and geology coordinator in the Department of Environmental Studies at Southern Oregon University, chairs the Department of Geology and Physics. Dr. Zane Mitchell comes to USI from the United States Air Force Academy, where he was deputy department head for civil and environmental engineering. He chairs the Department of Engineering.

Chair of geology and physics

Elliott said he is pleased to have the opportunity to grow the geology program and help with the growth of the physics program. As a geologist, the outstanding reputation of the Pott College geology program was well known to him prior to joining the University of Southern Indiana. He was familiar with the work of Dr. Joseph DiPietro in the Himalayas and that of Dr. Paul K. Doss in Yellowstone National Park.

He also was attracted to USI by opportunities to work with students in the field. Elliott specializes in the study of earth-surface processes, low-temperature geochemistry, and sedimentary geology. In his previous position, he involved students in research in the Pacific Northwest. He is interested in extending opportunities to USI students to participate in that work.

“I’m also hoping to get involved in research locally, perhaps in the petroleum/natural gas arena or the environmental field,” he said.

Elliott looks forward to helping the Pott College develop its planned program in environmental science. “That’s very exciting to me coming from a Department of Environmental Studies,” he said. “There is a lot of potential for our students to work in the environmental field.”

To increase awareness of educational opportunities and career paths in geology, Elliott has visited introductory geology classes to make presentations. He plans to work with the

Continued on page 3

New GO STEM! Camp will encourage young women to pursue careers in science, math, engineering

A ride on a roller coaster this summer will be more than entertainment for 48 girls entering their sophomore year of high school in the fall. The young women will be participants in the first GO STEM! program provided by the Pott College and the Southwest Indiana STEM Resource Center.

“GO” stands for “girls only.” “STEM” is an acronym for “science, technology, engineering, and mathematics.” The camp is in the planning stage and funding is currently being sought to help support programmatic activities.

The participants will spend a day at a theme park in Indiana or Kentucky, collecting data to analyze in Pott College science laboratories the following day. Investigations will cover topics from nutrition to water quality to probability to acceleration.

The camp will take place June 6-9. Dr. Shelly Blunt, Pott College associate dean, is director of the program. She said, “GO STEM! is designed to allow high school girls to explore real-world applications of science, technology, engineering, and mathematics. This exposure,

Continued on page 5
Letter from the Dean

Our college continues to experience rapid growth. We now have more than 1,100 students majoring in our programs. We welcomed seven new faculty this fall, with two taking roles as department chairs. They join an outstanding group of dedicated professionals.

Progress continues on the new Business and Engineering Center, and we have begun design of a facility for the rapidly growing advanced manufacturing program. By this time next year, we will have completely renovated the original Science Center.

In summer 2009, we launched the Early Undergraduate Research Program with 18 students and 12 faculty participants. This summer we expect to have 36 students and more than 20 faculty participants. Also, faculty and staff led about a dozen professional development programs for almost 200 regional K-12 STEM teachers last summer. We plan more workshops for the coming summer and a STEM program for young women.

The two STEM trucks introduced in September are constantly on the road distributing equipment and instrumentation to K-12 classrooms in the region.

I invite you to visit www.usi.edu/science for more information on our recent activities.

Dr. Scott A. Gordon
Scott A. Gordon, Dean
Pott College of Science and Engineering

Advanced manufacturing program moving forward
Additional federal funding approved for equipment; building in design stage

The advanced manufacturing program is moving forward with the purchase of equipment for a new building scheduled to open in spring 2011. Federal funding of $1 million was included in the 2010 Energy and Water Development Appropriations Bill, bringing to $2.7 million the total amount of federal funding approved to support equipment purchases for the program.

Dr. Zane W. Mitchell, chair of the Department of Engineering, and Daniela Vidal M ’00, program coordinator for the advanced manufacturing and industrial supervision programs, expressed appreciation to Congressman Brad Ellsworth ’81 and Indiana senators Richard Lugar and Evan Bayh for their support of the funding.

Now in the design stage, the building will support the advanced manufacturing major as well as the program in industrial supervision. Vidal said the University is committed to training the workforce in advanced manufacturing techniques to support regional economic development. The program includes an advisory board representing industries in the area. “We keep our ears open to providing a workforce with the appropriate skills. We want to stay relevant to employer needs,” said Vidal, an instructor in engineering.

The new building will have a high bay with a 15-ton crane capable of moving industrial-size equipment.

Students will use five new CNC (computer numerical control) machines in addition to two now in use in the Technology Center. The machines will have a range of automation capability so students will learn to proceed from mostly manual operation to full automation.

Vidal said, “If students don’t know how to do a process manually, they may have a hard time automating it. We want them to learn the manual process first and then how to program the machines.”

The robotics lab will include two industrial robots and a third that will weld. The welding robot will be set up initially at ARC Industries, where students are helping design and build a special work station that will allow disabled persons employed by ARC to assemble a product for a local company. When the work at ARC is finished, the robot will be brought to campus for installation in the advanced manufacturing center.

The plastic processing lab will include an extruder for compounding resin and an injection-molding machine. The materials processing lab will provide a waterjet cutting tool capable of cutting through any kind of material with a high-pressure water stream. A number of wood processing tools will support the wood industry in the area. A precision measurement lab will feature a CMM (coordinate measuring machine) as well as manual tools. A property-testing lab will provide instruments to test strength of materials, flexibility, hardness, viscosity, and other variables.

A CIM (computer integrated manufacturing) cell will be available for training and simulation. A conveyer will connect with appropriate machines to create a product from raw materials.

“It simulates a complete production line that is fully automated so students can see how machines are integrated to create a product,” Vidal said.

The building also will have a project or “business incubator” space where students can work with partners to develop solutions that meet specific needs, similar to the ARC project. All senior projects involve real-world situations with businesses or entrepreneurs who engage students under the direction of faculty. Vidal also works closely with the University’s Center for Applied Research to coordinate projects.

We want to stay relevant to employer needs.

— Daniela Vidal
Southwest Indiana STEM Resource Center to ensure that students at schools in the region have hands-on experiences giving them early exposure to geology.

Elliott earned an undergraduate degree at the University of Pittsburgh at Johnstown and master’s and doctoral degrees at Indiana University. He has received grants and fellowships totaling more than $350,000.

**Chair of engineering**

Mitchell, associate professor of engineering, joined USI in July after retiring as a U.S. Air Force colonel. He was deputy department head for civil and environmental engineering at the Air Force Academy from 2007-09. He also led the department’s geotechnical engineering division.

From July 2004-July 2007 Mitchell was associated with the Defense Threat Reduction Agency, which safeguards the United States and its allies from weapons of mass destruction. In 2006, he became deputy director of the Cooperative Threat Reduction Directorate, overseeing offices in six countries for the $8 billion Nunn-Lugar Cooperative Threat Reduction Program. **U.S. Sen. Richard Lugar** has lauded Mitchell for his work in threat reduction, saying, “Untold horrors were prevented by your commitment and work ethic.”

The motivation and quality of the engineering faculty and the teaching philosophy attracted Mitchell to USI.

He said, “I think engineering is best taught and learned by instructors (not teaching assistants) working with students in a setting where the classes are small and one-on-one interaction can be achieved.

“I’m also excited about the level of support and funding the engineering program enjoys from the Pott College of Science and Engineering and from our University leadership — the new Business and Engineering Center and the new advanced manufacturing facility being the crown jewels of that support.”

The Business and Engineering Center will open in fall 2010. View construction progress by webcam at www.usi.edu/ science. Mitchell calls it a student-centered facility and especially looks forward to seeing the student design center in use. “It’s a place where students can congregate and work on their designs. A lot of good things will happen there,” he said.

A facility for the new major in advanced manufacturing is scheduled to open in spring 2011. (See story page 2.)

The engineering program will continue to involve students in projects that give them real-world experience. Current projects include setting up a small hydroelectric generator for a campground owner and an alternative energy project for a new pavilion at Howell Wetlands.

Mitchell earned a bachelor’s degree in civil engineering at the U.S. Air Force Academy, a master’s degree in business administration at Rensselaer Polytechnic Institute, and master’s and doctoral degrees in civil engineering at Virginia Polytechnic Institute and State University. He is certified as a professional engineer and holds certification as a project management professional from the Project Management Institute. He is a LEED accredited professional.

**New faculty**

**Rick Hudson ’02,** assistant professor of mathematics, earned a master’s degree in mathematics at the University of Louisville in 2004 and has completed all requirements except the dissertation for a doctorate in mathematics education at Indiana University Bloomington. Hudson is a past president of the USI Student Government Association. He received the Trustees’ Distinguished Merit Award in 2001.

**Dr. Landon Moore,** assistant professor of biology, earned a doctorate in biochemistry at Purdue University in 1997. From 2003 until joining USI, he was an assistant professor at the Boston University School of Medicine, where he was developing a research program using genetics and genomics to study chromosome segregation.

**Dr. Kenneth Purcell,** assistant professor of physics, completed a doctoral degree in physics in 2009 at Florida State University. As a graduate research assistant at Florida State’s National High Magnetic Field Laboratory, he performed high-field and high-pressure skin-depth measurements on novel superconductors. He also holds a master’s degree from Florida State and two bachelor’s degrees from Western Kentucky University.

**Dr. Natasha Smith,** assistant professor of engineering, came to USI from the U.S. Naval Academy, where she taught mechanical engineering, material science, and thermodynamics. She holds a doctorate in civil engineering from Vanderbilt University.

**Daniela Vidal M ’00,** instructor and program coordinator in advanced manufacturing, was most recently corporate training and development manager at Berry Plastics in Evansville. She also has worked in a variety of positions at GE Plastics (now SABIC) and was a product research scientist at Mead Johnson Nutritional. She holds a bachelor’s degree in chemical engineering from Universidad Metropolitana in Caracas, Venezuela, and a master’s degree in business administration from USI.
A summer internship at Mayo Clinic in Rochester, Minnesota, gave junior chemistry major Sunny Huang hands-on lab experience in one of the nation’s top hospitals and convinced her that her future lies in combining research with the role of practicing physician.

Huang spent 10 weeks as a research assistant in the laboratory of Dr. Stephen Ekker. He uses zebrafish to investigate treatments for nicotine addiction.

“I focused on quantifying nicotine sensitization and designing an assay to test for conditioned place preference induced by nicotine in zebrafish,” Huang said. “I developed a novel assay that analyzes the choice of environments of larval zebrafish when exposed to nicotine. By the end of the summer, I was able to create a protocol that is still being studied and perfected in the Ekker lab.”

The lab work complemented a Mayo clinical study on smokers.

Huang’s day-to-day mentor, Andrew Petzold, taught her a number of lab techniques and advised her on perfecting her project. From Ekker, she learned about the theory of research and the importance of cooperation.

“It is the great amount of teamwork at Mayo Clinic that allows them to achieve these amazing medical advances. It is truly inspiring,” she said.

The summer experience was not entirely in the laboratory.

“I had the opportunity to network with many physicians, primary investigators, graduate students, and undergraduate students with the same passion for science and research as myself,” she said.

“Through the research seminar series for our program, I learned about advances in using viruses as cancer treatment, equipment used for translational research, how behavioral biology studies are advancing psychological studies, and so much more. After this summer, I discovered that I want to combine both my love for research and my desire to touch lives and pursue an M.D./Ph.D. degree.”

Mayo Clinic is listed second on the honor roll of hospitals with top scores in six or more specialties in U.S. News and World Report’s 2009-10 report on America’s Best Hospitals. Huang was one of 80 interns in the Summer Undergraduate Research Fellowship Program at Mayo’s Rochester location.

Huang holds the Robert A. and Carole D. Rust Endowed Presidential Scholarship. She is a student ambassador and president of the USI chapter of the American Chemical Society.

Rehkopf selected as Project NExT fellow

Dr. Edward E. Rehkopf, assistant professor of mathematics, is among 82 faculty members in mathematics from universities throughout the country to receive fellowships for 2009-10 in the Project NExT program.

Sponsored by the Mathematical Association of America (MAA), Project NExT (New Experiences in Teaching) is a professional development program for individuals in their first or second year of full-time teaching following completion of a doctorate. The program addresses improving the teaching and learning of mathematics, engaging in research and scholarship, and participating in professional activities.

Rehkopf attended the MAA summer meeting in Portland, Oregon. It included a pre-conference workshop for Project NExT fellows. He also will attend conferences in San Francisco and Pittsburgh and will participate in an electronic network linking fellows with distinguished teachers of mathematics.

His research interests include quadratic forms and lattices. He is working toward furthering the classification theory of these objects. Since joining USI in 2008, he has taught courses in calculus and linear algebra. He enjoys working with a wide range of students.

Rehkopf earned a doctorate in mathematics at the University of California at Santa Barbara in 2008. He has taught at UC-Santa Barbara and Westmont College.

New master’s program in mathematics teaching available

A new track in mathematics teaching is available in the University’s Master of Science in Education program.

Persons wishing to strengthen their knowledge of mathematics as well as deepen their understanding of math pedagogy have expressed a desire to pursue an advanced degree which contains at least 18 semester hours of mathematics. The M.S.E. - mathematics teaching degree program also includes 15 semester hours from the Department of Teacher Education.

Teachers at the secondary level seeking the minimum qualifications to teach dual credit courses, secondary teachers wishing to pursue an advanced degree in their content area, or persons wishing to teach entry-level mathematics at a two- or four-year college are anticipated participants.

For more information contact Dr. Kathy Rodgers, chair of the Department of Mathematics, at krogers@usi.edu.
GO STEM! continued from page 1
coupled with hands-on activities, is intended to further the participants’ interest in STEM disciplines and encourage them to take challenging high school coursework to prepare for post-secondary education, especially STEM-related career paths.”

Rising sophomores at high schools in Dubois, Gibson, Knox, Perry, Pike, Posey, Spencer, Vanderburgh, and Warrick counties may be nominated for the program. Students demonstrating financial need may receive financial assistance.

The program will blend science learning, career education, and social networking with overnight accommodations in residence halls. USI female students who are majoring in STEM disciplines will serve as mentors. They will work with participants in collecting data and performing experiments.

Female faculty members and administrators helped plan the GO STEM! program. These include Dr. Jeannie Collins, associate professor of chemistry, and Dr. Julie McCullough, associate professor of nutrition, chemistry/nutrition; Carrie Anderson, instructor in mathematics, in collaboration with Dr. Kathy Rodgers, chair of the Department of Mathematics, mathematics; Dr. Marsha Segebarth, instructor in biology, biology; and Dr. Susan J. Ellspermann, director of the Center for Applied Research (CAR), and Elissa Bakke, project coordinator for CAR, engineering/applied physics.

The students will experience STEM activities in a non-competitive, interactive way with the application of concepts to their everyday lives.

High-tech instructional technology will be utilized in addition to the Pott College’s state-of-the-art science labs. The University will host an electronic blackboard to facilitate information sharing among participants, mentors, and faculty.

For more information, contact Dr. Shelly Blunt at sblunt@usi.edu.

STEM lending-equipment trucks in high demand for ‘hands-on’ science

Kara Becker named director of SwiSTEM Resource Center

Demand from K-12 teachers is high for the $300,000 worth of state-of-the-art STEM (science, technology, engineering, and mathematics) equipment available from the Southwest Indiana STEM Resource Center’s lending-equipment trucks.

Unveiled at an open house at Bosse High School on September 10, the two trucks had delivered 325 items to public, private, and parochial schools throughout the nine-county region by October 31. Staff of the SwiSTEM Resource Center conducted 11 orientation sessions involving 67 teachers from 37 schools. Sessions are planned at additional locations to familiarize teachers with the truck inventory and procedures.

The trucks are stocked with STEM resources suitable for elementary, middle school, and high school levels.

Kara Becker, named in June to direct the center, said, “This is so much fun because I get to work with teachers who are really excited about bringing new things into the classroom.”

Becker was previously an advanced placement chemistry lead teacher at Henderson County High School in Henderson, Kentucky. She also has taught chemistry on a part-time basis at Henderson Community College. She holds a bachelor’s degree in chemistry and recombinant genetics and a master’s degree in education from Western Kentucky University. She was American Chemical Society Southeast Region Teacher of the Year in 2008.

Becky Schnur, a third-grade teacher at St. John Catholic School in Newburgh, Indiana, attended a truck orientation session at her school.

She said, “We used the Micro Slide Viewers to observe microscopic plants, and it was a great learning experience. Kara was helpful with instruction and delivery. It was easy to work with the STEM truck, and I plan to borrow the Vernier probes. I want ‘hands-on’ science for my students, and the STEM truck helps me to do just that.”

Alison Grabert is science coordinator for the resource center. Two Pott College faculty members assumed responsibilities with the center in October in addition to their teaching duties. David J. Ellert, instructor in engineering, is coordinator of engineering outreach. Dr. Doris J. Mohr, assistant professor of mathematics, is coordinator of math outreach.

Check the SwiSTEM Resource Center web site for a truck inventory, patron forms, workshop schedule, and other information.

www.swistem.org
First actuarial track graduate
Wendi Conwell ’09, mathematics, has accepted a position as actuary analyst with the senior products segment of Humana Inc. in Louisville, Kentucky. Conwell is the first graduate in the actuarial track of the Pott College’s mathematics major. She earned an associate degree at Lincoln Trail College in Robinson, Illinois, in 2001 and joined Toyota Motor Manufacturing Indiana in Princeton, Indiana, in 2003 as a paint production team member. She enrolled at USI to complete a bachelor’s degree in fall 2006. Originally from Oklahoma, Conwell is a member of the U.S. Air Force Reserve.

Graduates earning doctorates
Phil Bauer ’97, chemistry, has completed a doctorate in inorganic chemistry at the University of Louisville.
Greg Schilling ’02, chemistry, completed a doctorate in analytical chemistry at Indiana University in July. He is an analytical chemist in the Research and Development Department of LECO Corporation in St. Joseph, Michigan.
Walter Jermakowicz ’03, biology, chemistry, and German, completed a doctorate in neuroscience at Vanderbilt University in July. He continues at Vanderbilt, working toward a Doctor of Medicine degree.
Misty Rowe ’03, chemistry, completed a doctorate in applied chemistry at Colorado School of Mines in 2008. She is a post-doctoral fellow in the Boyes Research Group at Colorado School of Mines and is cofounder of the startup company, TheragNos, which develops targeted imaging agents for the treatment of cancer.

Around the college
Ken Schnautz interns at NASA’s Glenn Research Center
Kenneth W. Schnautz, a junior engineering major, completed an internship during fall semester at the National Aeronautics and Space Administration’s Glenn Research Center in Cleveland, Ohio.
Schnautz’ project was related to soil mechanics and granular physics. He performed much of his work in the SLOPE (Simulated Lunar Operations) facility, which contains simulated lunar soil (called GRC3) in large “sandbox- es.”
“My main task is to determine a method of characterizing a 2 meter by 6 meter soil bin filled with GRC3. It’s a very cohesive sand-silt mixture with high silica content, so I use a respirator when performing excavations in the soil,” he said in the early weeks of the internship.
Schnautz was the first person to use the NASA facility’s new $8,000 electrical density gauge. “My task right now is to calibrate the unit so we can determine the densities of any given sample of GRC3,” he said.
During the 15-week internship, Schnautz also worked on a project involving cone penetrometry.
“I love working at NASA,” Schnautz said. “While it’s not directly related to my studies at USI, it allows me to use the problem-solving skills we have learned in every science class since eighth grade.”
The 15-week internship began August 31. His participation was funded by the District of Columbia Space Grant Consortium, one of 52 members of a national network involving universities and organizations in every state.

Six B/MD graduates enroll in IU School of Medicine
The 2009 graduates who held Baccalaureate/Doctor of Medicine scholarships have begun medical school. The six B/MD scholars attend five different campuses of Indiana University School of Medicine (IUSM).
• Priyanka Arshananpalli, biology, IUSM-Northwest
• Sandeep Gurram, biology, IUSM-Bloomington
• Heather Keefer, biophysics, IUSM-Terre Haute
• Nathan Oakley, biology, IUSM-Evansville
• Sarah E. O’Donoghue, biology, IUSM-West Lafayette
• Priscilla Walker, food and nutrition, IUSM-Bloomington
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To learn more, visit www.usi.edu/giving.

Lauren Raikes named student trustee

Lauren K. Raikes is the student trustee recently appointed to the University of Southern Indiana Board of Trustees by Governor Mitch Daniels. A biology major with an emphasis in optometry, Raikes will serve a two-year term.

She holds the James J. and Sally H. Giancola Endowed Presidential Scholarship at USI and carries a 4.0 grade point average. She is a member of the Honors Program and serves as a student ambassador and a member of the Pott College of Science and Engineering Advisory Board. She is a member of the Pre-Professional Health Club and was a participant in the USI Honors Symposium.

Raikes plans to graduate in May 2011. She is from Speedway, Indiana.

Kalvelage receives Cooper Award

Barbara Kalvelage is the 2009 recipient of the University Core Curriculum’s H. Lee Cooper Teaching Award, presented annually to a faculty member who is especially creative in furthering UCC goals. As the award winner, she will deliver a presentation to the University community during this academic year.

Kalvelage, instructor in biology, teaches the Core course BIOL 105: Biology of Human Concern. Most of her students are non-science majors, who often approach science classes with fear and trepidation, and she uses an unconventional but effective approach to help them succeed.

Her rap starts on the first day of class and continues through the last. She raps about the elements, the reproductive system, anatomy, or the lecture topic of the day. She also is known for making excellent use of visual aids. In a demonstration of her own creation, she uses students, hula hoops, Tic Tacs, golf balls, and fish bowls to demonstrate how atoms bond and form molecules.

The Cooper Award is named in honor of H. Lee Cooper, longtime friend and supporter of USI.

Faculty, students participate in coalbed methane project

Faculty and students have taken part in a project with Evansville’s Energy Systems Group, which drilled cores on campus to a depth of 750 feet during exploration for coalbed methane. The gas found in coal deposits, coalbed methane has become an increasingly valuable part of the nation’s energy portfolio.

Dr. Kent W. Scheller, associate professor of physics, studied the cores to determine the presence and quantity of radon gas in the area. Radon, a radioactive gas that results from the decay of uranium and thorium in the earth’s crust, is considered to be the second leading cause of lung cancer in the United States. Scheller presented preliminary results at the 2009 annual meeting of the Geological Society of America in Portland, Oregon.

Energy Systems Group hired geology students Clint Broach and Chris Grathler to work on the project. Dr. James M. Durbin, associate professor of geology, was faculty liaison.
**Calendar of events**

**March 11-12**  
Pott Foundation Tri-State Science and Engineering Fair  
For students in grades 4-12; www.usi.edu/science/fair/

**April 8**  
USI Endeavor Undergraduate Research and Creative Works Symposium  
www.usi.edu/endeavor

**April 9**  
Project Lead the Way Spring Conference  
USI Lego Competition  
Contact Dave Ellert, djellert@usi.edu for information on either event.

**April 24**  
Indiana State Math Contest and Math-O-Rama  
Students from Dubois, Posey, Spencer, Vanderburgh, Warrick, and Dubois counties compete for local and state awards. The Math-O-Rama, a fast and fun competition with students competing in pairs, follows the 90-minute exam.

**May 9**  
USI Spring Commencement

**June 6-9**  
GO STEM! Camp NEW for Girls Only!  
(See page 1.)

**July 30-August 6**  
Tropical biology field study, Ambergris Cay, Belize  
Led by Dr. Brent Summers, assistant professor of biology