

Fall 2012



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ON THE COVER



Meredith Petrie, Ph.D. candidate in geoscience, stands in the Saint Cyr range, a remote mountain range in the Canadian Yukon. She researches tectonic plate activity to glean information from shifts in the Earth's crust, which yield data about mineral deposits and other resources. A Dean's Graduate Research Fellow and AGEP Scholar, Petrie appreciates the support she has garnered from the Graduate College, which helps underrepresented students and STEM field students. Photo courtesy of Meredith Petrie.

Graduate Education at Iowa

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TRAINING EFFECTIVE TEACHERS: 70 new teaching assistants participated in the UI's first TA Orientation August 16, 2012. Jean Florman (pictured above) hopes to offer several follow-up sessions during the 2012-13 academic year for those who attended. She also intends to make the day-long orientation an annual event. Florman credits UI Associate Provost for Undergraduate Education Beth Ingram for her assistance in launching the orientation. She also thanked Graduate College Deans John Keller, Dan Berkowitz and Minnetta Gardinier for their valuable perspectives on the needs of new TAs at Iowa. Photo by Tom Jorgensen, UI Creative Services.

Resources for TAs

UI offers support, in-class strategies for new teachers

Students gain better career preparation through training focused on teaching.

As a first-time teaching assistant, Jean Florman left every session of her physical anthropology class in despair.

“The class covered everything from molecular genetics to hominid evolution,” recalls Florman, director of the University of Iowa’s Center for Teaching. “I was an archaeologist, and I had never had any molecular anything. I was failing the needs of the students. I probably confused them even more than if they had been left to their own devices.”

The Center for Teaching offers a TA Orientation before the fall semester begins. At the orientation, new teaching assistants gain teaching strategies, network with fellow TAs, and learn how the UI’s Center for Teaching can help them develop their teaching skills.

The Center for Teaching, which reports to the Office of the Provost, has designed this day-long orientation to be informative, participatory, and fun for the graduate students.

The orientation provides a relaxed setting where TAs meet not only their departmental peers, but also new TAs in other disciplines. By modeling in-class teaching strategies, the orientation facilitators enable participants to experience active learning situations from a student’s point of view.

“Much like the students they teach, graduate students learn best when they are relaxed and engaged in the learning process,” says Florman. “We hope this orientation inspires them to think about how they will design their own discussion sections and courses to be more than Q&A review sessions.”

Raquel Baker agrees. Baker is a TA in rhetoric and has served as a panelist for the UI’s TA Orientation.

“Be patient with yourself,” she says. “You’re not

going to get it right the first time. You will not always be on top of your game, so forgive yourself.”

James Wetzel, a TA in physics, encouraged his fellow graduate students to rely on one another to achieve teaching success.

“Be collaborative, not competitive. You’re so much more effective if you work together instead of against each other,” Wetzel said.

The orientation introduces new graduate students to many campus resources that support excellence in teaching and student learning, including the Graduate College, the Center for Teaching/Office of the Provost, ITS-Instructional Services, the UI Libraries, the Office of Graduate Teaching Excellence, the Office of Student Life, and campus advising centers.

“I hope the new TAs who participate in a Center for Teaching orientation—either the day-long group event or individual departmental orientations—feel more confident because they have a few arrows in their teaching quivers,” Florman says. “I hope they know that teaching is valued at Iowa, and realize there are people who will support and encourage them in their teaching efforts.”

“Teaching assistants play a vital role in the lives of Iowa undergraduates, serving not only as teachers and mentors but also as role models,” Florman adds. “In many situations, they are on the ‘front lines’ of teaching, especially in large lecture courses where students may feel more at ease in their small-group discussion sections where they can interact with TAs.

“It’s important to provide new TAs with some fundamental teaching tools as well as welcome them to campus and to this new phase of their professional development.”

“Be collaborative, not competitive. You’re so much more effective if you work together.”

—Advice to new TAs from James Wetzel, physics TA

Engaging students with ease

Alumnus appreciates his UI training as a TA



COMFORTABLE IN THE CLASSROOM: Brett Coppenger

For Brett Coppenger, the classroom is not a place of anxiety or trepidation.

Teaching college students just a few years younger than himself is a source of excitement and accomplishment for this new faculty member at the University of Minnesota Duluth.

Coppenger, who earned his Ph.D. in philosophy at the University of Iowa in 2012, holds this view after gaining valuable experience as a teaching assistant at the UI.

“The Philosophy Department at the University of Iowa takes very seriously its role in preparing teaching assistants for future success,” says Coppenger, assistant professor of philosophy. “Because I was relatively new to teaching, I found the guidance of the faculty members extremely helpful. I was able to get hands-on experience teaching while still having someone there to offer advice when things weren’t going well.

“My experiences in the classroom as a TA established a sense of confidence and comfort that is essential to being a successful teacher. As a result, the transition to teaching full-time at the University of Minnesota Duluth has been very smooth.”

Teaching award

UI students and faculty noted Coppenger’s efforts to hone his teaching skills. In 2011, the UI Council on Teaching presented Coppenger with an Outstanding Teaching Assistant Award for demonstrating outstanding ability as a teacher.

Coppenger is honored to have received this recognition. “Receiving the Outstanding Teaching Assistant Award was very fulfilling,” Coppenger says. “The money that came with the award was nice, but knowing that I was having a positive influence on my

students and knowing that I was succeeding at the job I was being paid to do was what really mattered.”

In the classroom, Coppenger works to ensure that his students are interested in and engaged by the course material. He teaches an array of courses, including Theories of Knowledge, Medical Ethics, Philosophy and World Religions, and Introduction to Philosophy.

“It has been my experience that excited students are interested students; and interested students are overwhelmingly successful students,” Coppenger says. “The best way I know for generating this kind of excitement in my courses is to make obvious the enthusiasm I have for teaching the material.”

Richard Fumerton, UI professor of philosophy, mentored Coppenger on his dissertation and supervised him when he taught discussion sections of Philosophy and the Just Society. Fumerton attended several classes and noticed Coppenger’s strong classroom presence.

“Brett comes to class clearly prepared and conveys the contagious enthusiasm he has for the material he is teaching,” Fumerton says. “But he also is completely relaxed. He brings humor to the class, and has a real knack for making the students feel comfortable engaging in the give-and-take of discussion that is so essential to successful teaching of philosophy.”



FAMILY TIME: Coppenger with his wife Megan and daughter Leah at Seal Beach close to his hometown of Long Beach, Calif. Photo courtesy of Brett Coppenger.



LIFE BALANCE: Getting some exercise mountain biking the Slickrock Trail in Moab, Utah. Photo courtesy of Brett Coppenger.

Funding for dissertation

The Graduate College awarded Coppenger a Ballard and Seashore Dissertation Year Fellowship in 2011-12. This final-year fellowship is intended to help students in the social sciences and humanities complete their dissertations.

“The support I received from the Graduate College was essential to the timely completion of my degree,” Coppenger says.

“The Ballard Seashore Fellowship allowed me to focus my time and energy on completing my dissertation during my last year at the University of Iowa. In particular, I was able to use money from the fellowship to cover childcare expenses. Working on a dissertation tends to be much easier when you are not also trying to keep a two-year-old entertained.”

Researching beliefs

Coppenger’s research looks at productive ways to examine one’s beliefs. Such processes can be opportunities to scrutinize inherited beliefs, make sense of long-held beliefs, or question beliefs that can no longer be justified.

While we might examine a belief in order to decide whether it’s either true or false, Coppenger encourages us to seek and consider both the justifiable and unjustifiable aspects of that belief.

Given situations in which our beliefs drive our actions and choices, a careful, balanced analysis of those beliefs can help us make better decisions. “As a result, one might hope for an analysis of justified belief that can be both intellectually satisfying (one that holds up to philosophical scrutiny) and capable of making sense of many of our commonsensical beliefs (one that avoids skepticism),” Coppenger says.

“The account of justification developed in my dissertation is able to deliver both of these goals. If I am right, then we can make sense of how many of our commonsensical beliefs are in fact justified while also taking skeptical arguments seriously.”

In his current research, Coppenger continues to focus on the practical implications of justifying belief in our daily lives. He uses a variety of tools to examine these issues, including epistemology (the study of knowledge), modern philosophy, and the philosophy of religion.

The joy of teaching

Overseas teaching enriches Ph.D. alumnus

James Lambert could have been completely overwhelmed his first day teaching at the American University of Kuwait.

Arriving in Kuwait City one week before classes began this fall, Lambert was given no information on what he would be teaching. Fortunately, he was able to draw on his experience as a teaching assistant at the UI.

“For me, having been a TA meant I could start teaching with a full syllabus, plan, text, and confidence,” Lambert says. “That, to me, is the most amazing part of the University of Iowa’s training.”

After earning his Ph.D. in English in May 2012, Lambert navigated the challenging humanities job market and landed a tenure-track faculty position in English at this private liberal arts university of 2,100 students, located on the shore of the Persian Gulf in the Middle East.

“It is true that these jobs aren’t easy to come by, but if you are willing to go overseas and help out an international university, your options increase,” Lambert says.

Outreach work

While at Iowa, Lambert held a one-year graduate fellowship from the Obermann Center for Advanced Studies. The outreach work he completed that year was valuable professional development, increasing his worth to potential employers.

For his Obermann Fellowship project, Lambert created a service-learning literature course focused on affective joy and how it manifests in poetry. The course he designed gave students opportunities to perform poetry and other literary works in public libraries and at the Iowa Children’s Museum.

Teaching this course “actually opened the most doors for me professionally,” Lambert says. “I got asked about the class I taught in conjunction with the Iowa Children’s Museum more than any other course or research project I had, and that all came from the execution of ideas from the Obermann Fellowship.”

Lambert’s doctoral research examines the expression of religious joy in Renaissance England, telling the story of how the act of rejoicing through hymns, psalms, poetry, and private



NO SMALL FEAT: Lambert and his entire family have relocated to Kuwait. Pictured here are his daughter, Maria (8), Calvin (3), and Henry (6). His wife, Kathryn is behind the camera, taking this photo as the family faces the ocean. This location is just a block away from the university. Photo courtesy of James Lambert.

spiritual writing formed a new kind of expression that combined the ineffable sense of the sacred with a controlled loyalty to the state church.

“My dissertation offers a method for finding authentic joy in religious discourse, a practice that is often overlooked in academia and in religious communities,” Lambert says. “Looking for joy is always good. We don’t have to be surprised by joy to find it; we just have to be generous enough to allow it

to appear and to allow it to be authentic.”

Early impressions of Kuwait

Lambert likes shawarma—thinly sliced cuts of meat rolled into a large piece of flatbread or pita that has been steamed or heated. He also realizes that Mountain Dew tastes better in the United States.

Academically-speaking, Lambert challenges popular opinion about university students in Kuwait. “Most of our students are guaranteed good jobs out of college, which is part of being a Kuwaiti citizen. Some say this makes the students unmotivated and disengaged,” Lambert says. “I have observed the exact opposite, at least in the humanities classes. Because there is not a job market at stake, my students can approach learning for the sake of learning, which is the function of a liberal arts education in the first place. This has made some of my classes, particularly the literature classes, very satisfying.”

The university boasts an international faculty with first-hand experience in the American style of higher education. Of the 117 faculty, 78 hold Ph.D.s or terminal degrees.

Lambert says Kuwait is ready for an influx of higher education institutions. Adjustments, sensitivity, and patience will be important parts of the transition. “Placing an American-style institution, when it is not an oil business, in a context that is wholly unique is going to be tricky,” he says.

“A delightful story: everyone calls me Dr. James or Professor James. That is the standard—title and first name. I enjoy it.”

Prize-winning research

The 2012 Spriestersbach Dissertation Prize Winners

Jacob Elkins and Fabian Soto have each earned top recognition from the University of Iowa's Graduate College for excellence in doctoral research.

The 2012 D.C. Spriestersbach Dissertation Prize in mathematics/physical sciences/engineering was awarded to Elkins, a student in the UI's M.D./Ph.D. Program in Biomedical Engineering. Soto, who earned his Ph.D. in psychology in 2011, received the Spriestersbach Dissertation Prize in social sciences.

The students were nominated by members of their dissertation committee and will be honored during a ceremony in April 2013.

The Spriestersbach Prize is named for Duane C. Spriestersbach, who served as Graduate College dean from 1965 to 1989. When the prize was founded over 30 years ago, Spriestersbach hoped it would “serve as tangible evidence—as ‘gold standards’—of the outstanding work of which graduate students are capable and to which all others should aspire.”

Winners of the Spriestersbach Prize are the UI's nominees for the Council of Graduate Schools (CGS)/University Microfilms International (UMI) Distinguished Dissertation Award. This national award is the most prestigious dissertation prize in the country.

Iowa has had five national winners, more than any public institution. Twelve more Iowa nominees have been finalists in the national competition.



D.C. Spriestersbach, Graduate College Dean 1965-1989

Jacob Elkins

Spriestersbach Dissertation Prize Winner in mathematics/physical sciences/engineering

Jacob Elkins developed the first computational model that simulates the hip dislocation process as it actually occurs in the human body. It took Elkins a year and a half to develop the model, which became the centerpiece of his doctoral dissertation. Elkins' research has garnered much interest, resulting in eight published/accepted papers and thirty-five conference presentations.

"This prize validates the hard work, and I am proud of it," says Elkins, who satisfied his Ph.D. requirements in January 2012 and will complete his M.D. in May 2013. "To be recognized for this research motivates me to do it better."

Elkins' dissertation, "Biomechanics of Failure Modalities in Total Hip Arthroplasty," details his research on the failure of total hip implants due to impingement and/or dislocation.

"Jake's dissertation research has broken new ground in the area of computational biomechanics and finite-element modeling as applied to orthopaedics," says Joseph Reinhardt, professor of biomedical engineering and member of Elkins' dissertation review committee. "His dissertation will have a lasting impact on how medical implants are designed and how we treat patients with orthopaedic disorders."

The first portion of Elkins' thesis outlines the overall model formulation, with particular emphasis on the hip capsule—a thick jacket of ligamentous tissue that surrounds the joint.

"He kept getting slapped down by the algorithm for the model and he kept bouncing back up," says Thomas Brown, Richard and Janice Johnston Chair of Orthopaedic Biomechanics and Elkins' dissertation



Jacob Elkins. Photo by Miranda Meyer, UI Photo Services.

advisor. "I really love the guy's perseverance. He is a warrior. His capsule model isn't something for the faint-hearted. From a biomechanics standpoint, it's been so difficult to quantify."

The second section focuses on implant problems that occur due to impingement, which is caused by a lack of room or clearance between the neck of the femur and the rim of the hip socket. This work has several potential applications, including solutions for impingement problems that occur in metal-on-metal implant designs, currently a pressing clinical concern due to large numbers of early failures of this class of implants.

Elkins' dissertation also describes fractures that can occur in ceramic total hip implant designs, which serve as an alternate to metal-on-polyethylene and metal-on-metal bearings. Ceramic implant fractures are rare, but when they happen, the result is disastrous. Elkins approaches this issue computationally, since many ceramic fractures occur due to impingement.

"My favorite part of his dissertation is the fracture work," Brown says. "To simulate that computationally, which is very desirable from a design standpoint, was a bear. Jake picked that up beautifully."

Fabian Soto

Spriestersbach Dissertation Prize Winner in social sciences

Fabian Soto's faculty mentor calls Soto "the graduate student of one's career." Soto devised an innovative application of two highly-influential psychological theories to explain how organisms (animals and humans) categorize their surroundings and their interactions with those surroundings. Such mental processes form the basis of adaptive skills that are essential for surviving in a complex and ever-changing world.

Soto, a native of Chile, published a portion of his dissertation in *Psychological Review*, the flagship journal of the American Psychological Association (APA). Soto also received the New Investigator Award from the APA's Division of Experimental Psychology.

About winning the Spriestersbach Prize, Soto says, "This is a nice surprise and will have a very great impact on my career."

"Fabian has the widest range of highly developed skills I've ever seen in a graduate student," says Edward Wasserman, Stuit Professor of Experimental Psychology and Soto's dissertation advisor. "He's a theoretician, he's a mathematical psychologist, he's a computer modeler, and he's a fine experimentalist. You usually don't get all those things in one person."

Soto's dissertation, "Developing and Testing a Common

Elements Theory of Object Categorization Learning by Pigeons," examines ways in which animals categorize objects. Categorization is considered a foundation of basic learning processes that help animals—pigeons and humans alike—make sense of the world.

Soto worked with pigeons and humans to arrive at his findings. His research results speak directly to matters related to human mental processing, allowing a closer approach to questions such as, "How do we form categories and distinguish one from another? What makes some categories more readily distinguishable? How do we extend what we learn about members of one category to new examples?"

"This research is important because categorization underlies virtually all complex cognition and perception—from speech perception to attention to decision making," says Bob McMurray, UI associate professor of psychology and member of Soto's dissertation review committee. "This is difficult because with complex categories, like cars and flowers, we don't even know what the relevant perceptual features are. Fabian takes a very interdisciplinary perspective to this problem, combining work with animals, humans, and computational models."

In tests with both humans and pigeons, Soto found that both learn more from their experiences with objects by making incorrect predictions. Soto's theory asserts that prediction errors are necessary for category learning to happen.

"When learning is error driven, it's a gradual form of learning," says Soto, who received a Graduate College Summer Fellowship in 2009. "How much you learn when you make a mistake depends on how different your predictions are from what actually happens. The farther your expectations are from the truth when you make the error, the more you learn."



Fabian Soto, left, with faculty mentor Ed Wasserman. Photo by Tom Jorgensen, UI Creative Services.



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**limb up,
dig deep**

Rugged terrain worth investigating



A Ph.D. student in a STEM field takes on shifts in the earth's crust as well as shifts in academic diversity.

Despite getting good grades in high school, Meredith Petrie was terrified of science. However, Petrie didn't sell herself short as an undergraduate, deciding to pursue an academic career in a STEM field. She took a chance and tackled the math that provided a foundation for her doctoral program.

"As an undergrad, I went for the 'scary' math and I didn't bomb it," says Petrie, a Ph.D. candidate in the University of Iowa's Department of Geosciences. "I worked really hard, and once you get past the math, you get into the fun grit that is geology. The best part about geology is it is hands on. You get to touch, taste, smell, and see what you're working with."

Looking at the Earth's crust to learn its deeper secrets

Petrie studies tectonic plate activity in the St. Cyr area, a high-pressure terrain within the Canadian Cordillera mountain belt in the Yukon Territory, Canada. She studies metamorphic rocks, which make up a large part of the Earth's crust.

"These rocks are one of the tools we use to understand the processes that happen deep in the earth," Petrie says. "We use what's on the surface to extrapolate what's going on deep in the earth. It's important to understand the basic processes of the earth in order to utilize the earth the best way that we can."

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LIFE IN THE FIELD: Camp at midnight atop the Canadian Cordillera mountain belt in the Yukon territory. Photo courtesy of Meredith Petrie.

Such knowledge helps researchers maximize land and resource use. For example, tectonic research like Petrie's can help predict the locations of mineral deposits without disruptive or unnecessary excavation.

"If we can't understand the basic principles of what's going on in tectonics and in the evolution of the crust, how are we going to understand the best way to extrapolate oil out of shale," Petrie says, "or the best way to delineate where that oil is?"

Support from the Graduate College

Petrie is grateful to be funded by the Graduate College, through a Dean's Graduate Research Fellowship and as an AGEP Scholar.

The AGEP Program seeks to increase the number of Ph.D. degrees awarded to underrepresented U.S. students in science, technology, engineering, and math, which are known as the STEM fields.

"The funding from the Dean's Fellowship helps with my living expenses, and the extra money I get as an AGEP Scholar helps fund textbooks and any field equipment I might need," says Petrie, who is part Puerto Rican.

Petrie and other underrepresented graduate students turn to the Graduate College's Office of Graduate Inclusion (OGI) for support. OGI strives to build an inclusive and welcoming community for all underrepresented students.

"OGI and the Graduate College, in serving underrepresented students, create a bridge between their academic

learning experiences and the workforce," says Tarrell Portman, Graduate College assistant dean and director of the Office of Graduate Inclusion. "We help supplement graduate students' funding through our fellowships. These fellowships, in partnership with support from their departments, help the students succeed in a timely matter with less stress and worry about the financial side of things.

"We also provide employers with talented minority candidates who are trained very well in a rigorous environment," notes Portman.

In addition to the academic and career development support it provides, OGI offers personal and social support for students who may be experiencing the normal joys, stresses, or worries in the midst of their academic progress.

“It’s been extremely huge, in the community sense, to have Dr. Tarrell Portman as a mentor,” Petrie says. “I see what she’s done to come from her background and get a Ph.D. She’s so supportive of everything that we do. It’s really nice to have that extra support.”

Inspiring others

Petrie does her best to pay the support forward, exposing students to the exciting world of geoscience. She serves as the American Association of Petroleum Geologists (AAPG) Student Chapter President at the UI.

“We want the AAPG group to include any undergraduate or graduate student who is interested in a geoscience career,” Petrie says. “We invite speakers from economic geology to the oil business to environmental consulting. This club gives you an idea of what to do after you graduate.”

In 2011, Petrie received the Minority Award from the Geological Society of America for promoting and supporting minority students in the geosciences.

“Everybody from every background brings different perspectives and views,” Petrie says. “Those are people who challenge the old way of doing things. That’s why it’s really important to include minority students.”



ROCKS THAT TELL THE TALES OF DEEP WITHIN THE EARTH: A close-up of eclogite, the type of rock Meredith Petrie studies. Eclogite is a rare type of metamorphic rock formed at pressures greater than those typically found inside the Earth’s crust. Because Eclogite is formed deep within the planet and then thrust to the surface, geoscientists study them to learn about patterns and processes of plate tectonics. The green color is a mineral called clinopyroxene, and the pink dots are garnets. The black material is lichen and moss. The Canadian 2 dollar “toonie” provides scale. Photo courtesy of Meredith Petrie.



METAMORPHIC SEDIMENTS: Sediments that once lay in flat deposits have been metamorphosed deeper in the Earth's crust and then pushed upward. Many, like this one, now stand upright. The sample is pictured here with a backpack for scale. The team's helicopter is in the background. Air travel is often the only way to access some of the remote locations geoscientists study. Photo courtesy of Meredith Petrie.

By 2018, the state of Iowa will need to fill 72,000 STEM-related jobs, with 68 percent of those occupations projected to require a bachelor's degree or higher.

The importance of STEM education

The STEM fields—science, technology, engineering, and mathematics—are essential to helping generate jobs and economic prosperity in the state of Iowa and across the nation.

According to the Georgetown University Center on Education and the workforce publication *Help Wanted: Projections of Jobs and Education Requirements Through 2018*, the state of Iowa will need to fill 72,000 STEM-related jobs by 2018, with 68 percent of those occupations projected to require a bachelor's degree or higher.

Will many of these high-demand jobs go unfilled? A gap currently exists between the number of available jobs and those people qualified for such positions.

“At every business (on our tour), there are unfilled positions, and the business people are just having a hard time finding the workforce with the skill set,” Iowa Lt. Gov. Kim Reynolds said Aug. 23 in Tipton during one of a series of education reform town hall meetings across the state initiated by the governor's office.

The UI Graduate College closes this gap with funding and support for students pursuing STEM fields. Meredith Petrie, a Ph.D. candidate in geoscience, garnered funding from the Graduate College through its Dean's Graduate Research Fellowship and as an AGEP (Alliance for Graduate Education and the Professoriate) Scholar.

Three other UI Dean's Graduate Research Fellows are also AGEP Scholars: Veronica Wills (chemistry), Leyda Almodovar (mathematics), and Marcos Ortiz (mathematics).

Sustainable Iowa

Iowa Initiative for Sustainable Communities (IISC) launches a new statewide, campus wide effort.

Just a generation ago, hometown Iowa had a different look and feel. Today, many Iowa communities, both large and small, search for ways to regain and sustain vibrancy.

Common struggles include declining employment opportunities, fewer family farms, and susceptibility to flooding and other extreme weather. For some towns, decreases in population make it harder to fund and staff basic services like schools, hospitals, and libraries.

In response, the UI's Iowa Initiative for Sustainable Communities (IISC) has launched a new effort to assist Iowa municipalities with long-term sustainability projects. Broad in scope, these collaborative projects will encompass economic, environmental, social, and cultural needs of Iowa communities.

Since 2009, the IISC—the civic engagement branch of the School of Urban and Regional Planning—has joined with communities to identify, design, and implement sustainability-focused planning projects. Graduate students in the master's program in planning have worked directly with partners in eight Iowa communities: Anamosa, Burlington, Charles City, Columbus Junction, Decorah, Dubuque, Oskaloosa, and Wellman.

Now the IISC will serve as the hub for campus-wide civic engagement initiatives in Iowa, including towns in central and western portions of the state. Projects stemming from IISC will bolster the state's sustainability goals.

“The governor and I have set ambitious goals of creating 200,000 new jobs and reducing the size of government by 15 percent. The IISC program is a great economic and environmental tool for communities and businesses to increase their vibrancy in local economic growth,” said Iowa Lieutenant Governor Kim Reynolds in a statement.

Expanding the IISC's work to include campus-wide expertise is made possible through funding from the University of Iowa's strategic initiative *Better Futures for Iowans*, which selectively funds UI outreach projects that improve the life of Iowans.

“The Iowa Initiative for Sustainable Communities is an exciting project that will tap resources across the UI campus. We are hopeful that the program will continue to grow

**The UI's
strategic
initiative,
“Better Futures
for Iowans,”
will fund the
IISC's efforts.**

Executive summaries of
research results from
the IISC's five 2011-2012
sustainability projects
with the City of Dubuque.





Charles Connerly, director, School of Urban & Regional Planning



Nick Benson, IISC program coordinator

“The IISC program is a great economic and environmental tool for communities and businesses to increase their vibrancy in local economic growth.”

—Iowa Lieutenant Governor Kim Reynolds

involving all colleges, thus providing an excellent learning experience benefiting students, local communities, and our faculty,” says Chet Rzonca, Associate Provost and Dean of Continuing Education and administrator of the Better Futures for Iowans initiative.

“The IISC’s work serves as both a sustainability effort and a civic engagement effort on behalf of the university,” says Nick Benson, program coordinator of the IISC. “Not only are we enhancing the ability of Iowa communities to become more sustainable, but we are also encouraging UI students and faculty to take their studies and their research beyond the university and really make a difference in communities across Iowa.”

Benson, who holds both a master’s in urban planning and a law degree from the UI, envisions working with many UI programs to match university expertise with specific needs in Iowa towns.

“Art and art history, business, education, engineering, Hancher, journalism, law, public health—these are just a few of the UI departments that could contribute, because sustainability includes economic, environmental, social/cultural issues. You can’t get at that comprehensive triangle without a campus-wide initiative,” says Benson.

The IISC worked extensively with the City of Dubuque for the past year. Those projects will serve as templates to forge similar collaborations with other Iowa communities. “This is an opportunity for the IISC to build on its successes in Dubuque, where our students conducted five sustainability studies that yielded specific, practical recommendations for the city’s next steps toward sustainability,” says Charles Connerly, director of the School of Urban and Regional Planning.

Work in Dubuque will continue this academic year, with plans to involve faculty and students from other UI programs of study. “This partnership with the University of Iowa is going to pay big dividends for the City of Dubuque. Given our positive experience with the School of Urban and Regional Planning last

year, we have full confidence that expanding the scope of our work to include other colleges and departments will yield great rewards,” says Roy Buol, Mayor of the City of Dubuque.

To expand the IISC’s collaborations across Iowa, Benson plans to find additional community partners. “As our work in Dubuque continues, we’ll be able to connect with other communities that will be able to benefit, as well.”

Taking a holistic view of community, the IISC will seek connections not only with city governments, but also with organizations that serve Iowans. Benson explains, “As the IISC expands, we are looking at connecting with non-profits, companies, and other entities in the communities that may not be confined by the boundaries of the community itself.”

The IISC presented its new initiative at the Iowa American Planning Association Conference in November. The School of Urban and Regional Planning, part of the Graduate College, will continue to oversee the IISC’s efforts, helping to guide campus collaborations with Iowa municipalities.



Taylor Newton (right), a graduate student in the field problems in planning course at the University of Iowa, talks with Anamosa City Administrator Patrick Callahan after a meeting Oct. 13, 2009 between graduate students and community members at the Anamosa Public Library. (Jim Slosiarek/The Gazette)

Water

Postdoctoral scholar analyzes the M

The Mississippi River—a defining geographic feature in North America—serves as a vital transportation corridor for much of the United States and provides drinking water for those living along its banks.

A river in trouble

Significant changes in the river jeopardize its future. Excess plant nutrients and sediment reach the river and travel to the Gulf of Mexico, resulting in algae and other plant overgrowth that can choke delicate ecosystems. Other problems include invasive species such as Asian carp and zebra mussels.

Over time, these problems have begun to alter the river's navigation routes and drinking water quality. To save the largest river on the continent, researchers must learn more about the Mississippi River's complex ecosystems and our human impact on them.

UI research site

To study these issues, researchers gather at the UP's Lucille A. Carver Mississippi Riverside Environmental Research Station (LACMRERS), located near Muscatine, Iowa. This facility provides access to the Upper Mississippi River, stretching from St. Paul, Minn., to Cairo, Ill.



FIELD WORK: Postdoctoral research scholar Carrie Davis shows a visiting Chinese student instruments used to test water quality.

The Iowa Institute of Hydraulic Research (IHR) Hydroscience and Engineering, a unit of the University of Iowa's College of Engineering, operates the research station.

IHR postdoctoral research scholar Caroline (Carrie) Davis, a Cedar Rapids native, is based at LACMRERS.

“There is so much work to be done research-wise on the Mississippi,” says Davis, who works for Doug Schnoebelen, director of LACMRERS. “The fact that we’re able to operate a state-of-the-art station with all kinds of water quality equipment, sediment analysis equipment, and research space, is so important because we can bring University of Iowa researchers and students to do collaborative research on-site at the Mississippi.”

Davis operates real-time water quality sensors in the Lower Iowa River and Lake Odessa. The Iowa River joins the Mississippi River near Wapello, Iowa, while Lake Odessa is a backwater lake in Iowa's Louisa County with water levels that fluctuate with the Mississippi.

“Carrie has been doing the heavy lifting in getting 12 real-time water quality sensors out in the Lower Iowa/Cedar River, Mississippi River, and Lake Odessa,” Schnoebelen says. “The sensors will give us a unique opportunity to

Quality

Mississippi

study the Mississippi River and tributary streams in a new way for water quality fate and nutrient transport. This research has many practical applications for agricultural stewardship and sustainability in Iowa and the Upper Mississippi River.”

What’s in the water?

The sensors at Lake Odessa collect data every 20 minutes, measuring nitrate, turbidity, dissolved oxygen, pH, temperature, and specific conductance. Specific conductance is a measure of water’s ability to conduct an electrical current, which depends on the amount of dissolved solids in the water.

Nitrate, a naturally occurring form of nitrogen found in soil, is of particular interest. Nitrogen is essential to all life, and most crop plants require large quantities to sustain high yields.

The formation of nitrates is an integral part of our environment’s nitrogen cycle. In moderate amounts, nitrate is a harmless constituent of food and water. If people or animals drink water high in nitrate, it may cause methemoglobinemia—an unusual and potentially fatal blood disorder in which an abnormal amount of methemoglobin, a form of hemoglobin, is produced. Hemoglobin is the molecule in red blood cells that distributes oxygen to the body. Methemoglobin binds with and carries oxygen, but cannot release the oxygen to nourish the body’s cells.

Nature’s giant water filter

Initial results suggest that nitrate and water quality at Lake Odessa are less dependent on water level variations and more directly related to flow-through conditions from the river source due to inlet gate position.

“We have real-time monitors set up throughout Lake Odessa and we see as water goes from the Mississippi into the lake that the nitrate levels go from pretty high to nothing,” Davis says. “We’re able to say that this backwater system processes nitrate very well, so we’re able to take this information and suggest that this type of system be put in different environments along other sections of the Mississippi River.”

Watching the watershed during drought

With sensors in place, the researchers are set to monitor the effects of weather patterns, such as recent drought conditions. “We’re looking at how nitrate and nutrients are transported from

the site where the farmer applies the fertilizer to the surface water stream and onto the Mississippi,” Davis says. “That’s what we’re trying to figure out right now—fate and transport of nitrate.”

The lack of rain means Davis and her colleagues must wait for the data.

“We have very low nitrate in Clear Creek, the Iowa River, and even the Mississippi River,” Davis says. “What happens when we get that rainfall? Nitrate is just sitting there in the ground waiting to be washed into the surface water system and out to the Mississippi and to the Gulf of Mexico.

Davis says her position as a postdoctoral research scholar is the perfect next step in her career. Prior to working at LACMRERS, she was a contract geologist for the Iowa Geological and Water Survey at the UI’s Oakdale Campus. Davis also earned a master’s degree in geology at Fort Hays State and a Ph.D. in geophysics at Missouri-Rolla.

“At the Iowa Geological and Water Survey, I started learning more about nitrates, water quality, and nutrient monitoring,” Davis says. “When that contract ended, I found the postdoc position at LACMRERS. It was a perfect opportunity to continue with water quality and environmental research in Iowa.”



ON THE WATER: Carrie Davis and a colleague conduct water quality tests.



TEST SITE: UI equipment at the Lake Odessa field site.

Watch a video of Davis explaining how research at IHR enhances our understanding of water quality and nitrate dynamics in Iowa.





DEAN'S FELLOWS COLLABORATE: Derrais Carter (left) and Nicholas Yanes, both Dean's Graduate Research Fellows, on the steps of the Old Capitol on the University of Iowa campus. Carter and Yanes are co-editors of a book of essays about Obama published this fall by McFarland & Company, Inc.

As the 44th President of the United States, Barack Obama has become an icon of the times—a lens through which people worldwide interpret the politics, art, comics, and music in their lives.

To examine this cultural phenomenon, University of Iowa graduate students Nicholas Yanes and Derrais Carter compiled and edited essays and interviews for *The Iconic Obama, 2007-2009: Essays on Media Representations of the Candidate and New President*, published this fall by McFarland & Company, Inc.

The book presents a series of viewpoints that explore the widespread enthusiasm associated with Obama and the resulting implications for the study of popular culture. The essays in this collection focus on the buildup to the 2008 election, as well as Obama's first year as president. The contributors represent a variety of scholarly viewpoints, each adding a unique perspective on Obama's relationship to popular culture.

"The book is about understanding the capacity of people to create and unleash their own interpretations of our leaders," says Carter, a Ph.D. student in American studies and a Dean's Graduate Research Fellow. "There is no single way to represent them. We do it through different lenses."

The co-editors see this book as a reflection of our society's tendency to discuss and characterize political leaders in newspapers, on television, and on the Internet. This type of analysis carries over to other media studies, including music, film, and comic books.

Yanes says the image of the country's first black president is inescapable. The idea for this book is an example.

Pop Culture

“The book was inspired by my niece, who was five at the time,” says Yanes, who is also a Ph.D. student in American studies and a Dean’s Graduate Research Fellow.

“She told me

there’s a new candidate and she wanted me to vote for him. I thought there must be something unique about how Obama influences public rhetoric.”

For Yanes, collecting the essays served as an insightful reminder of the world’s interconnectedness.

“People around the world are borrowing our cultural tropes, but redeploying them in unique ways,” Yanes says. “In the United States, we had the Obama Girl phenomenon with the YouTube video of the girl singing, ‘I have a crush on Obama.’ In Japan, they had the Obama Girls, which was a group of women who supported Obama and encouraged people to support Obama.”

The book offers no commentary on Obama’s political agenda, instead emphasizing the possibilities his campaign has created both in the United States and abroad. This project’s overarching argument is that President Obama’s campaign and transition into

“The book is about understanding the capacity of people to create and unleash their own interpretations of our leaders.”

the White House has carved a space in which activists, politicians, fans, and artists can converge, using Obama’s image to represent their respective ideologies.

“We are interested in how people work through his image. Our intent is not to say we’re pro or anti Obama,” Carter says. “We’re more interested in how people make meaning of Obama. That’s the more

interesting narrative we’re building with this project.”

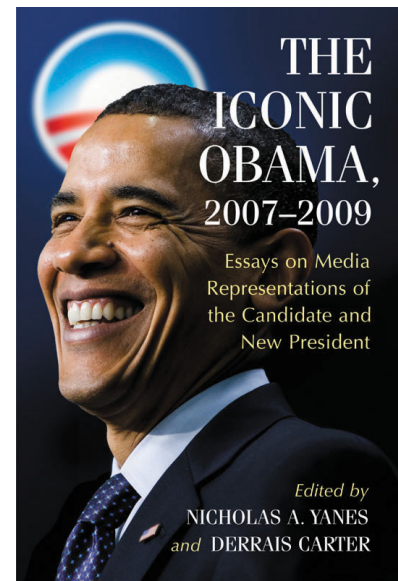
Carter especially enjoyed Travis Gosa’s essay, “The Audacity of Dope”: Rap Music, Race, and the Obama Presidency.

“Travis has this approachable way of writing that helps us understand how the politics of rap and rap music are connected to political ideologies,” Carter says. “He’s not saying all rap is political, but he’s saying it’s important for us to understand that some of these artists are also making meaning of Obama’s presence.”

Yanes and Carter’s collaborators for this project include national and international contributors. University of Iowa contributors include doctoral students Rauf Arif, James Carviou, Robert Gutsche, and Etse Sikanku (all journalism and mass communication), and Patrick Oray (American studies). Graduate College Associate Dean Dan Berkowitz also was interviewed about

how to understand Obama’s election news coverage.

In the aftermath of the 2012 election, additional representations of Obama will proliferate as he enters his second term. All the while, Obama supporters, critics, and analysts will remix the image of the United States’ first black president.



THROUGH A WIDE-ANGLE LENS: This collection of essays (available at amazon.com) gives readers a broad look at pop culture in politics. The essays appear in six sections:

- **Forging a Brand:** Introducing Obama-Mania
- **Film and Television:** Televised Change
- **Hip-Hop Culture:** Remixed Response to Obama’s Popularity
- **Comic Books:** Obama’s Popularity and the Original Superhero Medium
- **News Media and New Media:** The Impact of Presidential News Politics and Digital Social Networks
- **International Responses:** Obama’s Popularity Goes Global

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