Introduction

This is a special time for Utah State University. The year 2007 portends a bright and promising future for Utah’s land-grant university.

We are grateful to the many donors for the unprecedented generosity during this first year of our comprehensive fund-raising campaign. These gifts reflect tremendous confidence in Utah State University as a top research university with an exciting and solid future.

You will see in this booklet a reflection of some of the great work being done at USU. You will see how our students, both undergraduate and graduate, benefit through hands-on learning.

You will see how educational opportunities are now more accessible to our students than ever before in the history of USU.

These are the stories of Utah State University. They reflect who we are, the strides we are making, and the tremendous reach and impact of USU throughout the world. I am confident that after reading through these stories you will better understand what I mean when I say that this is, indeed, a very special time for Utah State University.

Stan L. Albrecht
President
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As higher gas prices, larger utility bills and skyrocketing energy costs plague the nation, Utah State University researchers are looking for solutions to ease consumer heartache while, at the same time, sustaining the world. The researchers, funded in part by the Utah Science, Technology and Research Initiative, are working together to come up with a secure, clean and sustainable energy source.

"This is perhaps the most important scientific challenge facing humanity in the 21st century," said Lance Seefeldt, professor of chemistry and biochemistry. Seefeldt, along with several fellow USU professors, formed the Biofuels Program to develop new and emerging technologies that will produce methane, biodiesel, hydrogen and alcohols from renewable, carbon-dioxide-neutral energy sources, such as consumer and agricultural waste and sunlight.

"There are several options for solving the world's energy problem, but at this point, none of them are realistically viable for long-term use," said Seefeldt.

The world today relies on fossil fuels to supply much of its energy, and there are currently 13 terawatts of energy used per year. A terawatt is 1,000 billion watts, and Seefeldt said usage is predicted to double to 26 terawatts by the year 2050. Fossil fuels are expensive, finite and generate greenhouse gasses that many believe are harming the environment, said Seefeldt.

"It is obvious that we need to do more research," he said.

One of the options USU is working on is what Seefeldt describes as a second-generation solution – that is, taking oil from algae and converting it to biodiesel fuel. Algae, plainly referred to as pond scum, can produce up to 10,000 gallons of oil per acre and can be grown virtually anywhere.

Biodiesel is a clean and carbon-dioxide-neutral fuel that is becoming more popular, but most of the current product comes from soybean and corn oil. As supply and demand grows, so does the price of soybeans and corn. People and animals rely on soybean and corn as a food commodity, eventually causing competition between commodities and growing enough product. Meeting this demand would require the world to use virtually all of its arable land, said Seefeldt.
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USU is currently conducting research on algae and plans to produce an algae-biodiesel that is cost-competitive by 2009.

The state of Utah sees so much promise in the research that it has given the USU Biofuels Program $6 million for five years through the USTAR program. USTAR makes highly-selective, strategic investments in research with the potential to benefit Utah’s economy.

“This has moved from a purely environmental issue to a global economics issue,” said Seefeldt.

Sir Nicholas Stern, chief economist for the World Bank, said that climate change presents a unique challenge for economics and that it has the potential to be the world’s greatest and widest ranging market failure ever seen.

“Business as usual will result in a five-to-six-degree warming of the Earth by 2100,” said Stern. “This will result in a five to 10 percent loss in global gross domestic product, having a direct impact on human health and environment.”

The state of Utah, and especially USU, has positioned itself to be a key player in the future for this type of research thanks to the foresight of the Utah legislature, said Seefeldt.
The research has already set in motion several spin-out and industry relationships, and one patent has already been issued, with four others pending.

“We are looking toward the world’s future energy solutions and USU is part of it,” said Seefeldt.

The research takes a tremendous amount of investment and energy, but the payoffs will be worth it, he said.

The team includes Brett Barney, chemistry and biochemistry; Jeff Broadbent, nutrition and food sciences; Scott Ensign, chemistry and biochemistry; Carl Hansen, nutrition and food sciences; Conly Hansen, nutrition and food sciences and biological and irrigation engineering; Ron Sims, biological and irrigation engineering; Byard Wood, mechanical and aerospace engineering; and Henry Nowak from the USU Technology Commercialization Office.
With a 35th birthday party coming in June 2007, USU's Center for Persons with Disabilities will celebrate the enormous impact it has made in the lives of people with disabilities, their families and their communities in Utah.

CPD remains at the forefront of research, education, technology and direct-service support systems.

“We are proud that we've made a significant difference in people's lives for 35 years,” said Sarah Rule, director of the center. “Our goal from the day the doors opened was to improve quality of life, and the partnerships we have developed throughout the state have had important impacts.”

CPD projects address a broad spectrum of disability-related topics such as early intervention, health care, clinical evaluation, recreation activities, employment, assistive technology and web accessibility. The center also participates in training students and professionals, and in conducting basic and applied research. By combining various disciplines, cutting-edge technology and research in numerous areas, CPD provides unique education and coordinated service opportunities. These benefit Utah families and professionals in the field.

“We focus efforts on the needs in our state, especially those in rural and underserved areas,” Rule said. “But our programs are not limited to Utah. In fact, our efforts have had positive impacts nationally and internationally.”

The USU center receives more than 80 percent of its funding from external sources. For every dollar of university funding received by CPD in 2005, more than eight additional dollars were generated through grants and contracts from federal, state, local and private agencies.

Some of the major accomplishments from last year alone include:

–Major research efforts on improving service systems, the biological causes of
Utah State University is the number one university in the United States when it comes to funding for space research, taking the lead over other prestigious research institutions that include Johns Hopkins University and Massachusetts Institute of Technology.

With more than $54.8 million in research and development expenditures in 2004, USU ranks first among all universities in the nation in money spent on aerospace research and development, according to the most recent National Science Foundation statistics. The majority of the funding comes from grants, contracts and appropriations.

The top 10 universities in aeronautical research are, in order of their ranking, USU, Johns Hopkins University, Georgia Institute of Technology, Wichita State University, Massachusetts Institute of Technology, Air Force Academy, University of Colorado, University of Florida, Texas A&M and University of Maryland.

USU ranks 17th in total engineering research and development expenditures, according to NSF. Overall, USU’s research funding grew by nearly 50 percent from 2000-2004, to more than $150 million. USU’s funding puts it in the top 10 of all non-medical schools in the West.

Other major research centers at USU include the Center for Persons with Disabilities, the Utah Agriculture Experiment Station, the USU Ecology Center and the Utah Water Research Laboratory.

USU is home to Space Dynamics Laboratory, a unit of the USU Research Foundation. The USU Research Foundation is a non-profit research corporation owned by the university. SDL’s expertise in the development of sensors and calibration, small satellites and real-time intelligence, has made it an internationally known organization in the space arena.

Founded in 1982, SDL engineers and scientists have worked closely with USU students to design and develop many research experiments flown on the space shuttle. SDL works in close collaboration with USU’s College of Engineering to identify and secure funding for research.

disabilities, and the development of assistive technologies and software to make electronic information accessible.

–More than 18,000 hours of training and technical assistance delivered to more than 34,000 people, including those at state and local human services agencies and organizations of people with disabilities and their families.

–More than 4.5 million people visited CPD-supported web sites, and 513 library patrons accessed information.

–The CPD provided financial support totaling almost $352,000 to 163 graduate and undergraduate students. More than just a paycheck, support was linked to experiences that advanced students’ understanding of disability issues, research and services, and the funding provided leadership opportunities for many.
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projects and also provides thousands of USU students with hands-on experience in engineering and many other disciplines.

“SDL is glad to be part of the important research effort provided by USU to government agencies,” said Michael D. Pavich, retired major general and director of USU’s Space Dynamics Lab. “We strive to provide the best value to all those who fund our efforts and will continue to provide innovative solutions and timely support whenever we are called upon. SDL is proud to be working closely with USU in establishing the university’s reputation of excellence in space science and engineering.”

The USU colleges of Engineering and Science are both heavily involved in space research, with extensive expertise in the subject.

The College of Engineering houses the Rocky Mountain NASA Space Grant Consortium and the Center for Space Engineering, a multi-disciplinary group of engineering faculty who are principal investigators of programs with strong ties to the Space Dynamics Laboratory. All departments in the College of Engineering, including mechanical and aerospace engineering, electrical and computer engineering, biological and irrigation engineering, civil and environmental engineering and engineering and technology education are involved in space research.

The College of Science is home to the Center for Atmospheric and Space Sciences that involves many areas of physics, in addition to such disciplines as engineering, chemistry and meteorology. The center works closely with instrument development and data analysis related to rocket, satellite and space shuttle projects and projects in experimental design and data analysis related to incoherent-scatter and coherent radars, ground-based magnetometer and ground-based optical instruments, including a LIDAR system.

“With the synergy of the Space Dynamics Laboratory and top-notch science and engineering programs, USU has long been a leader in aerospace research,” said Brent Miller, vice president for research at USU. “Other USU research programs are growing to national prominence as well. USU’s College of Education and Human Services, for example, is ranked third in the nation in external research funding. USU is also rapidly accelerating the transfer of university technology to the public by spinning out more than 12 companies within the past three years.”
FAST FOOD TO FAST TRACK:
USU Distance Ed Business Students Excel

A new bachelor’s degree in business through Utah State University Regional Campuses is giving students like Kim Stookey the chance to achieve what was impossible before – a degree from USU without having to leave home.

Stookey began the business program at USU Tooele Regional Campus in 2004 after 10 years as restaurant manager at McDonald’s.

“I started the program with no previous college experience,” Stookey said. “Without distance education, I would have never started on a degree.”

Stookey emphasized that the convenience and flexibility of the program do not come at the expense of quality courses and student services.

“The business classes were small, and the professors were accessible,” Stookey said. “Most of the business classes were taught via satellite, and the professors were well organized and ready to teach through this method. The staff was outstanding, and there was always a focus on the highest quality experience for the student.”

In addition to school and working part-time, Stookey is involved in student government and is the regional campus’ representative on the business council. She praises her overall college experience as “nothing but positive.” She is excited to continue in her education and plans to enter USU’s MBA program this fall.

The program prepares graduates for administrative positions in business, government and other entrepreneurial careers. The degree provides courses in fundamental areas of business including marketing, accounting, economics, finance and business information systems. Courses are offered weeknights each semester via interactive broadcast delivery, enabling non-traditional students working full-or part-time to progress toward completion of a degree.

“Satellite classes allows us to take the necessary courses to the students, instead of requiring them to come to campus,” said Ronda Menlove, vice provost of regional campuses and distance education.”Dis-
tance education programs allow people to achieve goals they never thought they could reach.”

Michael Mathie, who graduated from the program through USU Richfield in May 2006, benefited from the flexibility of the program.

“This undergraduate business program has helped me fulfill educational goals that would have been otherwise impossible, or extremely difficult, while working full-time to support my family,” Mathie said.

Mathie was positive about the course availability.

“I rarely had trouble filling my schedule with the classes I needed,” he said. “Most students only attend part-time, which makes for easier scheduling, but I was still able to fill five straight semesters of full-time credits with classes that began after 5 p.m. Along with those night classes, I found several online and print-based courses to fill my schedule. The business courses were offered frequently enough to take as many, or as few, as necessary.”

During the summer, Mathie moved his wife and three children to Moscow, Idaho, where he is attending law school.

“At first, I was worried that I would not get accepted to law school since I did not take classes on a campus or in-person,” Mathie said. “Over the past six weeks of law school, I have met and spoken with many students and realized my courses and overall degree are no different from theirs. I earned a bachelor’s degree just like them.”

Douglas D. Anderson, dean of the College of Business, predicts that those who graduate through distance education will have valuable contributions to make in the workplace.

“Our programs are accessible and flexible but our academic standards are high,” he said. “I have great respect for those who push on to get a degree through these programs. I would think employers would also recognize that successful students who manage to graduate, working nights and weekends, are going to have the kind of entrepreneurial spirit they want to harness. Those graduates will become the leaders in any company. We are honored that we can play a key role in helping them achieve their dreams.”

USU’s bachelor’s degree in business can be completed through distance education centers and regional campuses, Menlove said. Students desiring a specialized business degree can attend campus for as little as two semesters and take the specific courses needed.

For more information, visit http://distance.usu.edu, or contact Joslyn Heiniger, program advisor, at joslyn.heiniger@usu.edu or (435) 797-2272.
Utah State University undergraduate Andrew Burgon tells family and friends his faculty mentor David York is to obesity research what director Steven Spielberg is to filmmaking.

“I’m incredibly fortunate to be working with someone of his stature,” says Burgon, a biology major who graduated from Utah’s Logan High School in 2002. “Not only is he a great thinker, but he takes the time to involve me in every aspect of the experimental process.”

Burgon, who hopes to enter medical or dental school, sought research opportunities through his advisor, who directed him to York.

“My first task was helping Dr. York unpack boxes and set up his lab,” says Burgon.

Formerly with Louisiana State University’s renowned Pennington Biomedical Research Center, York joined USU in 2006 as one of the first researchers recruited through the Utah Science, Technology and Research Initiative. He’s director of USU’s nascent Center for Advanced Nutrition, which is focused on exploring the impact of nutrition on such 21st century plagues as obesity, Type II diabetes and cardiovascular disease.

Burgon, York and research assistant professor MieJung Park, are investigating a peptide called enterostatin that is produced in the brain, pancreas and gastrointestinal tract in response to the ingestion of fat.

“We’ve used microarray genomic approaches to identify genes that are regulated and functional pathways affected by enterostatin,” says Burgon.

At each step of the project, says Burgon, York and Park have taught him various experimental processes and techniques and then allowed him to run the experiment.

“They’re so proactive about promoting undergraduate research,” he says of
his mentors. “It’s really cool to have these hands-on experiences and be a part of an important project.”

Over the course of the study, Burgon has been introduced to phase contrast and fluorescent microscopy used in conjunction with immunohistochemistry.

“These are lab processes and techniques that you simply can’t learn in the classroom,” he says.

The team’s study shows that enterostatin regulates dietary fat intake by inhibiting the release of a protein that slows an organism’s appetite for fat.

“This is cutting-edge research,” says Burgon. “We’re literally discovering molecular processes. We’re part of discoveries that have implications for controlling obesity, cardiovascular disease, Alzheimer’s disease – discoveries that could be society-changing.”

Along with York and Park, Burgon is publishing the results of the study and plans to present the research at an upcoming professional meeting.

“This is an extraordinary opportunity for me as an undergrad,” says Burgon. “I’m learning so much. Plus, it will look really good on my application when I’m ready to apply for professional school.”

Before selecting Utah State as his college destination, Burgon considered another school that touted teaching over research.

“Because they are a non-research institution, they claimed I would receive more attention from professors whose only responsibility was teaching,” he says. “But I can’t imagine a setting where I’d receive more personalized learning than USU. I would have missed so much if I hadn’t ventured outside the classroom and into the lab.”

Hands-on research offers lessons that can’t be learned from a textbook, says Burgon.

“Dr. York and Dr. Park have taught me how to approach problems, design experiments and the tools to pursue answers,” he says. “It’s a privilege, for sure.”
USU’S ‘SMART LIBRARY’ TOPS LIST OF 101 BEST PRACTICES
Merrill-Cazier Library Lauded in “Smart Classroom” Category

Campus Technology, a California-based publication, lists the 101 best practices in three areas — smart classrooms, connectivity and administrative information technology — and Utah State University tops the list in the smart classroom category.

Make that Utah State University’s “Smart Library” that tops the list of 101 best practices. Following Utah State University’s number one ranking is Harvard at number two for enhancing classroom technology for teaching and learning.

“Since we introduced this special 101 Best Practices issue back in December 2005, we’ve come to see that the spark of a good idea is indeed a very powerful thing,” said Katherine Grayson, editor-in-chief at Campus Technology. “All year long, we here at Campus Technology delve into the nitty-gritty of what makes a technology initiative work and return real benefits to its user community and its institution.”

It seems that the Merrill-Cazier Library has technology that is returning real benefits. That technology adds to the overall academic experience at Utah State University, allowing students to do just a little bit more, a little bit faster, with more ease. That contributes to academic success.

“The library houses really advanced technology that most universities don’t have,” said Alexa Harris, a sophomore nursing major. “It has many resources, including course reserves and journals.”

Slobodan Mikolic, a junior majoring in engineering, likes the library’s computers.

“There are a lot of computers there and the library is close to my classes and it is quiet,” he said. “It is like my home. I practically live there.”

The Merrill-Cazier Library replaced the older Merrill Library, portions of which opened in 1930, with “modern” additions made in the 1970s. The new Merrill-Cazier Library opened with the 2005-06 academic year. It not only uses technology to retrieve information from the library catalog, but also retrieves the books themselves, Campus Technology notes in its acknowledgement.

Utah State’s library was first highlighted in Campus Technology in a news brief creatively
WATERWISE: USU is a World Water Leader

Water is a key factor of life in the arid West and since Utah State University’s beginning in 1888, water has been a key research focus. In December of 1965, when the university dedicated its new Utah Water Research Laboratory, USU took its place as one of the world’s leading water research universities in the nation. The lab, which celebrated its 40th birthday in 2006, works on nearly 250 water-related projects a year and has an annual budget nearing $10 million. With projects in all of Utah’s 29 counties and more than 40 international countries, the lab has become one of the go-to places that addresses the technical and societal aspects of water-related issues, including quality, quantity and distribution of water.

Located on the Logan River at the mouth of Logan Canyon, the UWRL was one of the first water labs in the nation and, according to Director Mac McKee, it is the most diverse. “Our work makes an impact, not only here in Utah, but around the world,” said McKee. “We offer such a diverse range of services that we are able to help people in all facets of life. But there is no greater satisfaction than working in a remote village and seeing a smile on someone’s face as they receive water from a tap for the first time.”

In Utah, researchers from the UWRL are working on water management projects in the Virgin River Basin and Sevier River. Researchers are also looking to help solve Utah’s air quality problems. The lab sends water experts on-location to countries around the world in need of water expertise, and many people travel to the Logan facility for training on dam safety and hydraulics. “Because of our unique location, we are able to divert the entire Logan River right through our building to study hydraulics,” said McKee.

The water lab was the vision of Dean F. Peterson, dean of the College of Engineering in the late 1950s and George Dewey Clyde, former governor of Utah. Clyde supported the idea for the water lab and, according to Peterson, made the enterprise possible. In his honor the UWRL is housed in the George Dewey Clyde building.

titled “Technology ’Til the Cows Come Home,” an affectionate reference to the Aggie heritage and the campus name for the retrieval system, “the barn.”

The barn houses a system of robotic stacks, 85 feet high, 60 feet wide and 120 feet long. It locates requested materials among the 1.5 million volumes and speeds them to patrons at a rate of 328 feet per minute — that’s 3.7 miles per hour, Campus Technology stated in the announcement.

All agree that the space-saving systems allows for many years of collection development.

Douglas Jackson-Smith, an associate professor in the Department of Sociology, Social Work and Anthropology misses the old library but finds the advantages in the new.

“I miss the shelves and understand the space issues, but I like the electronic elements in the library now too,” he said. “It saves time and allows more access to scientific journals.”

Fellow faculty member Cathy Bullock, an assistant professor in the Department of Journalism and Communications, had some early concerns. “At first, I had reservations about the barn, but after the library opened I found it to be easy and convenient — you just put in your order and then go and get it,” she said. “It works well for the students as well. I put items on electronic reserve and the students can access it anytime they want. I tell my students to go find a sunny corner to sit and think — the library has excellent spaces like that too.”

The technology makes the library cutting-edge, but the physical space — those sunny corners — make it the place to be.

“The Merrill-Cazier Library has become the hub of learning on campus, providing the resources, access to technology and flexible study environments that support the way students learn today,” said USU’s Vice Provost for Libraries Linda Wolcott in the Campus Technology announcement.

In its introduction, Campus Technology asks what makes a classroom “smart?”

“Presentation technologies such as projectors, document cameras and LCD panels clearly fit the bill, but when you consider other technologies for teaching, learning and developing content, the possibilities become limited only by the boundaries of an institution’s innovation.”

Utah State University is proud that the technology incorporated into the new Merrill-Cazier Library has been nationally ranked. It’s something USU students already knew.
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The UWRL has employed numerous professionals over the years, many who dedicated themselves to their work, but it is Betty Hansen who best exemplifies this. Hansen, an office assistant, began working at the UWRL in 1965. She retired in December 2005 after 40 years of hard work.

The lab is part of USU’s College of Engineering and offers services in natural systems engineering, air quality analysis, water and science education, environmental management, hydraulics, surface water hydrology, hazardous and toxic waste remediation, public lands planning and management, on-site wastewater treatment training, water quality engineering, dam safety risk management and water resources planning and management.

For more information about the UWRL, visit http://www.engineering.usu.edu/uwrl/.
Autism is the fastest growing disability in the United States, and public school systems are trying to catch up. One out of every 166 children is diagnosed with autism, making it more common than pediatric cancer, diabetes and AIDS combined.

Early intervention is key to helping children with autism, and the ASSERT program at Utah State University serves as the training grounds for the educators who will make a difference in Utah’s school districts. The program offers children a chance to receive help at a young age.

The Autism Support Services: Education, Research, and Training (ASSERT) program at USU is a state-of-the-art preschool program that uses research-based techniques to address the individual needs of autistic children. USU’s pioneer site has opened the doors to a new world for children with autism and is a model training classroom for professionals in the Intermountain region.

Thomas Higbee, director of USU’s Autism Support Services, spent more than 10 years researching and developing cutting-edge ideas that sparked the birth of the ASSERT program. Research has shown that children with autism spectrum disorders (ASD) do not learn readily in typical environments, so Higbee fashioned an atmosphere ideally constructed for ASD treatment.

ASSERT provides consultation services and curriculum to school districts throughout Utah and its surrounding regions. Higbee and his graduate students frequently visit sites in Weber and Washington county school districts to provide in-depth training and ensure that students are getting the best instruction possible.

“The hard work has really paid off, and we have seen dramatic positive changes in our students,” said Higbee.

This individualized educational program has been improving the lives of children with ASD since 2003. What started as a 10-week summer course has become a highly-successful year-round preschool program that continues to revolutionize the way children with autism are educated.

Fawn Rigby’s four-year-old son Zac is a student in the ASSERT program. This education has affected young Zac’s life dramatically, his mother said, and she is enthusiastic about ASSERT.
“It’s amazing,” Rigby said. “ASSERT has given Zac the personal attention he needed. After just a few months, the progress I’ve seen in him is remarkable.”

Higbee is excited with the outcome of the program and the positive changes in the students.

“The life-changing improvements we have expected from our students are happening,” Higbee said.

The impact on the students and significant changes can be credited to the intense training and professional caliber of the instructors. Graduate and undergraduate students at USU can apply to work in the program and earn either university credit or compensation while learning how to effectively teach students with ASD.

Higbee said the ASSERT success comes from the rigorous training and satellite program. USU’s ASSERT classroom serves as a training site for current and future special education teachers and professionals in related fields such as psychology and speech pathology.

“A big part of our students’ success is due to our collaboration with ASSERT,” said one aide at a Washington County Preschool. “The staff training and continual on-site visits have been vital in keeping our staff qualified to serve our students.”

Through ASSERT training, professionals are able to learn behavioral intervention techniques and demonstrate knowledge of behavior principles and how to apply them. Educators in Weber County are also showing the same significant positive changes.

“I have seen a tremendous amount of growth in each child, and I attribute it to the intensive individual programs that are implemented daily,” a teacher from Weber School District said.

ASSERT also provides training to school district personnel on effective educational and behavioral strategies for students with autism. ASSERT continues to help students after preschool and throughout their experience in the public education system.

For more information on USU’s ASSERT program, visit http://sped.usu.edu/ASSERT/.
A day of river wading, examining aquatic life and learning water testing skills yielded a longtime mentoring relationship between a Utah State University professor and a budding teen scientist, who has garnered impressive awards in national and international science competitions.

Aggie freshman Shannon Babb and Nancy Mesner, associate dean of USU’s College of Natural Resources, met when Babb, then a middle school student, participated in a watershed science workshop Mesner led for USU Water Quality Extension.

In the ensuing years, the two stayed in touch as Babb, who was named the 2006 Intel Science Scholar and three-time state winner of the Stockholm Junior Water Prize, sought guidance from Mesner and conducted water research projects in her Utah County community.

“Intel’s science talent search is like the holy grail in youth science research,” says Babb, of the prize that carries a $100,000 college scholarship.

Recipients of the prestigious award have gone on to become Nobel laureates, National Medal of Science winners and MacArthur Foundation fellows.

During a whirlwind of activities surrounding Intel’s awards ceremony in Washington, D.C., where she had the opportunity to meet President Bush, Babb was invited to publicly thank one person who helped her achieve success. Babb chose Mesner.

“I chose Nancy Mesner because, as a woman scientist, she was a positive role model for me and introduced me a host of learning opportunities in watershed science – the start of an amazing journey,” she says.

Babb, who graduated with multiple honors from American Fork High School in 2006 and was sought by numerous universities around the country, chose Utah State as her college destination.

“USU’s Watershed Sciences Department is one of the few of its kind in the world,” she says.

Nowadays, Babb, who wields the tools of her trade – a kick net, a turbidity tube and a dissolved oxygen testing kit – with familiar ease, has a curriculum vitae rivaling those of doctoral candidates. Since her initial meeting with Mesner, she’s conducted exhaustive research on four rivers that flow into and out of Utah Lake – studies that have captured the attention of water scientists, government water professionals and legislators.

Her six-month longitudinal study, Troubled Waters, in which she determined causes of pollution in Utah’s Spanish Fork River and identified remediation strategies, won her the Intel prize. From May through October 2003, Shannon and her father awoke at 4 a.m. several days a month to perform chemical,
The September 2006 issue of "Washington Monthly" ranks Utah State University in the top 25 public colleges in the nation and among the top 50 public or private universities in America. According to the editors of "Washington Monthly," unlike other rankings, "this guide asks not what colleges can do for you, but what colleges are doing for the country." Their rankings focus on determining which U.S. colleges make the best use of tax dollars and produce graduates that help the country maintain a competitive edge in a global economy.

"Looking at universities from this unique perspective provides new insights into those American colleges — like Utah State University — that are quietly amassing remarkable achievements," said Raymond Coward, USU executive vice president and provost. "Since coming to USU, I have been impressed with the notable achievements of our faculty, staff and students," Coward said. "This national ranking provides still further affirmation of the extraordinary achievements that happen each day on our campus."

The ranking system, according to "Washington Monthly" editors, starts with a different assumption about what constitutes the "best" schools. "We asked ourselves: what are reasonable indicators of how much a school is benefiting the country?" The publication said it came up with three main indicators: how well a college performs as an engine of social mobility, how well it fosters scientific and humanistic research, and how well it promotes an ethic of service to the country.

There is a good reason for the "American fixation" with rankings, according to "Washington Monthly" editors. "If done correctly, they can help tell us what's working and what's not," they wrote. "Of course universities ought to be judged. The key is judging the right things."

"Based on these criteria, USU outperforms some of its more prominent and notable public university rivals," Coward said. USU also has achieved high marks in other rankings. For example, when comparing physical and biological tests at sites on the river's primary tributaries, Thistle Creek, Soldier Creek and the Diamond Fork River, as well as sites upstream and downstream from the city of Spanish Fork.

This past year, Babb completed a yet-to-be-published study, Deadly Waters: A Twelve-Month Water Quality Study of a Newly Erupted Sulfur Spring and its Longitudinal Effect on Diamond Fork Creek. Her study reveals the source of milky white hydrogen sulfide in a Spanish Fork River tributary. Last summer, she presented her findings to a rapt audience of members of the Water Environment Association of Utah.

Along the way, says Babb, Mesner has helped her secure equipment, locate sources and interpret results. Mesner, she says, set her straight when she misidentified a species of aquatic invertebrate or got a false reading because she had taken a sample at the wrong time of day.

Many have asked Mesner how she mentored Babb. "I always answer, 'What Shannon's accomplished, she's done herself,'" says Mesner, who serves as associate professor of water quality and program leader for USU Natural Resources Extension. "My job is simply to plant a lot of little intellectual seeds and provide a little nourishment along the way."
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USU also has achieved high marks in other rankings. For example, when comparing
the receipt of federal support for research, Utah State is ranked in the top 20 among land grant universities in the nation and in the top 100 public or private universities in America.

Similarly, USU’s College of Education and Human Services is among the top-ranked graduate programs in the nation in the latest “U.S. News and World Report” ratings — finishing third in the nation in terms of funded research dollars generated. Finally, in 2004, “Consumer Digest” ranked USU No. 6 in the nation for “Best Value.”

“Utahans have much to be proud of at Utah State,” Coward said. “This most recent national recognition is especially appreciated because it is based on several ideals at the core of our vision as a university — that is, service to the nation, opportunity through education, and fostering scientific and humanistic research. We are proud of those characteristics, and we are pleased that others have recognized us for our excellence in these areas.”

In its ranking methodology, “Washington Monthly” established two primary goals. First, no single category was deemed more important than another. Second, the final rankings reflected excellence across the full breadth of the measures.

WHAT’S IN YOUR WATER?
USU-led lake monitoring program inspires young scientists while helping environment

Each time Doug Andersen listens to his 12-year-old son, Konnor, describe his lake monitoring activities to curious friends, family members and strangers, he hears growing confidence in the youngster’s voice.

“It’s been fun to see Konnor’s responses grow in length and detail as he gains understanding in what he’s doing,” says Andersen, a Utah State University alum who is a broadcast journalist with KPVI-TV in Pocatello, Idaho.

Konnor is one of more than 30 water enthusiasts in 15 Utah counties who have been offering a few hours of their leisure time to monitor the health of the state’s lakes and reservoirs. Led by the Utah State University’s Water Quality Extension group, the volunteers are providing the Utah Division of Water Quality with valuable information about the condition of Utah’s waters.

“Data collected by the volunteers is used in mandatory assessment reports that we submit to the Environmental Protection Agency,” says Theron Miller, environmental scientist with the UDWQ. “The more data we receive, the more accurate our reports can be.”

Kaisi Baron, a USU undergraduate watershed sciences major, serves as coordinator of the five-year-old volunteer monitoring program, known as Utah Lake Watch. “We’ve had a great response from the public,” says Baron. “Last year, we successfully monitored 20 lakes and reservoirs. This year, we’re monitoring 30 sites.”

The monitoring procedure involves lowering a device called a Secchi disk, invented in the 1860s by Italian astrophysicist Pietro Angelo Secchi, into the water and recording the depth of its vanishing point. About eight inches in diameter, the flat disk, which is
For those who like their snow machines to be seen and not heard, there's plenty to cheer about in a Utah State University electric snowmobile that competed in the eighth annual Clean Snowmobile Challenge in Michigan in mid-March.

From snowmobiling to skiing, wintertime outdoor recreation is big business and a group of USU engineering students want to be a part of it. The USU snowmobile was one of only four electric snowmobiles to compete in the competition, while the remaining 12 competitors were gas powered.

“What started out as a typical 2005 Yamaha Vector snowmobile turned into a clean and quiet battery-powered machine,” said Ashley Kelly, team leader and senior mechanical and aerospace engineering student.

The Clean Snowmobile Challenge was started by the Society of Automotive Engineers as an effort to build environmentally friendly machines that will meet the 2012 federal emissions standards. SAE challenged students to take a stock snowmobile and reengineer it to reduce emissions and noise while maintaining or improving performance.

“After attending the competition, I was really impressed with our snowmobile because we made it what it is,” said Kyle Hanson, team member and senior engineering student. “We did all the design and analysis work with help from our faculty mentor Byard Wood and that really contributed to our learning experience.”

The USU snowmobile is a utility vehicle that isn’t quite ready for recreational use — it weighs nearly 1,000 pounds, while traditional sleds weigh only 600 pounds. The sled relies on 12 car batteries and tops out at a speed of 29 miles per hour. The team said they would have liked to have used a lithium ion battery at a cost of $6,000, but the funds weren’t there.

“As better battery technologies become available I can see electric snowmobiles becoming the way of the future for several reasons,” said Mat Brown, team member and senior engineering student. “The advantages of an electric snowmobile include zero on-site emissions as well as a considerably quieter motor than a conventional snowmobile.”

Volunteer Konnor says he’s learned “lots” from taking readings in Bear Lake, which straddles the border of Utah and Idaho. “You can see about five meters into the water, about 15 feet. The wind blows a lot,” he says. “Pollution changes the clearness of the water. Same for the water level, which can go up when it rains or receives runoff. It goes down through evaporation. And farmers taking their share of the water. And animals drinking out of it.”

Andersen says participation in the project has ignited his son’s enthusiasm for science. “Kaisi (Baron) has been a big help in this regard, really instilling excitement and confidence in Konnor from the first time we met,” he says.

As the cadre of Utah Lake Watch volunteers grows and data is banked, the state of Utah will have increasingly accurate information from which to observe trends.

“I wish we had more personnel to send out and take measurements, but we simply don’t have the resources,” says Miller. “The information that volunteers are gathering for us is extremely valuable.”

Konnor thinks it’s important for volunteers to participate in projects like Utah Lake Watch. “(Bear Lake) is a good lake, lots of fun and I would like my kids to be able to visit it, too,” he says.

Adds his dad, Doug, “Public education is an important element of taking care of the lake. Water is increasing in demand, especially clean, plentiful sources in the West. For a myriad of reasons it’s important we take care of what is in our own backyard.”
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As concerns for the environment grow, Yellowstone National Park and the National Science Foundation are interested in the future of environmentally friendly technology. NSF donated $2,000 to the USU students to design and create the snowmobile.

“It was great to see so much interest from the public in our sled,” said Daniel Plaizier, team member and senior engineering student. “All teams in the competition got a chance to display the sleds for a day in a Michigan shopping mall. People were fascinated with the idea of a clean and quiet snowmobile and wondered when the technology would be available for the masses.”

While USU didn’t take first place, the team was proud of their efforts realizing that the weight of the batteries weighed them down in terms of the competition. When plans for a 2008 electric snowmobile are discussed, the teams know they want to try and get higher-tech batteries, make a smaller motor, reduce the drag and fix the rear suspension, Kelly said.

“The weight really slowed us down when it comes to maneuvering the sled, and that is where we lost points,” said James Gyllenskog, team driver and senior engineering student.

USU’s sled, in its second year at the competition, was honored in other ways as it was one of only two electric snowmobiles to complete the 10-mile endurance event. Sixteen snow machines from schools across the United States and Canada participated in the six-day event.

“We increased our performance from last year’s event by 20 percent,” said Kelly.

NSF also recognized USU’s technology as its 2006 sled was chosen to be used in Greenland in Summer 2006 as a way to get around the polar ice caps without polluting the area.

The team was mentored by USU mechanical and aerospace engineering department head and professor Byard Wood, and includes: Mat Brown, senior, mechanical and aerospace engineering; Amanda Calder, senior, mechanical and aerospace engineering; Mark Fairbanks, senior, mechanical and aerospace engineering; Jeff Ferrin, graduate student, mechanical and aerospace engineering; Sam Francis, senior, electrical and computer engineering; James Gyllenskog, senior, mechanical and aerospace engineering; Kyle Hanson, senior, mechanical and aerospace engineering; Ashley Kelly, senior, mechanical and aerospace engineering; Paul Overdiek, senior, mechanical and aerospace engineering; and Daniel Plaizier, senior, mechanical and aerospace engineering.

For information about the Clean Snowmobile Challenge, visit http://www.admin.mtu.edu/urel/snowmobile/index.html.

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Clockwise from center: Mat Brown, Jeff Ferrin, James Gyllenskog, Amanda Calder, Sam Francis, Kyle Hanson, Daniel Plaizier and Ashley Kelly. Not Pictured: Mark Fairbanks and Paul Overdiek.
THE YIN & YANG OF CELL SIGNALING:
USU Chemist Explores ‘Remarkable Chemistry’ of Phosphate and Sulfate Transfer

Consider your body. Day by day, second by second trillions of minute cells undergo a complex array of continuous chemical processes at a dizzying rate. Through the endless ebb and flow of biochemical reactions, life is kept in precarious balance. A kink in the chain and illness, even death, ensues.

Utah State University organic chemist Alvan Hengge delves into the chemistry that drives biological systems and seeks to understand how various enzymes accomplish what he calls “remarkable chemistry.”

Simply put, enzymes are proteins that catalyze chemical reactions, or trigger activity, in living cells.

The enzymatic mechanisms of phosphate and sulfate transfer are a specific research focus for Hengge, professor in the College of Science’s Department of Chemistry and Biochemistry. “These processes have great importance in biological systems,” he says.

His work with colleague and former mentor W. Wallace Cleland, co-director of the Institute for Enzyme Research at the University of Wisconsin-Madison, appeared in a recent issue of Chemical Reviews.

“What we’re looking at is how phosphatases and kinases work,” says Hengge, who adds that human attempts to create catalysts as effective as these natural enzymes have consistently fallen short.

Phosphatases and kinases are two broad classes of enzymes that essentially function as “on” and “off” switches to control various biological processes. Opposing yet complementary controllers, Hengge says the two are often referred to as the ‘yin’ and ‘yang’ of cellular signaling.

Kinases synthesize phosphate esters, and phosphatases destroy them. “These dual, opposing activities serve to keep proper levels of activity of particular proteins and receptors in balance within each cell,” he says.

Easier said than done.

What confounds chemists, says Hengge, is how these enzymes accomplish their regulatory functions with such speed and ease in nature. Efforts to replicate these processes in the lab are extremely difficult.
The problem of the uninsured: is there a silver bullet?

The health care problem is, in fact, multiple problems, not a single issue, according to Utah State University faculty member and researcher Roberta Q. Herzberg. Is legislation the answer, and how do we resolve the problem of the uninsured in Utah?

Herzberg is department head and associate professor of political science at USU, with a specialization in public policy, political economy and American politics. She is active in the Utah policy process and has served on several state policy committees and commissions.

"The notion that health insurance protects your health is incorrect," Herzberg said. "It protects your wealth."

A decided difference between the face of the uninsured and the face of the uninsurable exists, she said.

"Most of Utah's uninsured are young and in good health," she said. "They think insurance coverage is too expensive and there are too many other important items to spend money on."

If a devastating health catastrophe hits members of this younger, uninsured group, the financial implications are not as serious — they have very few assets to lose in a possible bankruptcy. And, in many cases, someone steps in to pick up the tab, since no one is denied emergency services because of an inability to pay — the government provides subsidies to hospitals, or there is a cost-shift to other insured individuals.

"We should make the financial implications of not carrying insurance more serious," Herzberg said. "A delinquent medical bill is often treated differently than other bad debt on a personal financial report. We should not be surprised then, that young people are willing to accept the low risk of being uninsured."

But, the face of the uninsurable is very different. That is the face of the older, seriously ill person — the person none of us wants to become. They are frequently excluded from buying insurance because of pre-existing health conditions.

"The notion that health insurance protects your health is incorrect," Herzberg said. "It protects your wealth."

Phosphate esters, which are substrates of phosphatases, are extremely stable, says Hengge. Very harsh chemical or kinetic stimuli are required to elicit a reaction from them in a lab setting. How, scientists wonder, do these enzymes ever reach a transition state in the relatively mild environment of a healthy organism?

"The stability of phosphate esters is a protective mechanism that enables the cell to maintain very tight control of this regulatory process and protect the organism's delicate balance," says Hengge. "This makes sense from an evolutionary standpoint."

"We're trying to understand the transition states that enzymes stabilize during their reactions," he says, of the tiny chemical-reaction machines that constantly deconstruct and rebuild their substrates like children's Tinkertoys.

Hengge describes the transition state as the "fleeting geometry that any reacting compound must go through when it changes from a reactant form to a product."

"In terms of energy, think of a ball flying through the air from one point to another," he says."The highest point on the arc traveled by the ball is the transition state."

Hengge says biochemists have speculated that the enzymes use a mechanism different from what is observed during uncatalyzed reactions of phosphate esters, but this does not seem to be the case.

"We clearly have our work cut out for us," he says."Further study into the structure of enzymes is needed to understand their powerful abilities."
THE PROBLEM OF
THE UNINSURED:
IS THERE A SILVER BULLET?

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"The notion that health insurance protects your health is incorrect," Herzberg said. "It protects your wealth."
The question of the uninsured is a thorny one, she continued, but it is a problem that must be addressed.

The health insurance mandate in Massachusetts may provide good examples of the problems Utah could experience in rushing into a comprehensive plan that contains many unknowns.

"The Massachusetts legislation mandates that all citizens of the state must have health insurance coverage," Herzberg said.

"Those who fall below the 300 percent poverty rate will be subsidized, and those above the 300 percent poverty rate will be responsible for proving to the state that they are insured."

The concept is much like that of car insurance — if a citizen owns a car, proof of insurance must be provided.

The Massachusetts plan is a connector plan. The state will connect people to the proper insurance plans. The bottom line, however, is that it is the individual’s responsibility to obtain health insurance.

"The Massachusetts experience — if the state can carry it off — will provide good lessons," Herzberg said. "So far, the results Massachusetts is finding during implementation differ dramatically from earlier estimates used to pass the legislation. It is quite possible, given these changes, that the mandate on individuals may never be fully implemented. There is no silver bullet.

Mandated health coverage is expensive and no one wants to pay for it. A single payer, government-organized insurance program is frightening to many."

Taking individual responsibility for health insurance is one important social value, but the freedom of choice issue is also important.

"The attitude of ‘no one is going to tell me what I have to do’ is very common and makes comprehensive policy change problematic," Herzberg said.

One approach consistent with individual freedom is enhanced use of consumer-based plans such as health savings accounts and health reimbursement plans. Under these, consumers become more cost-sensitive in shopping for care. The more out-of-pocket cost, the more cost-sensitive a person becomes.

"The issues of health care, legislation and the uninsured present serious problems and there are no ready answers," Herzberg said. "Being able to solve everything by implementing a government mandate is overly optimistic."

Proposals, each with benefits and flaws, abound.

"With health care issues, we need to decide what society values most before we rush to put an expensive and failed policy in place," Herzberg concluded.
A BREATH OF FRESH AIR: USU Scientist Studying Ways to Clear up Utah’s Inversion Problem

Utah’s license plates tout one of Utah’s most attractive features, ‘the greatest snow on Earth,’ but the cold temperatures that come with the snow can cause ugly pollution.

Utah State University scientist Phil Silva is studying what conditions in Utah’s atmosphere make inversions in the state particularly severe and what people can do to correct the problem.

Many researchers around the world are studying the negative effects of pollution and the impact it can have on one’s health. Silva, however, is focusing more closely on the chemistry of pollution.

“In order to reduce pollution, you have to understand what the sources are,” said Silva. “By figuring out the chemical makeup of the pollution, you can identify triggers and come up with solutions on how to reduce the problem from the source.”

Silva said that when it comes to pollution, things are not always what they seem. When Silva first came to Utah, he thought fireplace smoke would be a big contributor to the state’s pollution levels. After researching air quality at locations throughout northern Utah, he discovered that ammonium nitrate causes 50 to 70 percent of the pollution in the state.

Ammonium is a product that comes from agricultural sources, such as dairy and livestock farms, which are prevalent in many northern Utah communities. Nitrate is produced by many industrial processes, as well as vehicle emissions. Burning fossil fuels, such as gasoline, in power plants and vehicles results in the production of nitric acid and ammonia as air pollution, said Silva.

“Utah is vulnerable to ammonium nitrate pollution because it is traditionally an agricultural area that is rapidly becoming more urban,” he said.
So where does the other 30 percent of pollution in Utah come from? Silva said it comes from organic carbon, which comes from several sources, including diesel vehicle emissions, fireplace smoke and barbeque grilling. Manufacturers are trying to create more environmentally friendly options, including reducing sulfur emissions on newer model diesel engine vehicles.

Consumers who use natural gas fireplaces and barbeques are helping, said Silva because natural gas emits lower particle emissions. When it comes to propane versus briquette barbequing, propane is the cleaner way to go, he said.

Utah's chemical pollution signature is unique said Silva, and he has begun to research how organic carbon fits into the larger picture.

“The larger picture is what we have to keep in mind,” said Silva. “Ultimately, any research being done to correct the causes of pollution will have an effect on the future of the world.”

Silva's studies are already being used by Utah policy makers to begin developing plans to lessen the negative effects of pollution. He serves on air quality boards for Cache Valley's Bear River Health Department and the State of Utah's Division of Air Quality. These boards deal directly with Utah's susceptibility to pollution-trapping inversions.

Temperature inversions happen when cold air is trapped below a mass of warmer air. During a temperature inversion, air pollution released into the atmosphere's lowest layer is trapped. Utah is vulnerable to inversions during the winter months because of the blanket of snow that is so popular with locals and tourists. Snow on the valley floors lowers the temperature, which can exacerbate the problem.

Inversions are a nationwide problem that not only affects Utah, but also certain areas of California and the eastern United States. During severe inversions, trapped air pollutants form a brownish haze that can cause respiratory-related illness, particularly in the young and old.

“Northern Utah is a great place to live nine or 10 months of the year,” said Silva. “But in January and February, we often get hit with a high amount of inversion days that are not only depressing to look at, but that are also bad for our health.”

The United States Environmental Protection Agency has begun to take steps to address the problem, starting with the creation of a more stringent standard for air pollutants in October of 2006. Many areas of the United States affected by air pollutants will have to come up with ways to correct or reduce the problem by 2008.

By focusing on the chemistry of pollution, Silva's research has the potential of providing an important link in efforts to reduce global pollution.

Once a good policy to lessen the impact of pollution is in place, the next step will be to provide information to the public so that everyone can do their part lower pollution, said Silva.
GETTING MORE INFORMATION OUT OF INFORMATION:
Statistician Adele Cutler Offers Insights on Facts, Figures and Finding Your Life’s Passion

Utah State University professor Adele Cutler's passion for statistics has taken her to the boundaries where the discipline converges with computer science and electrical engineering. Her work has led her to research projects using such tools as bioinformatics, archetypal analysis and machine learning. She's applied these methods to diverse fields ranging from genetics, medicine and astronomy, to banking, air traffic control and national security.

"An advantage of statistics is that you can participate in exciting research in a lot of different disciplines without restricting yourself," says Cutler, a faculty member in the College of Science’s Department of Mathematics and Statistics. "As statisticians, what we're really trying to do is think of better ways to get information out of data."

Of particular significance to Cutler is her ongoing work with Random Forests™, a trademarked statistical classifier developed by the late Leo Breiman, her mentor and longtime colleague.

Breiman, professor emeritus of statistics at the University of California-Berkeley, died July 7, 2005 at the age of 77. Renowned for his work with statistical computation, Breiman was elected a member of the National Academy of Sciences and of the American Academy of Arts and Sciences.

"Random Forests was really a work of a lifetime," says Cutler, who collaborated with Breiman for more than 20 years. "It's a powerful, versatile tool that outperforms traditional statistical tools."

Many data sets encountered in today's scientific fields are much bigger and complex “than anything we've dealt with before,” she says. "Random Forests allows us to interpret data and gain insights in ways other tools can't. We can explore, for example, why a 'yes' is a 'yes.'"

Each of us encounters applications using Random Forests, says Cutler, though we may not even realize it. Did you look up anything on Amazon.com or another online retailer today? You may not have noticed, but the site automatically logged your interests and, like an attentive salesperson, offered up a slew of suggestions for you.
Utah State University students graduating from the International MBA program in Food and Agribusiness are ready to take on the world.

In a unique exchange between USU and the Royal Agricultural College in Cirencester, England, students enrolled in the program receive the educational background and hands-on experience necessary to secure leadership positions in the globally competitive food-related industry.

USU College of Business economics professor DeeVon Bailey started the program in 1999 to provide additional opportunities for graduate students interested in pursuing careers in the food industry.

"The international orientation of the program gives students a world-class education and opens up so many new horizons," said Bailey. "Our graduates work all over the world."

The program readies students to work with the social, cultural, production and consumption conditions of the world’s major markets and gives students experience working with producers, processors, consumers and policy makers in the food industry.

"The exposure to different market systems has further enhanced my business education, and I feel that makes me an asset for a company not just in the United States, but around the world," said Cody Bingham, a USU student enrolled in the program.

Five students from the United States and five students from England begin their studies at USU for one semester and then go on to England for a semester. The semester is followed by a six-week research-based group project, after which the USU students return home to complete a thesis. Graduates receive an MBA from the Royal Agricultural College.

For a presentation at a conference, Cutler selected a photo of a forest showing bare branches shrouded in fog. "I thought it was really pretty, but Leo (Breiman) said, 'Too gloomy."

So Cutler commissioned her son Phil, then seven years of age, to come up with a drawing. "Leo loved Phil’s crayon drawing. He said, 'It’s bright, cheerful and, most importantly, shows the simplicity of the method.""

In a world obscured by mystery, complexity and reams of data, says Cutler, statistics provides a light at the end of the tunnel. "Statistical tools give scientists that moment of clarity, where it all becomes clear," she says.
Utah State University students graduating from the International MBA program in Food and Agribusiness are ready to take on the world.

In a unique exchange between USU and the Royal Agricultural College in Cirencester, England, students enrolled in the program receive the educational background and hands-on experience necessary to secure leadership positions in the globally competitive food-related industry.

USU College of Business economics professor DeeVon Bailey started the program in 1999 to provide additional opportunities for graduate students interested in pursuing careers in the food industry.

“The international orientation of the program gives students a world-class education and opens up so many new horizons,” said Bailey. “Our graduates work all over the world.”

“The exposure to different market systems has further enhanced my business education, and I feel that makes me an asset for a company not just in the United States, but around the world,” said Cody Bingham, a USU student enrolled in the program.

Five students from the United States and five students from England begin their studies at USU for one semester and then go on to England for a semester.

The semester is followed by a six-week research-based group project, after which the USU students return home to complete a thesis. Graduates receive an MBA from the Royal Agricultural College.
The Royal Agricultural College makes arrangements for the six-week research project with private companies located throughout Europe. Students are split into teams and then work as consultants for the company conducting research and reporting their findings.

“Our students are working in international industry before even graduating with their degree,” said Bailey.

Most of the students enrolled in the program have undergraduate degrees in business and want to end up working in the food business, said Bailey. Some leave the program working as consultants for large international companies, others have gone on to work for state farm bureaus and others return home to run a family-owned farm.

“I grew up on a farm in south central Idaho and have worked on that farm since childhood,” said Bingham. “However, after completing my international MBA I hope to maintain my farm and then jump into corporate agribusiness and work for someone like John Deere.”

Many USU students enrolled in the program are married and take spouses with them to England, said Bailey. They secure housing, buy a car and learn about living life in a different place, in a different culture, he said.

“My family and I loved living in the United Kingdom,” said Sterling Liddell, a graduate of the program and senior research development analyst at the Iowa Farm Bureau. “Every day presented a new adventure. Just getting lost in a drive between towns could result in the discovery of new things like street markets, local celebrations and breathtaking scenery.”

Students also learn the differences between a United States education and education abroad.

“The program allowed me to experience the different cultural, economic and value systems that drive business and marketing practices in other countries,” said Liddell. “Many times our own cultural views prohibit us from truly understanding a global business effectively. The international MBA program went a long way toward teaching me how to interact and be effective in an international environment.”

Bingham said the program is challenging, but that the rewards of the experience make the program worth completing.

“Unlike most of my classmates, I had worked for more than 10 years as a marketing director in Europe when I joined the program,” said Simon J. Ryan, a graduate of the program and freelance marketing consultant from England. “Professionally the program brought a new intellectual rigor to how I approach work, and returned me back into the workforce with a number of new skills and changed perspectives.”

As the program continues to grow and flourish, Bailey said this will open up more opportunities for future students. USU and the Royal Agriculture College are looking to establish additional programs in China and India, thus enhancing the global aspects of the program.

“We want to give our students the world,” said Bailey.

For more information about the USU International MBA in Food and Agribusiness, visit www.usu.edu/cob/degreesmajors/internationalMBA.cfm or contact Bailey, 435-797-2300, d.bailey@usu.edu.
VIRTUAL MATH TUTOR AIDING STUDENTS WORLDWIDE:

USU Researchers Ready to Market eMATH@USU

If you've ever rummaged frantically through the kitchen for dried beans or bottle caps prior to the imminent arrival of the school bus, then you're more than familiar with math manipulatives. But if you haven't set foot in an elementary classroom since F Troop was a hit TV show, the term may make you feel a bit like Rip Van Winkle.

“A manipulative is simply a concrete object that represents an abstract idea,” says Robert Heal, Utah State University professor of mathematics.

Manipulatives, ranging from sleek store-bought designs to cast-offs from kitchen junk drawers, are instructional fixtures in many of today's elementary and secondary classrooms. They gained popularity in the 1980s when standards promoting their benefits were published by the National Council of Teachers of Mathematics.

Heal and USU colleagues Professor James Dorward (Elementary Education); Senior Research Associate Joel Duffin (Instructional Technology), and Professor Lawrence Cannon (Mathematics) created an interactive, Web-based library of virtual manipulatives after receiving a three-year, $1.2 million National Research Foundation grant in 1999. Named the National Library of Virtual Manipulatives, the collection is composed primarily of Java applets, featuring an array of colorful exercises for K-12 mathematics instruction.

Some students easily grasp abstract concepts, but the majority benefit from models that help them visualize an idea, says Doward. “A substantial body of research suggests that manipulatives increase student understanding and achievement.”

Pennies, paper clips and homemade wood, nail and rubber band geoboards are tried-and-true learning tools, but they have their limits, says Heal.

“With the virtual library, students, teachers, and parents have hundreds of concept tutorials at their fingertips,” he says. “With the click of a mouse, you can rotate figures, change colors, and create three-dimensional objects.”

Plus, adds Dorward, you can't shoot a virtual rubber band at your neighbor.
“The virtual exercises are much more interactive than static objects and give teachers a lot of instructional flexibility,” says Heal.

Teachers, students, and parents enthusiastically agree. Available on-line and free of charge since 2001, the library has attracted attention throughout the United States and the world. During the school year, the library’s Web site, www.nlvm.usu.edu, receives an impressive four million hits a day.

Well-established education publishers Wiley and Sons, caught wind of the USU library and incorporated a NLVM CD into their existing book, “Mathematics for Elementary Teachers.”

“The book went from ‘who wants it’ to their number one seller,” says Heal.

During 2007, the State of Maine will place a copy of the NLVM CD in the hands of every eighth grader. Beyond U.S. borders, the government-funded Learning Federation of Australia and New Zealand has adopted the library for those countries’ public education systems and Denmark has signed on as well, funding the development of a Danish language version of the CD for Danish public schools.

USU alumnus Alejandro Garcia, who completed a master’s degree in computer science in 2006, supervised the translation of the library into Spanish, which is now available on the Web site. A French version is nearing completion, plans are underway to create Chinese versions (one for Taiwan and one for the People’s Republic of China), and requests have been made for Arabic and Hebrew translations. Corporate giant Apple Computer has also expressed interest in the virtual library.

Impressive results, Heal concedes, from a single Web site that’s never been promoted through formal marketing. “We’ve never advertised the library—it’s simply spread by word of mouth,” he says. “It’s all just taken off.”

This could be just the beginning. The Utah Governor’s Office of Economic Development Board recently awarded the USU team funding for business counseling as a precursor to the team filing its proposal for the State of Utah’s Centers of Excellence (COE) technology commercialization program.

“Two outstanding Utah business leaders will assist our team in developing a business plan, completing our bid to become a Utah Center of Excellence, and launching our product to market,” says Heal. “One of the things they’ll help us develop is a name for our product—‘eMATH@USU’ is a current contender.”

Whatever it’s called and in whatever language it’s offered, the library could play an important role in providing future generations with a solid foundation for advanced study and research in technology-based disciplines.

Heal says the library represents the collective efforts of a number of USU graduate and undergraduate students, as well as the research team. “What this project has shown me is the great things you can accomplish when you combine the varied efforts and expertise of talented people,” he says.
USU TO UNVEIL INNOVATIVE PROGRAM FOR DEAF CHILDREN

Permanent hearing loss is the most frequent birth defect in the United States, affecting 12,000 newborns each year. If these babies are not identified during the first few months of life and provided with appropriate assistance, hearing loss can cause devastating problems for a child’s language, learning and social development.

Until recently, most children with permanent hearing loss were not identified until they were 2-3 years of age — far too late. Fortunately, recent advancements in universal newborn hearing screening programs, improved hearing aids and cochlear-implant technology means that most of these children can develop language and achieve in school as well as their typically hearing peers.

“Instead of attending special schools for the deaf, many of these children can now develop spoken language, attend their neighborhood schools and require little, if any, special education services,” said Karl White, director of USU’s National Center for Hearing Assessment and Management, which is responsible, in large part, for the advances in newborn hearing screening around the world.

Utah State University’s Department of Communicative Disorders and Deaf Education and NCHAM recently unveiled details about a new educational program that is a one-of-a-kind effort in the Intermountain Region.

Called “Sound Beginnings of Cache Valley,” the $3 million initiative will have what is called an auditory-oral focus, which means the program will focus on developing spoken language and listening skills, according to “Sound Beginnings” Program Director Todd Houston. He stressed that this new initiative will provide an alternative for deaf children and their families, but will not replace, the department’s existing sign language training program.

“Because of newborn hearing screening, we can now get a definitive diagnosis of hearing loss within a few months of birth, and now we have the technology to enable deaf children to develop language similarly to their hearing peers,” said Beth Foley, department head of Communicative Disorders and Deaf Education at USU. “The improvements in technology have been dramatic, and these advances have caused a major revolution — an exciting revolution — that has changed the field of educating deaf people. More important, it has changed the lives of thousands of deaf children and their families.”
An important part of the initiative will be a tuition-free, early childhood educational program housed on USU's campus, Houston said. The full-day, full-week school will open in fall 2007 and will offer daily access to specialists in early childhood deaf education, pediatric audiology and speech-language pathology. Services will include school-based services for older toddlers and preschoolers, home visits for infants and toddlers, and — an important component — coordination with the Utah Schools for the Deaf and Blind and other service providers in the region.

The preschool is significant in the services it will provide for its young patrons and their families, but it also will be a critical training ground for graduate students in deaf education, speech-language pathology and audiology in the department of Communicative Disorders and Deaf Education. Most university-based training programs for teachers of the deaf still focus primarily on sign language-based services. Houston said that is appropriate since there is an important need for educators and clinicians to serve families that want to communicate via sign language. But many families now prefer to communicate via spoken language, and training programs for educators and clinicians to serve these families are simply not available in most of the country.

“Parents can, and should be, able to choose how they want to communicate with their children,” Houston said. “The fact is that 95 percent of all newborns with permanent hearing loss are born to hearing parents, and with all of the advances in the field, most of these parents want to communicate via spoken language. Many parents are now choosing to get their children cochlear implants, and these children need intensive follow-up training and services to take full advantage of this technology.”

He said there is little point in putting in cochlear implants if they are not followed by appropriate intervention and support. The services available now can’t provide the intensity of services necessary. Only a few sites in the nation are capable of offering that support, and the “Sound Beginnings” initiative is ground-breaking in the Intermountain West. In fact, Houston said there is no similar program in place between San Francisco and St. Louis.

“Unfortunately, these programs are not available in many parts of the country, and parents shouldn’t have to move elsewhere to have access to these services,” he said. “We’ve heard many stories of parents having to pack up and move long distances just so they can have this opportunity for their children.”

Foley said Houston's national and international expertise will add significantly to the department’s already highly regarded status and, especially, its ability to attract top-notch graduate students to the program. He is one of the nation’s foremost authorities on hearing technology and teaching deaf children to listen and talk. He is the former executive director and chief executive officer of the Alexander Graham Bell Association for the Deaf and Hard of Hearing in Washington, D.C. AG Bell is the world's oldest and largest consumer organization for people who are deaf and hard of hearing.

For more information about the program or to enroll a child, contact the USU Department of Communicative Disorders and Deaf Education, 435-797-7554, or the National Center for Hearing Assessment and Management, 435-797-1224, or email Vicki.Simonsmeier@usu.edu or diane.behl@usu.edu.
GEARING UP FOR COLLEGE

Mahlet Bekele, a sophomore at Sky View High School in Smithfield, Utah, is not your typical teenager. Bekele moved from Addis Ababa, Ethiopia, in search of more opportunity and a better life just two years ago with her parents, two brothers, two sisters and nephew.

“My family came to the United States so we could have a better life, and getting an education will help me reach my goals,” Bekele said. “I want to be the first in my family to graduate from college and set a good example for my little sister, Bete.”

To help achieve her dream of graduating from college, Bekele enrolled in the Gaining Early Awareness and Readiness for Undergraduate Programs, known as GEAR UP.

GEAR UP is a national program administered by Utah State University that helps junior high and high school students prepare for and succeed at a university education.

GEAR UP students receive free tutoring, help with homework and advice from mentors who are current college students. GEAR UP students take part in monthly educational workshops and fieldtrips that focus on college preparation. Students also learn crucial life skills and how to prepare for college entrance exams.

“I took some of the GEAR UP students to one of my classes at Utah State, and I think it was very helpful for them to be on campus and get a sense of what the college experience is about,” GEAR UP mentor Ashlee Thompson said. “We took a tour of the art building and did a financial aid workshop with the USU admissions office. The program helps students understand that college is a real possibility for them. It also helps them set a course for how to make it to college and be successful when they get there.”

In addition to receiving help with tests, homework and learning about the academic side of college, GEAR UP students get a taste of the total college experience and learn life skills to help them succeed after high school.

“In GEAR UP, we’ve had lectures on healthy relationships, the ACT, financial aid, scholarships, career exploration, stress management and even attended basketball games at Utah State,” Bekele said. “It helps me with my homework and helps me set goals and realize all of the opportunities that are available to me with a college degree.”
Utah State was awarded a national grant and offers the GEAR UP program at North and South Cache 8th and 9th grade centers. GEAR UP is also offered at Mountain Crest, Sky View and Logan high schools.

Students in the GEAR UP program arrange a personalized program with their mentors. Students attend GEAR UP after school one to four days a week from 3-5 p.m. depending on the student’s arrangement.

Bekele wants to attend Utah State and major in environmental or computer engineering. After completing her college degree, Bekele intends to return to her native country of Ethiopia and use her education to benefit her friends and neighbors.

“I want to learn all I can and go to college so I can set a good example for my sister, become an engineer and return to Ethiopia and improve the living conditions for the people there,” Bekele said. “I have so many reasons to push myself to do well in school. I am lucky to have the chance to go to college. I need to do all I can to make that dream come true.”

For more information about joining the GEAR Up program, contact Celestial Star Brandley at celestial@cc.usu.edu or (435) 797-1758.
SERVING STUDENTS IN DISTANCE EDUCATION

When it comes to teaching, Rich Etchberger, associate professor at Utah State University Uintah Basin Regional Campus, will not settle for wooden boats.

“There are ‘wooden boat’ people who accept the first working solution that comes to them,” Etchberger said. “I am not a ‘wooden boat’ person. Instead, I focus on finding new and better ways to reach a goal or overcome a problem.”

Etchberger is just one example of the professors and researchers at Utah State and at the USU Uintah Basin campus. The Uintah Basin campus is the largest of the three regional campuses with more than 2,350 students enrolled in fall 2006. USU Uintah Basin currently offers three associate’s degrees, 12 bachelor’s and seven master’s degrees. In addition, minors, endorsements and certificates are available as well as a Doctorate of Education. Campus facilities in Roosevelt and Vernal include classroom and administration buildings and a student center.

Etchberger was a non-traditional student and his experiences fuel his excitement about the opportunity to teach distance learning students. According to Etchberger, distance learning provides a challenge to find more than a ‘wooden boat’ solution.

“These students are really place and time bound, but they are determined to get an education,” Etchberger said. “I am happy to help remove some of the road blocks that are standing in their way. With the new technology becoming available, it is possible to take education all over the world. Distance education is really about taking the courses to the students.”

Etchberger feels that a quality education is more than technology and must include real-life, hands-on learning experiences. He makes an effort to involve students in research projects, field trips and tracking.

“From owl calling to bird identification to stream sampling, there was always something to see, touch or hear,” Stephanie Tomkinson, a former student of Etchberger’s said. “Every class I had with Rich involved field trips. He knows that is where the real learning takes place, that’s when it sticks.”

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Dave Evans recently graduated with a bachelor’s degree and worked closely with Etchberger. Evans was impressed with how quickly Etchberger developed a personal interest in his students.

“All through my undergraduate program, I always felt good when I left his office or his classroom because I knew I had learned something valuable that I could use immediately,” Evans said.

Evans worked with Etchberger on field projects as a wildlife intern in the Pariette Wetlands. The internship program is a one-year assignment in which current wildlife students get opportunities to work and earn money, as well as gain experience in the field before graduation. From hands-on learning opportunities to internships and alumni networking, Etchberger collaborates with government and private agencies to create internship and job opportunities for his students.

“Rich seems to love his job and helping students succeed,” Tomkinson said. “When I graduated and got a job, he told me to keep the USU program in mind if I ever needed interns.”

“My company will be using summer interns and Rich will be the first person I call,” he said. “Dr. E is not just a professor, he is a mentor for many people. Most professors I had will become faded memories, but Dr. E will always be part of my network. I look forward to working with him for many, many years.”

Etchberger enjoys staying in contact with his former students and living and working in the Uintah Basin.

“It is great to live in the basin and have graduates out there that you see every day,” Etchberger said. “They run businesses. Their kids go to school with my kids. We are part of a community, and that is what I was looking for when I started teaching. I wanted to be part of a university community, but also a good neighbor.”
LIFE IN THE FAST LANE

From riding and restoring classic motorcycles, training for triathlons and long boarding around the campus of Utah State University, Josh Kerkmann is more of a risk taker with an adventurous spirit than a rebel without a cause.

Oh yeah, he’s also vice president of his own start-up company.

Kerkmann is a junior in the College of Business, majoring in international business and taking 17 credits this semester. Between classes, meetings and pitching his product to clients, he stays pretty busy.

Kerkmann’s company, Lottery Solutions LLC, markets automated lottery software to schools, corporations and sporting events. Kerkmann partnered with fellow USU student Joseph Irvine, a freshmen majoring in computer science, to create a business to market Irvine’s unique computer program.

The program automatically runs any type of lottery for an organization that has more requests than available places. The program selects students for admission and has been purchased by charter schools across the country.

The team is also developing plans to work with major sporting events such as the Union of European Football Associations in Switzerland to help the organization decide who receives tickets.

“Becoming an entrepreneur has been such an exciting and involved process,” Kerkmann said. “It is like a case study that combines all of the classes from my experience in the College of Business. I am able to apply the skills and knowledge from all of my classes at Utah State and implement them in this business.”

Kerkmann has been working with Utah State’s office of technology commercialization to patent and register his products. He also researches potential customers such as the Space Share Foundation. He is in the process of creating a marketing proposal to demonstrate how Lottery Solutions can help the foundation select a person for space flight.

“Starting my own business has been a real challenge and adventure,” Kerkmann said. “With my business I am responsible for everything from accounting to marketing. I’ve had to draw upon all of my business classes, contacts and mentors to make this venture work.”
As a College of Business ambassador, Kerkmann has met business leaders who helped him develop his company and given him professional advice. He hosted Tom Stockham, acting CEO of the online trading company 3point5, at a Dean's Convocation seminar. From that contact, a relationship was created that resulted in several email exchanges. Stockham provided advice and suggestions about Kerkmann's business.

“As a business ambassador, I've learned a lot about business in the real world from the high-profile executives the College of Business brought in, including Kem Gardner and Ken Wooley,” Kerkmann said. “It's nice to be able to talk with these professionals one-on-one and apply their advice to my own business.”

In addition to his coursework, hobbies, start-up company and student government positions in the College of Business, Kerkmann is participating in a five-week study abroad program to South America to assist small business owners with a micro loan program. He also plans to travel to Paris, Brussels, London, New York and Washington, D.C. as a part of the college's Junior Year Experience program.

“Josh is an exceptional business student,” said Chris Fawson, professor of economics. “He has excelled in leadership, coursework and applying the principals we teach in the College of Business to his own entrepreneurial efforts. I am sure he will be a tremendous success in all of his endeavors.”

Whether riding motorcycles, starting his own business or traveling the globe, Kerkmann is a College of Business student who says he's always looking to take a risk and learn something new.
As early as he can remember, David G. Sant was fascinated with anything scientific — astronomy and chemistry and any mechanical or electrical system. That fascination would lead Sant to Utah State University to pursue an education in electrical engineering, and then on to the communications industry where he would further his interests and achieve great success.

His success allows him to follow his interest in education and to give generously to the students at Utah State University. Sant donated $1 million in May 2007 to his existing general engineering scholarship endowment in the USU College of Engineering to support students studying in the college.

“I am trying to make sure that any students who want to go to college can do so, without concern for their ability to pay for it,” Sant said.

After several years with IBM, Sant became a key contributor to the growth and evolution of the telecommunications industry when it moved from an analog-voice-only medium to a digital-based communications tool. He followed his earlier interests when he founded several start-up companies based in the telecommunications business.

“I am always telling students to make career choices based on their interests and to make sure they like what they are doing,” Sant said. “Success comes more easily when you enjoy life and when you enjoy what you are doing.”

Sant carries that philosophy with him on a daily basis. He grew up in Franklin County, Idaho, with parents who instilled in him a great work ethic, and after a three-year stint in the United States Air Force, Sant decided he didn’t want to be working on machines. He wanted to design them.
He enrolled at USU in the general education program and earned a place on the dean’s list during his first quarter. He then quickly changed his focus to the College of Engineering where he would graduate with a bachelor’s and master’s in electrical engineering. During his time at IBM, he continued his studies at Santa Clara University in California, where he would earn an MBA.

“One of the outcomes of the legislative session this year is the continuation of the engineering initiative,” said USU President Stan L. Albrecht. “Our graduate numbers are up in the College of Engineering and we are seeing a great success story. The funds coming from the legislature and great friends like David Sant make the success possible.”

Sant said USU treated him well as a student and he has maintained a close relationship with the College of Engineering since his graduation. He and his wife, Diann, recently donated nearly $4 million to support the construction of a new state-of-the-art engineering innovation laboratory building at USU.

Explaining his motivation, Sant said he was looking for a substantial way to give back to the community that shaped his life. He said there is no better way to do that than to support the institutions that equipped him for his career. Sant and his wife have also established scholarships at Santa Clara University and San Jose State and provided funds for a library in Preston, Idaho.

“Mr. Sant’s scholarship helped me out a lot my freshman year,” said Ashley Kelly, a USU engineering senior from Franklin County, Idaho. “I actually came to USU to try and get on the softball team, and when I didn’t make the cut, I was able to devote all my time to my studies. Being an engineering major is a lot of work, but it is worth it. The friendships I have made and the skills I have learned are irreplaceable.”

Sant believes the students are the future of USU’s College of Engineering. The college is in the position to achieve a world-class reputation, he said. He is happy to be associated with the college and Utah State University.

For more information on USU’s College of Engineering, visit www.engineering.usu.edu.
WALKING THROUGH A PHOTO
THREE-DIMENSIONAL PHOTOGRAPHY OFFERS WORLDS OF NEW POSSIBILITIES

Since World War II, the U.S. military has relied on radar. The simplistic radar depictions of planes, boats and submarines has left something to be desired by the military, which wants to accurately determine the distance and size of targets.

Utah State University researcher Robert Pack is using the same technology to develop survey instruments that are far ahead of current military reconnaissance. Pack's research has the potential to revolutionize myriad industries, including engineering, medicine, architecture and entertainment.

Pack has been with USU since 1998 and specializes in geological and geomatics engineering. He and his team of engineers have been working on the development of advanced 3-D multispectral imaging, a technology that produces complex 3-D images in the same time it takes to snap a photo. It is based on lidar technology, which is similar to radar, but uses light in place of radio waves.

The possibilities have made Pack's technology a shining star among start-up companies. After moving his research to the USU Center for Advanced Imaging Ladar, a Utah Center of Excellence, he was awarded a patent for the basic technology and expects to have several more in the next few years.

USU has also licensed Pack's camera to a Salt Lake City-based company, RappidMapper, Inc.

This approach to 3-D photography started as a small idea by Pack and his brother, Brent, a retired electrical engineer. As they pursued it, he said they were amazed to find out no one else had come up with the idea before.

"Three-dimensional photography solves the problem of being able to characterize natural objects," Pack said. "It enables people to analyze, measure and better understand the objects when using a computer."

The camera created by Pack is composed of three common technologies: lidar, digital photography and a global positioning system (GPS). The camera, called Texel, takes a normal digital photo of the scene in front of it, while the lidar and GPS are used at the same time to collect additional information. Once the 3-D photographic image is captured, it shows up on the screen like a normal digital photo. Unlike traditional digital photography, however, the scene is automatically embedded with distance, area and volume information.

When multiple Texel photos are combined, a complete 3-D scene is formed with views from every desirable position, Pack said. At this point, users can "walk-through" the photo, viewing it from a first-person perspective and seeing in 3-D.

Current 3-D processes use many of the same technologies as Pack's, but each one must be integrated with the others manually after the photos are taken and the information is collected. This takes a great deal of time and processing.
power. The Texel image, on the other hand, “comes out of the box in 3-D when it is downloaded onto a computer,” Pack said. No configuration is needed, and the file is small enough to email, while achieving 10 times more accuracy than other techniques.

In addition to improving detection technology, Pack’s camera could be used for a wide variety of other military applications, such as surveying a battlefield in real time and identifying tanks and artillery hidden under the cover of trees. Not only does 3-D visualization improve accuracy, it is also more cost efficient. The Department of Defense has granted a three-year contract to Pack to develop this camera for use in a cruise missile.

Three-dimensional visualization, however, isn’t valuable for just the military. The technology is being investigated for use in many fields, including space exploration, crime investigation, engineering, architecture and entertainment, Pack said.

“We want to revolutionize the 3-D camera market and put these in the hands of photographers of all sorts who care about the dimensions and shapes of objects,” he said.

In one possible use, a surveyor would be able to fly over a forest with the Texel camera and measure the height and species of trees, as well as the dimension and density of the forest.

The camera could also be used to document crime scenes in three dimensions, allowing investigators and jurors to walk through a scene long after critical evidence has been moved or cleaned up. Several federal and state agencies have already expressed interest in testing the technology for this purpose, he said.

Other industries that do extensive surveying, such as engineering and architecture, also stand to gain much from this technology. Buildings, construction sites and landscape designs could all be pre-visualized before they are completed.

The entertainment industry could also benefit from 3-D photography. Instead of spending millions of dollars to create digital scenes of physical sets, animators for movies and games could easily photograph the sets and locations and import them into a computer.

NASA’s Jet Propulsion Laboratory is interested in taking the camera to space by integrating the Texel camera into future Mars rovers, as well as in devices for more distant expeditions, Pack said.

In the meantime, Pack said there are many of avenues to explore. He hopes to make the tripod more easily airborne and eventually put the technology in unmanned aerial vehicles.

Pack said he is also working to increase the shots that can be taken per second from 600 to 200,000, as opposed to a typical digital camera that takes four to six shots per second. He also wants to improve the accuracy and range of the camera so it could take pictures of objects up to a little more than three miles or five kilometers away.

Pack said pictures are worth a thousand words, but an RMI image is worth a thousand pictures.

“I am really excited to see where this technology can take us,” he said. “People have always needed to know what’s out there. They need to know what sizes and shapes things are. This technology provides a new observation for us. Perhaps it allows us to discover things that have never been discovered.”

Source: USU Vice President for Research Office, anna.mcentire@usu.edu.

Contact: Bob Pack, USU’s Civil and Environmental Engineering Department, rtpack@cc.usu.edu, 435-797-7049.
Every shopper has experienced that gotta have it moment — walking into a store and there, almost as if centered in a spotlight, is the perfect athletic shoe. Or watch. Or car. Or book. Or …

But how do those wily companies know exactly what consumers want and when they want it? Could there be someone behind the curtain, if not pulling, then anticipating those ‘buy me’ strings?

Yes. And the power is not based on lucky guesses; it’s based on marketing research.

Marketing research is conducted every day, and companies using these techniques often have a competitive edge. These companies and organizations know what people want, or what they want to do — often before they know it themselves. There’s no magic formula to the process. It’s all based on research and work.

At Utah State University, Stacey Hills teaches a marketing research course in the Department of Business Administration in the College of Business that lays the foundation and provides the skills necessary to contribute to a successful product launch or business venture. It’s done through creative activities that go well beyond the confines of a textbook. The course is intended to give students as realistic an experience as possible in putting together a marketing campaign. To that end, she engages students in real-life, hands-on learning with actual companies.

In her marketing research course (BA 4530), Hills provides this realistic experience by assigning students to work with a client on a marketing campaign. Through the course of the semester, students develop, implement, and evaluate marketing research as part of a campaign for the clients. Through the experience, students enhance their communication, analytical, organizational, leadership and interpersonal skills — skills for a successful career following graduation.

Early in the semester, the class is divided into marketing agencies to work with the clients. Each agency conducts marketing research, designs a marketing campaign, then writes a comprehensive marketing plan to be pitched to the client in a formal presentation.

The goal is to meet the objectives set by the client.

“To do that, students need to draw upon not just what is learned in this class, but all previous learning,” Hills said.

Students draw upon their skills in marketing, advertising, management and human resources, public relations, sales promotions, teamwork, public speaking and business writing.
Corrington wanted to raise awareness of his business on campus and with students. As important, through the work of the students in the class, Corrington would learn how students heard about his business.

During the first weeks of the class, students receive training and are certified to conduct interviews and gather information. Following that training, Corrington met with two student teams. He was joined by the CEO of Beat the Bookstore, who was very interested in the project and wanted to be involved.

“At that first meeting I wanted to make sure we were on the same page so the students could begin their research,” Corrington said.

Throughout the semester he met with the teams multiple times, and many email exchanges took place.

At the end of the semester he met with the student teams for the final presentations. Gathered on the top floor of the Eccles Business Building, the students laid out their findings in a corporate board room setting. Each team had 25 minutes to summarize its work. There were charts, graphs and PowerPoint presentations.

“The final presentations were very good and I learned a lot,” Corrington said. “What I assumed had been effective advertising wasn’t, I’ve already re-evaluated my advertising, and the students’ research shows that more non-traditional advertising is better. The research showed how people heard about us, and that’s what I wanted to know. Concrete changes will come from this new information.”

Corrington said the research is especially valuable because it was conducted by students — information provided to students by students is probably more honest, he said.

“This experience has been extremely valuable and I give kudos to the students for their drive and effort,” Corrington said. “I’m also impressed by Stacey Hills. She has the right personality for this, and she challenges the students. She gives them the real-world experience that will pay off following graduation.”

Corrington spoke highly of Utah State University.

“As a business owner, I’m glad I became involved, not just with this project, but with the university as a whole,” he said. “I think that other businesses should get involved — on many levels — with the university. There are good things happening at USU, and Stacey Hills and her classes are a part of that.”

Hill’s outstanding teaching was recognized at the spring 2007 commencement, where she received the Teaching Excellence Award for the College of Business.

“Dr. Hills goes out of her way to inspire, influence and guide her students to a greater understanding of business and marketing,” a student said.
SUMMER BREAK WITHOUT MISSING A BEAT

Utah State University professor R. Dennis Hirst will spend his summer in Wolfeboro, New Hampshire. He dreams of sailing on Lake Winnipesaukee in an area known as the oldest summer resort in America.

The reality? He’ll be adding to his experience as an arts administrator.

Hirst is a recently promoted associate professor in the Department of Music in the College of Humanities, Arts and Social Sciences. From May to August 2007, he will take a break from his responsibilities as a music professor and director of the Wassermann Piano Festival at Utah State, to become the associate director of the Heifetz International Music Institute.

Hirst is among the USU faculty members who take the summer months to pursue professional development activities. Many devote time to book projects or complete field work that isn’t possible during the academic year, and others leave campus to fill professional positions at a variety of prestigious institutions or organizations.

Early in his professional academic career, Hirst, fresh out of graduate school, received an offer to become the administrative director at the Sarasota Music Festival. At the same time, he was offered a teaching position at Utah State University.

“The Utah State University offer provided multiple opportunities,” Hirst said. “I would be involved in teaching, in making music and in directing an international music festival. I liked the opportunity to be involved in many areas.”
Since he joined the faculty ranks at USU, Hirst has taken the bi-annual Wassermann Festival, where he is the artistic and administrative director, to impressive heights. It is a major international piano festival that brings the world’s foremost pianists and pedagogues to the Utah State campus.

While Hirst didn’t take the Sarasota job, it led to his summer employment with the Heifetz Institute. After the institute’s associate director left, the job was offered to the individual at Sarasota who had offered Hirst a position in Florida. Unable to accept the Heifetz offer but remembering Hirst, he recommended him for the New Hampshire position.

So, it was early in spring 2007 that Hirst received a call from Daniel Heifetz, founder and director of the Heifetz International Music Institute.

“I didn’t really know Daniel,” Hirst said. “I did know he was a prominent violinist, but I didn’t know much about his institute. I was surprised and pleased when he asked to speak with Dennis Hirst, the bassoonist.”

While much of Hirst’s work involves the piano — he is a performer as well as educator — he has a distinguished record in solo and orchestral bassoon performances. In fact, he was recently involved in two world premieres — *Ophelia in Seville* by Miguel del Aguila, and the modern performance edition of Christian Ludwig Dietter’s *Concerto Concertant No. 1 for two bassoons and orchestra*, a work he edited and restored.

After his conversation with Heifetz, Hirst began to research the institute. What he found excited him. The institute is designed to provide an intense musical experience, providing musicians the opportunity to develop the expressive potential while encouraging technical growth. The intensive schedule includes private lessons, practicing, classes, solo performances and chamber music.

The institute is a talent and skill-based festival. Admission is based on those criteria, not the ability to pay tuition. It is a professional training festival.

Prior to arriving in Wolfeboro, Hirst will spend three weeks at the festival’s headquarters near Baltimore, Md., then, it’s on to New Hampshire. Home to the institute is the Brewster Academy on the shores of Lake Winnipesaukee. It’s there that Hirst will step into his non-stop administrative responsibilities.

“This will be a significant change for me,” Hirst said. “With the Wassermann Festival, I’m pretty much a one man band. At the Heifetz Institute, there is an impressive list of faculty, and I’ll have a support staff.”

At the end of the summer, Hirst will return to USU with impressive administrative skills under his belt, and valuable contacts as well.

“The guest artists at the institute represent the very finest,” he said. “I’ll associate with an impressive and talented faculty, and all this furthers my professional training.”

Hirst is also pleased that he’ll have daily contact with chamber artists and the string faculty.

“We have an outstanding string quartet in residence at Utah State University — the Fry Street Quartet — and I hope to take advantage of my summer experience and pursue collaborative efforts with USU’s string and chamber music programs,” said Hirst. “I look forward to my professional opportunities at the Heifetz International Music Institute and will return to USU with a wealth of experience.”
HANDS-ON LEARNING

To look at him, an observer would never guess that Aram Arakelyan gets impossibly nervous before each piano competition or performance.

Talking with him, Aram is impeccably polite and somewhat quiet. His English is near-perfect with the slight lilt of an accent, not quite identifiable. Occasionally, a mischievous laugh emerges along with a dazzling smile.

To many, he would appear an average college student.

College student? Yes. Average? No.

Aram is among the prize-winning piano students who study with Utah State University’s Gary Amano, and he is the 2007 winner of the Kingsville International Piano Competition. The Kingsville title is his latest, but the road to the Texas competition was long, taking him on a journey he could never imagine.

Born in Armenia, Aram came to the United States to compete in the Gina Bachauer Junior International Competition for pianists ages 8-18.

Following the competition, and with the help of a piano scholarship, he began his studies at Utah State University with Amano. Returning to Armenia is problematic but Aram prefers to put a positive spin on his situation. He misses his family, but staying in America allows him to focus on his future. One thing is clear — that future involves the piano and music.

“Yes, I miss my family, but when I left my home at age 17, I knew I wanted to come to the United States to study,” he said. “There is an 11-hour time difference between Utah and Armenia, but we talk on the telephone once a week — we call every Sunday between 11 a.m. and 2 p.m.”

That’s every week unless Aram is preparing for a competition. Then, he sometimes becomes so focused he forgets to be near a telephone. At that time the young pianist is working toward one goal — playing in the zone, a mental state that is comfortable and where everything is going as smoothly as possible at the piano.

Amano, who has been Aram’s teacher the five years he’s been at Utah State, said he is an extraordinary talent.

“When he came to Utah State, he was a high school student who was immature, sloppy in his playing and very disorganized in his practice,” Amano said. “It has taken a few years to help him realize his wonderful potential. He can play and compete with the best students.”
At the Kingsville competition, Aram captured two awards. Following his first round, he received the Isabel Scionti prize for the best single performance at the competition. By the time he finished the final two rounds of the three-round competition, he took first place overall in the solo senior division. Better yet, he took home a cash prize of $2,000 — great news for a college student living on his own.

Preparing for the competition became all-consuming, but Arakelyan had the support of his teacher and mentor Amano.

“Professor Amano talked with me about entering Kingsville, and we decided this would be a good competition for me,” he said.

Aram is Amano’s fifth student to win first place at the Kingsville competition. That’s an impressive track record for Amano and USU pianists.

“I find that Kingsville carefully selects judges who are politically impartial,” Amano said. “They aren’t impressed if the competitors are from Juilliard or Moscow.”

In the highly charged atmosphere of major competitions, this is often a concern when the students come from Logan, Utah, an area unknown to many.

Kingsville required a 20-minute program with a repertoire of choice by the contestant from contrasting musical periods. Aram performed music from the Classical period, Romantic period and a 20th century work by a composer from his homeland. The selections were drawn from the nearly two hours of repertoire he had prepared for last summer’s Gina Bachauer Competition in Salt Lake City, a competition he entered this time in the senior division.

Aram said he likes to work with pieces “that you’ve been on the road with.” That is, pieces that have been used in competitions or performed multiple times in front of an audience.

“Once I was accepted in the Kingsville, I was practicing every single moment — not doing anything else,” he said. “That’s why I like to work on pieces I have experience with.”

“When students prepare for competitions, I always tell them the truth,” Amano said. “If they are playing on the level needed, I tell them so, and if they are not, they know that as well. At all stages of preparation, I will let them know exactly how they are doing.”

The work paid off for Aram, who most certainly achieved “the zone” in his winning performances.

“Aram is a great talent, but there are others in the department who are wonderful students,” Amano said. “They might not attain national recognition, but to help them grow as musicians and as young adults is the most rewarding aspect of my work at Utah State.”

Aram said he is at a crossroads. He’s close to graduating and will finish his undergraduate degree within the year. His experience at Utah State has been a good one, he said, and many on campus have had the opportunity to hear him perform. He plays at numerous campus events, both in the spotlight as a solo performer and providing background music for innumerable receptions. He’s even spent two summers as the accompanist at Bear Lake’s Pickleville Playhouse, a summer entertainment stop and the home to old-time melodramas and popular musicals.

“I want to build my career and to be able to do everything,” he said. “Musicians have to be able to play music, no matter what it is. That’s why I agreed to play with Pickleville. I love to play background music, recording and performing anything at all. I play and I’m at the piano constantly. I’m still learning.”

And when Aram is at home relaxing, what does he do? At the moment, he’s exploring jazz.
A FEW DEGREES COOLER

The Logan Canyon winds blasting across the Utah State University campus in the middle of January may take your breath away, but those same winds in the summer restore it. It’s cooler here, the pace is slower and there are always plenty of things to do.

For students who want to get a jump start on the fall, the university offers four sessions that equal one semester. Session one begins May 14 and ends June 8. Session two begins June 11 and ends July 8. Session three begins June 11 and ends Aug 3. Session four starts July 9 and ends Aug 3.

USU hosts numerous summer camps that range from Youth Council to 4-H Adventure Camps. Offerings also involve many sports camps, including a basketball camp by famed USU coach Stew Morrill, a gymnastics camp and a volleyball camp for girls.

Enriching our community are the 600-plus “Summer Citizens” USU welcomes to its campus each year. These visitors come mainly from Arizona and stay from about May 14 to Aug 20. They participate in many university activities and even take courses such as Introduction to the American Legal System. To help them stay fit, they have access to campus recreation where they may rent outdoor equipment or make use of a running track, badminton, volleyball, tennis and racquetball courts.

Summer Citizens, students and community members are also treated to free Alumni Band summer concerts – a tradition now 45 years strong. The concerts are performed on the USU Quad and in the Kent Concert Hall at 7 p.m. June 17 and 24th (Kent Concert Hall); July 1, 15 and 29th on the Quad, in the shadow of Old Main.

Logan Canyon delivers more than wind, it provides a wide variety of outdoor recreational opportunities. The canyon’s pristine qualities are heralded in a just-released book written by USU communications professor Mike Sweeney and published by National Geographic.

“If not the West’s last unspoiled place, Logan Canyon – with its alpine wildflowers, limestone cliffs, rushing trout streams, and myriad other signatures of nature upon unsullied canvas – remains something to be treasured and preserved,” he wrote.

Welcome to our backyard.
Forensic investigations are all the rage on television. Medical investigators get to the bottom of the case by the end of the hour. The clues are well hidden and the process is exacting, if not rapid. The outcome? Exciting, whether it’s in Las Vegas, Miami, New York or Boston. But that’s the world of entertainment.

How about the world of business? Are financial sleuths out there dissecting the books of suspect companies, uncovering the misdeeds of capital criminals? The answer is yes, and Utah State University School of Accountancy professor Cindy Durtschi has come up with an innovative way to train the accounting world’s future detectives — make that forensic accountants.

“The term ‘forensic accountant’ is rather new,” Durtschi said. “But the concept is simple. Forensic accountants look for fraud.”

And, as Durtschi said, there are all kinds of fraud. There’s asset misappropriation — to those who are non-business types, that’s stealing money. In cases where people are caught, the average amount misappropriated is $80,000-$90,000. That’s substantial.

“Over the years, I’ve incorporated every fraud I’ve heard about into this course,” Durtschi said. Forensic accounting is a specialty that combines a number of skills, including accounting, auditing and investigation. Durtschi teaches Accounting 6540 — Forensic Accounting — in USU’s College of Business. Her approach to the graduate-level course is creative and has been recognized nationally. She received the 2006 American Accounting Association Innovation in Audit Education Award for her published case in forensic accounting — “The Tallahassee BeanCounters: A Problem-Based Learning Case in Forensic Auditing.” The Tallahassee BeanCounters has become a very important part of Durtschi’s class as students take a look at the company and its books. But that’s jumping ahead a bit.

The course is centered around a problem-based learning experience — that is, Durtschi presents a “problem” and the students, working through multiple steps in the hands-on experience, must come up with a solution. The course provides a complete overview of the forensic accounting arena.

The surrounding area, including ski resorts, lakes, rivers and mountains, makes Utah State one of the finest recreational environments in the nation. Just four hours north of Logan Canyon is Teton and Yellowstone national parks.

Whether hiking or kayaking in Logan Canyon or exploring the geysers of Yellowstone, there is no shortage of recreational opportunities in some of the great unspoiled places of America.

Many of these activities were highlighted in a recent edition of Salt Lake Magazine in an article “25 things we love about Northern Utah.” USU occupies four of those prized spots. They include a stop for Aggie Ice Cream, “sweet, creamy, rich and an absolute obligation to partake of for parents visiting students at USU.”

The No. 2 spot, after the turquoise waters of Bear Lake at Logan Canyon’s north rim, is USU’s The Old Lyric Repertory Company in downtown Logan “staging four plays in manic rotation each summer.” The magazine noted that this rigorous schedule “has earned the company its hard-working reputation and you can bet that among the farces, dramas, and the musical comedies there will be something to entice you for at least one curtain call.”

Coming in at No. 5 on the list is Michael Ballam, USU opera and voice professor. He is artistic director over the Utah Festival Opera that draws 28,000 visitors every summer. The festival runs from July 11 to Aug 11.

Rounding off the list is basketball coach Morrill who “has built a solid program at USU and made the Dee Glen Spectrum one of the most feared arenas in the Intermountain West for visiting teams. Rock on Stew!”
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Students look at various types of fraud, learn to recognize the red flags of fraud and acquire specific skills used in fraud investigations. There’s financial statement analysis with the aim to discover firms that manage earnings in a way that might lead to fraud. The students complete a Benford analysis — a computer-assisted method of flagging suspect accounts.

“The course is team-based and prepares students for real auditing engagements,” Durtschi said. “It is based on real firms, real accounting numbers and a case that simulates a real company setting.”

Graduate student Hunter Lassetter enjoyed working in a team situation.

“Because I worked with the same team throughout the semester, the class felt like a real-world simulation in that the team members became my co-workers and friends,” she said.

Companies provide their books, and the students run the numbers and provide an analysis. The students must communicate directly with the companies and provide reports. One recent company reported to Durtschi that the students were observant and wished its own employees were as detail oriented.

“The course is unique in that it took us in so many directions,” Lassetter said. “It discussed topics that included murder and divorce to demonstrate the skills accountants can, and should, apply every day on the job.

The final project is a complete forensic accounting and investigation of the Tallahassee BeanCounters, a fictional minor league baseball team that Durtschi created.

The process is complex and detailed, and puts the pressure on Durtschi, who provides all the answers to questions posed by the student teams during their investigations. But others are involved as well. She recruits individuals to pose as principals in the BeanCounters. Several fellow accounting professors fill those roles, as do spouses and other staff in the School of Accountancy. During the information exchange with the students, Durtschi sends email copies to all the “actors” so they are completely filled in and in sync about the ball team’s business affairs and practices.

“I want to make this project as realistic as possible,” Durtschi said. “The teams can choose a list of suspects to interrogate. The goal is to obtain a confession or accumulate evidence that might be used in the presentation of the final case.”

To complete the project, student teams must prepare a final trail of evidence report. The students are not interviewed as expert witnesses, but rather, the written record is reviewed as if it were to be presented in court. The student teams must organize its facts and evidence to provide sufficient, high-quality, legally obtained evidence. The students must prove a crime was committed, what that crime is, how it was committed and the intent. Finally, they must produce proof of who did it, who benefited from the crime and where the money went.

“By the time the students get to the interview portion of the assignment, they are loaded and ready to go,” Durtschi said. “They want confessions.”

Durtschi’s course is offered once a year at USU. The work is time consuming for the professor, but extremely valuable to the students. She said she wants them totally prepared for the work world.

And when they are prepared, they not only enter an exciting career, they enter a “hot” career. In its 2007 “How Did You Do?” feature that details what Americans earn, Parade Magazine listed forensic accountant at the top of the list of 2007’s hottest jobs for college graduates. That piece said that the field combines accounting, auditing and investigative skills in a career that can provide an income ranging from $30,000 to $150,000.

Following graduation, Durtschi said students can go to work for the big audit firms, but others can look to careers with the FBI or other law enforcement agencies.

“Unfortunately, there is a big need,” Durtschi said.

Durtschi’s forensic accounting course provides tangible benefits for its students, including Lassetter, who has accepted a position with one of those powerhouse firms.

“The course was extremely valuable to me,” Lassetter said. “I’ve been hired and I’ll be doing forensic accounting in the Dispute Analysis and Investigations practice of PricewaterhouseCoopers when I graduate.

“I chose to come to Utah State University because it is the only university in Utah to offer a forensic accounting course. Not to mention that the course is taught by one of the most highly respected professors in the forensic accounting field. Cindy Durtschi devoted all of her time and energy to making the class realistic, interactive and fun. It worked!”
YOUNG HISTORIAN IS ON THE MAP

Most of the year Lawrence Culver can be found in a campus classroom at Utah State University or in his office in Old Main. It’s his research interests that take him to more exotic locations, and his friends once chided him about his doctoral studies.

“As a doctoral student, my friends ribbed me about my ‘research trips’ to places such as Palm Springs,” he said. “Even though I visited numerous archives, conducted oral history interviews and plowed through vast amounts of tourist ephemera, somehow it was difficult to prove that I had not simply reinvented dissertating as a vacation.”


An assistant professor of history at Utah State University since 2004, Culver has earned a new honor, a recognition that puts him on the map — to use the language of one of his specialty areas. Culver was named the country’s “Top Young Historian” for the week of June 3, 2007, by the History News Network.

“The History News Network is an Internet-based site that was organized several years ago,” Culver said. “It provides a public forum for historians to discuss history, to put current events into perspective and to discuss contemporary politics.”

The site also provides a venue for op-ed pieces and a place for historians to discuss and write about current research. Housed on the George Mason University Web site, History News Network is a non-profit organization based in Seattle, Wash.

Culver’s major area of research includes the United States’ southwest borderlands; the American West; cultural, environmental and urban history; and the histories of tourism, recreation, architecture and urban planning.
At USU, during spring semester 2007, Culver also earned a teaching honor when he received a recently created award that acknowledges top teaching. Culver was among the inaugural group of five USU faculty to receive the Excellence in Instruction for First-Year Students award. The award recipients were selected from a group of more than 100 faculty members who were nominated by freshman students.

“The Utah State faculty creates a rigorous academic environment while providing students the personalized support they need to bridge the gap between the past and present,” said Noelle A. Call, director of USU retention and first-year experience. “When a world-class research professor knows your name and really cares, it becomes a springboard to success.”

An observer at an off-campus summer course taught by Culver — a course designed for public school history educators — immediately saw his appeal as a teacher. He was animated and engaged, while sprinkling his information-and-illustration-packed lecture with humorous asides.

In its award to Culver, History News Network included a number of comments by students, and many appreciated his humor.

“Dr. Culver made it really fun and it was organized very well,” one student commented. “He was also really funny and that made the class better.”

“You are the best history teacher I have ever had,” another student said. “I can tell you love the subject by the way you teach.”

Praise for Culver’s dissertation, which he is now revising into a book, is also high. The review committee read nine dissertations before selecting Culver’s for the Rachel Carson Prize.

“The winning manuscript considers the lifestyle of leisure in southern California, arguing that Catalina Island, Palm Springs and Los Angeles contributed to the formation of a distinct American suburban culture in the 20th century,” the review committee wrote. Lawrence Culver asks us to think about all the ways that Palm Springs changed the way Americans thought about leisure: modernist desert architecture, the golf course residence and the Hollywood vacation colony. … [Culver’s dissertation] is innovative and it pushes environmental history in interesting directions.”

“Someone who studies leisure and tourism in American history is likely to encounter bewilderment, not to mention some humor, at their expense,” Culver said in response to the “Top Young Historian” award on the History News Network Web site. “What I really enjoy about being an historian is using and communicating historical knowledge in very different ways — in research and writing in the profession, through teaching, from surveys to graduate seminars, and through public history — in museum exhibits, public advocacy and in research projects, such as one I completed examining race and access to recreational space in Los Angeles.”

That report is now being used to advocate for increased parkland and access to recreational opportunities for all the residents of Los Angeles.

“Being able to use historical knowledge to help people in the present is an especially rewarding aspect of being an historian,” Culver said.

In various courses at USU, Culver uses different teaching techniques. Classroom technique is different in an upper division course and in graduate seminars as compared to large survey courses for undergraduates. In his history 1300 course — U.S. Institutions, a course made up primarily of freshmen — Culver said he provides a general overview of American history and works with primary documents so students get an understanding of how historians interpret documents. For those not accustomed to a large lecture course, Culver provides lecture notes and tips on how to write an essay, especially for an essay exam. He encourages attendance at activities outside the classroom.

“I want the students to know that Utah State University is more than a place you come to and take classes,” he said. “It’s an intellectual community, and I want them to be a part of that community.”

Culver said he is both flattered and slightly mortified to be named a “Top Young Historian.”

“It’s certainly nice to receive recognition and to be noticed by people in the discipline, especially at an early stage in my career,” Culver said. “I’m very flattered by it.”
Sweeney's tribute to the geologic wonder that he was drawn to from his first visit to Logan.

“I came to Logan in January 1996 to interview for a job at Utah State University,” Sweeney said. “Ted Pease, then the department head in journalism and communication, briefly took me into the canyon — for about a 10-mile drive. There was a lot of snow and the river was churning and we saw a moose. I thought, ‘this is pretty nice.’”

It was later, after accepting the job offer at USU, that Sweeney and his family saw the beauty and diversity of Logan Canyon. Making the move from Ohio to Utah, Sweeney decided to drive into Logan from the east, traveling through Logan Canyon on U.S. Highway 89.

“That was my introduction to Logan Canyon in the summer,” Sweeney said. “I was stunned and amazed at how beautiful it was. Driving down the u-shaped valley by the Sinks, I thought how green and cool — cool in every sense of the word — the area was. We drove through the tunnel of trees at Wood Camp with leaves overhead. It was unbelievable.”

Within a week of moving in, Sweeney was in the canyon, soon hiking the River Trail, going to the Jardine Juniper and exploring Tony Grove. So, when he was ready to write Last Unspoiled Place, he was prepared.

Logan Canyon is a place of legend, history, recreation and more, and it is the subject of a new book by Utah State University faculty member and department head Michael S. Sweeney. Last Unspoiled Place — Utah’s Logan Canyon is

Location, location, location. That real estate mantra might be a tired cliché, but for students studying at Utah State University, it’s a reality that promises an abundance of outdoor recreational possibilities. Logan Canyon, a spectacular natural resource, sits minutes from campus, a backyard playground for all.

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Professor Michael Sweeney takes a break with his canine companion Chance during a hike in Logan Canyon. Sweeney is the author of Last Unspoiled Place — Utah’s Logan Canyon, a book published by National Geographic.
"When I got into writing the book I was able to go into parts of the canyon I didn’t know about," Sweeney said. "I went to Peter Sink and the crash site of the Korean War-era plane. I made it to every site in the canyon I wanted to know."

_Last Unspoiled Place_ is published by National Geographic, a mainstay in the publication world with which Sweeney had previously worked, completing four earlier books. With this, he pitched the idea for a book about Logan Canyon. After submitting an outline and digital photos, Sweeney waited for a decision. The process took about 18 months — most of that waiting for National Geographic to make a decision. Writing the book took only five months. Sweeney attributed his swift completion of the book to his newspaper reporting background.

The book is divided into five chapters or sections and the reader travels through the book as if taking a drive through Logan Canyon. The first leg of the journey is from the Bonneville Shoreline to Spring Hollow. Readers then travel from Third Dam to China Cave, Twin Creek to Franklin Basin and finally to the summit and beyond in Franklin Basin to Bear Lake.

Sweeney likens the canyon to Old Ephraim, a grand, old bear immortalized in local lore.

"Logan Canyon, in northernmost Utah, has much in common with Old Ephraim," Sweeney wrote in _Last Unspoiled Place_. "Similar to the giant grizzly, it is among the last of its kind. If not the West’s last unspoiled place, Logan Canyon — with its alpine wildflowers, limestone cliffs, rushing trout streams, and myriad other signatures of nature upon unsullied canvas — remains something to be treasured and preserved."

Sweeney believes Logan Canyon is truly a unique place.

"I have lived in many states and have seen places that are beautiful and wild," he said. "But if you think of those places — Yellowstone, for instance — they are commercialized or crowded. There are traffic jams and difficulty getting a room or campsite reservation."

Logan Canyon’s beauty rivals that of Yellowstone, Sweeney said, but it doesn’t have the commercial development and the crowds. The highway makes the canyon easily accessible, and soon a visitor can become lost in the canyon’s wonders.

"You can drive a few minutes into the canyon, then park the car and get into a quiet area of almost pure wilderness," Sweeney said. "It’s a unique place, unspoiled, and it’s a place to restore the soul."

And what are Sweeney’s favorite spots, the places that can still stop him in his tracks, his _wow_ areas? There’s the trail from Tony Grove Lake to White Pine Lake, especially at the end of July when the wildflowers are in bloom. Standing atop Mount Naomi with the wind so strong it threatens to remove you from the peak. The trail to the Jardine Juniper with a sheer drop in areas and a view that is spectacular. All are on his list. And then there’s Peter Sink — one of the coldest places in the United States, where the temperature drops so suddenly it feels like you are being stabbed all over. It’s like sitting at the bottom of an ice cream bowl, he said.

For almost everyone, a trip through Logan Canyon would not be complete without a raspberry shake at the edge of Bear Lake and its shimmering turquoise waters.

A quote by Mary Ellsworth, found in Utah State University’s Special Collections and Archives, opens Sweeney’s book, and it captures the feelings of many who have visited Logan Canyon, whether once or for a lifetime.

"There were times when we were down emotionally or mentally and we found ourselves refreshed after a walk in the canyon," Ellsworth said. "It was our canyon, though we knew we shared it with every lover of nature."

Not a bad thing to have in your backyard.
They come to play

They’re engineers, music educators and accountants. They are proud members of the Utah State University Alumni Band.

Some are recent graduates starting careers, while others are easing gratefully into retirement. The band is the common bond that unites them each summer to continue one of the popular traditions on the Utah State University campus.

The band’s tradition goes back to 1963, when the group was founded by USU Music Department faculty member Max Dalby. The creation of the band came as a request. University administrators approached Dalby at that time because they were concerned there wasn’t anything for summer school students to do on campus on Sunday evenings. The idea for the band was born, and Dalby created a popular and ongoing tradition as a service to campus.

But, the tradition has become much more. It is a program that was quickly embraced by the community and is a popular feature on the USU campus today. It is a sure signal that summer has arrived in Cache Valley, whether the band performs indoors or out.

The concerts are extremely popular among the Summer Citizen population, many of whom say they attend every concert. One audience member said she had not missed attending a concert in nine years. A quick survey of comments from that community brings phrases like “excellent,” “we love the music” and “we hope it keeps going.”

Jenny and Bill, summer residents in Logan from Green Valley, Ariz., said they enjoyed the quality of the band and the conductor, especially when he explains the background of the pieces.

Other favorites with the Summer Citizen audience are the soloists and guest artists.

“The guest artists bring added dimension, and we really enjoy seeing the students and alumni perform. All are very talented,” one Summer Citizen said.

There have only been two directors in the band’s history, founder Max Dalby and current conductor and Music Department faculty member Nicholas Morrison. Dalby led the band for 30 years, and Morrison took over...
in 1993. Members of the band are either graduates or attendees of USU and performed with the music department’s top band. Between 60-70 musicians perform at each concert throughout the summer. Some perform in one concert, some two and a full one-third of the members commit to all five concert dates. And while many members are from Utah, others plan family vacations and trips to coincide with the concert dates. During the summer of 2007, band members traveled from California, Colorado, Illinois and Ohio to perform.

“A significant number of people in the band are Max’s students,” Morrison said. “That’s a real tribute to Dr. Dalby.”

One such Alumni Band member is Anita Ford, a flutist in the band. Not only was Ford a charter member of the band when it was established, she said her musical career began when she met Max Dalby much earlier when she was a seventh grade student in Ogden.

“He put a flute in my hands and I’ve been at it ever since,” Ford said.

Ford joined the USU Alumni Band its first year when she graduated in 1963 with a degree in music education. She went to work immediately, not in music, but as the school librarian at Preston High School in Preston, Idaho. She commuted daily to Preston, while her husband, Bill, completed his degree at USU.

He graduated in 1965 with a bachelor’s of science degree in public health and bacteriology. He also played in USU’s band, but he didn’t immediately become a member of the Alumni Band. First, it was off to Georgia and an officer’s commission that he earned through USU’s ROTC program.

“There was only one year that I didn’t perform with the Alumni Band,” Anita said. “That was when my husband was in the Army and we lived in Georgia. After one year we came back to Ogden and I’ve been playing ever since.”

A native of Ogden, Anita Ford soon began teaching flute lessons, continuing the tradition instilled by her teacher and mentor Dalby. She’s been teaching flute students for nearly 50 years and plans to continue.

“I believe in keeping up on my instrument and using it,” Anita said. “I love to entertain and to play for people. I’m still teaching, I’m still performing. I can’t imagine NOT doing it.”

Bill Ford joined the percussion section of the Alumni Band after his military duty ended and after he began a 33-year teaching career at Ogden High School.

“Early on, I was a spectator,” he said. “I would go to the concerts and watch Anita perform and I enjoyed that. Then, I was invited to join and I’ve really enjoyed the environment and the camaraderie — there is a real esprit de corps in the band.”

Compared to Anita Ford, band member Jo Hays is a newcomer. Also a flute player, Hays joined the band in 2005 after she earned a second bachelor’s degree in music performance at USU. Earlier, she earned a bachelor’s degree in mechanical engineering from the University of Memphis.

Professionally, Hays is an engineer and develops implants and instruments for orthopedic surgery and sports medicine. Music, however, is an important part of her life.

“Band has been a very important part of my musical life and I try to take every opportunity to play,” she said.

Beyond the Alumni Band, Hays performs extensively, but she usually makes all five of the band’s concerts each summer. Her flute choir, HiFalutin’, performs six to 12 times a year, and her flute duo, lolite, performs two or three times a year. Hays also tries to schedule several solo flute recitals a year, in addition to an unpredictable number of freelance performances.

Band member Rhonda Rhodes graduated in 1987 with a degree in music education. She lives in Hurricane, Utah, and travels the length of the state to perform with the Alumni Band. She is among the loyal band members who attempt to perform in all five of the summer’s concerts, but busy schedules sometimes limit that to three.

“After I graduated I wanted to stay connected to the people and professors I knew at USU,” Rhodes said. “The Alumni Band is a quality musical group and a great way to keep in touch with USU colleagues. And, I love Logan in the summertime.”

Rhodes is a music educator in the Washington County School District and currently teaches 6th and 7th grade band students at Lava Ridge Intermediate School in Santa Clara, Utah.

“Music education is what I do for a living,” Rhodes said. “When choosing a college for that career, there was no question at the time as to where I would get the best experience. Many of the educators who influenced my life were USU graduates. Even as I have, and am currently pursuing graduate degrees at other institutions, USU will always be where my heart lies, because there is where it was molded.”
SOARING TO SUCCESS

When Jeff Lunt, a new Utah State University freshman graduated from Brighton High School last spring, he had all the answers, now all he's got are questions. Lunt came to SOAR, student orientation, advising and registration to get some answers and avoid looking like a freshman on the first day of classes. Lunt needed to know how to pick a major, where to find a job, how to find the library and where the cheapest pizza on campus was.

He found that through attending SOAR with his mom, Michelle Lunt, he was able to get advice, personal help registering for his classes and walk away feeling prepared and confident to start school in the fall.

“I have been excited about coming to college, but I didn’t know what classes I needed to take or even how to register for them,” Lunt said. “I have also been concerned that I wouldn’t know what to do or where to go. It has been helpful to physically be on campus for SOAR and have face-to-face help. I liked being able to talk to actual students who have been through this kind of stuff already.”

SOAR is facilitated by a group of current USU students called the A-team. Members of the A-team help new students learn about USU policies, the registration process and student services. The A-team can answer a variety of questions, including what classes will fulfill university and major requirements, where to buy textbooks, how much butter-fat is in Aggie Ice Cream and details about becoming a True Aggie.

“The A-team students are very helpful, friendly and not intimidating at all,” said Lunt’s mother, Michelle Lunt. “I feel I can ask them any question I need.”

A lot of information is covered during a SOAR day. In the morning Lunt checked in and received his materials for the day and got his ID card pictures taken. During this time he also attended optional workshops
Utah State University professor Karl R. White is the perfect example of someone whose work has received international acclaim, but whose own next-door neighbors only know him as the guy with the great barn and beautiful horses. White has traveled over recent years throughout the world to receive honors for his work on newborn hearing screening, but now those honors have come closer to home.

Utah's Days of '47 organization recently awarded White its Pioneers of Progress Award in the field of Education, Health and Humanitarian Assistance. The award was presented as part of the annual Pioneer Day celebrations.

White is a professor of psychology at USU and the founding director of the National Center for Hearing Assessment and Management. He was honored for his work in early detection and treatment of hearing loss in infants and young children.

The award is given annually during the Days of '47 celebrations to five outstanding Utahns who carry on the "pioneer legacy of industry and integrity" by achievements that benefit present and future generations. The honor has been awarded since 1995. Recipients are nominated by Utah citizens and are selected from various fields of industry.

White is internationally recognized as one of the world's leading authorities on early identification and treatment of hearing loss. He has written hundreds of publications and has been invited to speak in 31 countries, where he has also assisted in the implementation of newborn hearing screening and intervention programs.

"I am always surprised when I receive this kind of attention — in fact I look at all of the others around the state who have done so much, and I wonder why they would pick me," White said. "It is a great honor."

White credited others for his success. "I feel like I was in the right place at the right time," he said. "There are hundreds of other people involved in the development of hearing screening and intervention programs."

Following the welcome, parents were excused to go to the parent orientation. Lunt and the other new students were broken into groups of six to 10 for the beginning of the student orientation.

"It's good to have student time with other students and have your parents go off and do their own thing," Lunt said. "They have parent orientation at the same time as student orientation so you can learn a lot and your parents can learn a lot so they can support you."

During the small group presentation Lunt and seven other new students met with an A-team member to talk about some of the essentials a student needs to know before attending USU.

Using Access, USU's online registration system, to register for classes and pay tuition, student services available to use with the Aggie ID card and the tuition and fee payment deadlines were a few of the topics discussed. Lunt asked the A-team member about concerns he had about coming to USU.

"The people I met in my small group were very interesting and came from all different parts of the state or neighboring states," Lunt said. "It was fun to see the type of people I was going to be going to school with."

The A-team member also let Lunt know how to get the most out of life at Utah State.

"They gave us information about clubs and said there are more than 200 different clubs you can join including intramural and club sports," Lunt said.

During lunchtime at SOAR there was information fair with representatives from university clubs, organizations, local religions and other groups for students to get involved with.

After lunch, Michelle Lunt and the other parents met with a panel of A-team members while Jeff Lunt met with his academic advisor to pick classes and setup a schedule.

"I got to talk to an advisor and an A-teamer about my first semester schedule and they were both really helpful in helping me pick classes," Lunt said. "They helped me pick classes that went towards general education and towards some majors I'm thinking about."

Following academic advising, an A-teamer helped Lunt register for classes to make sure there were no problems with his class schedule.

"It was great to get my schedule all setup and have an A-teamer help me register for my classes so now I don't have to worry about it," Lunt said.

After registration students and parents met back up for Aggie Ice Cream. At this time A-teamers answered some final questions Lunt had about the coming semester.

"I'm really excited and feel prepared to come up here to USU in the fall," Lunt said.
Utah State University professor Karl R. White is internationally recognized as one of the world’s leading authorities on early identification and treatment of hearing loss. He has written hundreds of publications and has been invited to speak in 31 countries, where he has also assisted in the implementation of newborn hearing screening and intervention programs.

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White credited others for his success.

“I feel like I was in the right place at the right time,” he said. “There are hundreds of other people involved in the development of
newborn-hearing screening in this country and world-wide, I am grateful to be a part of it.”

White is being honored as a pioneer in the field of newborn-hearing screening. The importance of having newborns screened for hearing loss has been recognized for many years, but it was White who spearheaded the movement in the early 1990s to develop the technology and create the programs necessary to screen all newborn children for hearing loss.

Through the screening process White developed, doctors are now able to test babies for hearing problems that can also identify life-threatening diseases. It also gives researchers an increased understanding of childhood brain development.

White is currently pioneering the new “Sound Beginnings of Cache Valley” program that will give children who are born deaf the opportunity to learn to listen and talk through the use of hearing technology such as cochlear implants and digital hearing aids. It will also include participation in auditory-oral educational programs.

According to White, the program is only one of three like it in the entire United States and the only one between St. Louis and San Francisco. Participation in such programs during the first few years of life will enable most deaf children to succeed in school on a similar level to their hearing peers.

“This program will be a huge benefit to children with hearing loss and to their families,” said White. “It is very exciting to see how these children are able to communicate with their family members and peers. When they get the proper type of assistance, it makes all the difference in the world.”

White’s work has been recognized with awards from such diverse organizations as the Deafness Research Foundation, the American Association for Speech Language and Hearing, the Swedish Society of Medicine and the Alexander Graham Bell Association for the Deaf and Hard of Hearing.

He serves on many national and international advisory groups for organizations such as the U.S. Department of Health and Human Services, March of Dimes, the American College of Medical Genetics and the American Academy of Pediatrics.

White’s work was featured in a 30-minute Public Television documentary, “Voices of Vision,” a documentary designed to highlight the accomplishments of organizations “whose leadership efforts make the world a better place.”

For more information on White’s research, visit the National Center for Hearing Management’s website at www.infanthearing.org.
LESSONS FROM ICARUS
UNDERGRAD PHYSICIST PUSHES THE LIMITS

When Daedalus constructed wings for himself and son Icarus to make their daring escape, his choice of materials was limited. And he knew the inherent risks of flying an apparatus crafted with wax too close to the sun.

Utah State University undergraduate Jennifer Albretnsen has a much broader and sophisticated range of materials to choose from for NASA’s planned Solar Probe satellite, but her concern still centers on the impact of solar radiation. And whereas Daedalus was preparing for low altitude flight and a comparatively short hop from Crete to Sicily, the Solar Probe is expected to travel within three solar radii (3 RS) of the sun’s surface. In the course of its journey, the satellite will be exposed to large fluxes of light and charged particles from solar wind, as well as temperatures far beyond what Daedalus could have imagined.

“NASA is trying to determine what materials could survive such a mission,” says Albretnsen, an Undergraduate Research Fellow in physics who is entering her third year at Utah State and was recently named a 2007 Goldwater Scholar and a 2006-07 Governor’s Scholar.

Working with mentors J.R. Dennison, Physics Department professor, and graduate student Ryan Hoffmann in USU’s Materials Physics group, Albretnsen subjects insulating ceramic materials, including aluminum oxide, barium zirconium phosphate and polyboron nitrate, to specific frequencies of light and measures the resultant current from electrons emitted by each material.
 During a virulent outbreak of cholera in mid-19th century London, physician John Snow doggedly went from door to door interviewing families of victims and piecing together evidence of disease transmission through contaminated water systems. With his collected data, Snow made a spot map that revealed the spatial distribution of cholera deaths – most clustered around a water pump in Soho's Broad Street. The idea of mapping a 19th century disease outbreak takes wing in the 21st century with the innovative work of Utah State University statistician Mevin Hooten. "The use of spatial and spatiotemporal statistics to test dispersal theories of natural phenomena has burgeoned over the last few decades," says Hooten, who uses hierarchical models to determine how invasive species and diseases spread and change over time and space.

While knowledge of germ theory and the sophistication of tools for statistical analysis have grown markedly, he says, the threat of modern pandemics – bird flu, SARS – and the unknown consequences of invasive species foster as much fear and uncertainty as plagues of yore.

A forest ecologist by education and experience, Hooten, along with colleagues, recently applied emerging modeling methods to an invasive bird species gaining a foothold in North America. The team's research was highlighted in "Hierarchical Spatiotemporal Matrix Models for Characterizing Invasions," in the June 2007 issue of Biometrics.

"The survival, interaction and spread of species are key elements of ecology," says Hooten, who joined USU's Department of Mathematics and Statistics as an assistant professor in 2006. "The TRACKING SPACE INVADERS Statistician Mevin Hooten uses hierarchical models to determine how invasive species and diseases spread and change over time and space."

"We place samples in a vacuum chamber," she says, indicating a large, round device that looks like a deep sea diving bell. "When light interacts with a surface, its energy is transmitted to embedded electrons. Often this forces the electrons out of the material, causing it to become charged."

In addition to the Solar Probe, which Hoffmann says resembles "a giant flying ice cream cone," the research trio and colleagues are investigating materials to construct NASA's James Webb Telescope, planned successor to the Hubble.

Albretsen is a National Merit Scholar, USU Presidential Scholar and Honors Fellow. The Wisconsin native chose Utah State because "I felt welcome, not like a number."

"USU was small enough that I felt like I would receive personalized attention, yet large enough to provide interesting research opportunities," she says.

Albretsen is enthusiastic about the projects that have come her way. "First of all, research is fun – it's a different experience from sitting in a classroom," she says. "You get a deeper understanding than from reading a textbook or doing homework."

Dennison concurs. "Undergraduate research is incredibly valuable because it gives students a chance to see what they can accomplish with what they learn from books," he says. "Classes are essential, but what makes science science is the thought process that goes with testing a hypothesis. You have to figure out what you don't know. There's no substitute for getting in the lab and making a lot of mistakes."

As a graduate mentor, Hoffmann also sees the value of undergraduate research. "Unlike many colleges, USU offers many hands-on learning opportunities," he says. "Not being involved in research is like going to a lecture about flying a plane without ever getting to pilot it."

He adds that as undergrads are added to the research group, he benefits from the teaching experiences. "For me, bringing new scientists up to speed makes the whole process much clearer in my mind," he says. "Going back and explaining the basics keeps me focused on the big picture and helps me avoid getting caught up in details."

Dennison says pairing undergrads with graduate students, as well as faculty mentors, provides the former with a valuable orientation for graduate school. "From the start of their college years, students are introduced to the opportunities offered beyond undergraduate study."
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Statistician Mevin Hooten uses hierarchical models to determine how invasive species and diseases spread and change over time and space.
statistics community has developed models to determine the abundance of species, but we need better tools for understanding the actual population size of different species, particularly, invasive species.

In a study funded by the National Science Foundation and the U.S. Geological Survey, Hooten and co-investigators Christopher Wikle of the University of Missouri-Columbia and USGS scientists Robert Dorazio and Andrew Royle used a hierarchical Bayesian framework to explore the march of the Eurasian Collared-Dove westward from Florida, its probable point of entry.

The innocuous-looking gray bird, with a black half-collar at its nape, is now at mid-invasion, says Hooten. “ECD is a prolific species and may pose a threat to native ecosystems. We predict the bird will colonize the entire United States within a few decades.”

He notes that the dove is even taking up residence in USU’s community. “Based on model predictions, we are on the cusp of a very rapid period of ECD population growth here in Logan.”

For Hooten and crew, the dove, disparaged by birders with such unflattering names as “scuzdove” and “Eurotrash,” offered a ready opportunity for testing the efficacy of their modeling methods. “Large-scale ecological datasets that provide quantitative population information are rare,” he says. “Fortunately, the long-term monitoring efforts of the North American Breeding Bird Survey provided us with invasive species data to fuel our research.”

The advantage of his team’s method over other invasive species models, says Hooten, is its simplicity and flexibility. “It accommodates uncertainty and also provides tangible graphical and numerical output,” he says. “Ecologists and resource managers can use the results to understand ecological processes and make decisions.”
If you can't see the jungle for the vines, take a lesson from Tarzan – just start swinging.

Is it the most thorough approach to path planning? Maybe not. But if you know the general direction you’re heading, grabbing the nearest vine might get you in touch with Jane, Boy and Cheetah more quickly than stopping to ask for directions.

That’s the gist of an algorithm Computer Science undergraduate Arthur Mahoney is developing with faculty mentor Dan Watson.

The two computer scientists are seeking a method to improve communications among robots, which are increasingly used in military, law enforcement and industrial applications to extend the reach of humans into dangerous environments.

“Our focus is on communications in Altruistically Negotiating Systems or ‘ANS,’” says Mahoney, who graduated from Utah’s Logan High School in 2005.

ANS, he says, feature a collection of robots or “agents” with diverse responsibilities that behave in a manner in the best interest of the entire team.

Sounds like a coach or military commander’s dream team, right? Well, yes, says Mahoney, but imagine that each visually challenged team member is working in a vast, fast-changing environment filled with hostile obstacles and doesn’t even know if the other members exist. How do team members communicate with each other?

One of the most common forms of ANS is Unmanned Autonomous Vehicle systems. “With UAVs, you have a group of robots equipped only with line-of-sight radio
Scientists call the tendency of physical objects to vibrate when excited by a certain frequency “resonance.” A guitar string, for example, oscillates in response to tones sounded in the same room. A visually memorable example of resonance is the 1940 collapse of the original Tacoma Narrows Bridge. Aptly nicknamed “Galloping Gertie,” the Puget Sound suspension span twisted and failed due to wind-induced vibrations. Utah State University geophysicist Tony Lowry suggests that movements observed at regular intervals on the earth’s deep tectonic faults are resonant responses to the weight of groundwater and ocean water shifted about by weather cycles. His research, funded by the National Science Foundation, appeared in a recent issue of Nature.

“Fault movements similar to earthquakes, but much slower, have been recorded at various subduction zones around the world, including southern Mexico, Japan, New Zealand, and the United States’ Pacific Northwest,” says Lowry, an assistant professor in the College of Science’s Geology Department. “But the underlying causes of these events have been poorly understood.”

The movements, known as “slow slip events” or “silent earthquakes,” are actually not earthquakes and produce no noticeable ground shaking, he said. And unlike earthquakes, which recur at unpredictable times, slow slip

“Conferences are a wonderful way to have your results reviewed by peers and get new ideas,” says Watson. “One of the nice things is that our work will be read by other researchers in this field of study.”

Working on your own research project is much more meaningful than learning facts in the classroom, says Mahoney. “With my research I’ve been forced to solve or work around problems that I would have never dealt with in class – and that’s real computer science.”

Mahoney, who was recently named a 2007 Goldwater Scholar, is a 2006-07 Governor’s Scholar, and a 2007-08 recipient of a Willard L. Eccles Undergraduate Fellowship, also thinks research makes learning more enjoyable. “Programming for a professor’s homework assignments during the wee hours of the morning is tedious, stressful and bothersome – but programming for research during the wee hours is fun,” he says.

“Art quickly learned the protocol for tapping into the university’s undergraduate research opportunities and hit the ground running with this project,” says Watson. “For students with initiative, there’s a path for exciting hands-on learning at USU. There’s definitely a path.”

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EXPLORING WHAT LIES BENEATH
USU GEOPHYSICIST CONNECTS DEEP FAULT MOVEMENT TO CLIMATE CYCLES

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The movements, known as “slow slip events” or “silent earthquakes,” are actually not earthquakes and produce no noticeable ground shaking, he said. And unlike earthquakes, which recur at unpredictable times, slow slip...
events typically occur at regular intervals of six to 18 months.

While researching slow slip phenomena in southern Mexico, Lowry found that events occurred at almost exactly the same time each year. Other researchers had already noted that repeating slip in the Pacific Northwest closely matched the frequency of the “Chandler wobble,” a small shift in Earth rotation caused by changes in the weight of ocean basins.

“This suggested to me that the slow slip events might have something to do with the changes in pressure caused by annual and other cycles of surface fluid movements,” he says.

Weather cycles move a lot of mass around the Earth’s surface and changes in atmospheric pressure also impact rock stress at depth. Though tiny, relative to tectonic stress, these changes are large enough to excite fault movement at their resonant frequencies.

“Fault slip resonance with climatic mass cycles explains why slip events are periodic, and the dependence of resonant frequency on fault properties explains why slip periods differ from place to place,” says Lowry.

Understanding the connection between surface weather and fault movement provides a potentially valuable tool for probing faults and better understanding their behavior, he says. “This knowledge will help to illuminate the frictional properties of faults, which should improve our understanding of earthquakes.”
The only thing sweeter at Utah State University than kissing on the “A” at midnight is Utah State University’s Famous Aggie Ice Cream.

A long standing Utah State tradition, Aggie Ice Cream has been an important part of social and academic life throughout the history of USU.

Aggie Ice Cream dates back to 1922 when Professor Gustav Wilster oversaw the first production and testing of Lacto Ice Cream. Wilster’s knowledge of ice cream production led to successful ice cream enterprises in the West such as Farr Ice Cream. Aggie Ice Cream is a popular attraction in Logan that many people visit while in Cache Valley. Tours of Aggie Ice Cream’s production facility are offered during the summertime on the last Saturday of each month. These tours have been attended by people from all parts of the United States.

Whitney Robins, a senior majoring in public relations, said the first time she had Aggie Ice Cream was during Week of Welcome her freshman year.

“During WOW Week I saw they were serving free Aggie Ice Cream on the patio outside the Taggart Student Center,” Robins said. “I love ice cream and couldn’t pass it up. Since then I have been in love with Aggie Ice Cream.”

Almost every week USU students can find activities where Aggie Ice Cream is being served.

“I think I have only purchased Aggie Ice Cream maybe once or twice because I have received
In what has become a spring rite of passage for scores of teens in the Intermountain West, more than 6,000 budding scientists descend on Utah’s Lagoon amusement park each May for Utah State University’s Physics Day. The day-long extravaganza features hands-on learning, academic competition and fun—all in the name of science.

Middle and high school science students from Utah, Idaho, Wyoming, Nevada and beyond transform the northern Utah überplayground into a giant laboratory to explore such basic physics concepts as gravity, projectile motion and centrifugal force.

“Physics Day motivates students’ interest in science and relates abstract concepts to familiar examples in a fun way,” says J.R. Dennison, USU physics professor and a founding organizer of the event. “What better laboratory to entice young people than an amusement park?”

Initiated by USU’s Physics Department in 1989, Physics Day is coordinated by USU and partners Idaho National Laboratory, Lagoon and the Rocky Mountain NASA Space Grant Consortium. Participation, sponsorship, activities and prizes for the event have steadily grown during the past 18 years. In recent years, the day’s top six academic competitors received four-year scholarship offers to USU, and thousands of dollars worth of prizes are distributed.

Months prior to the event, students prepare entries for the logo, demonstration and ride design contests. The day’s activities include the annual Physics Bowl academic competition as well as experiments performed directly on the park’s rides. Students build their own accelerators and explore concepts such as gravity, projectile motion and centrifugal force.

“Those 800 gallons are turned into 30 different flavors, which is enough to give anyone sphenopalantineganglioneuralgia (sfee-noh-pal-uh-teen-gan-glee-oh-new-ral-juh), the medical term for an ice cream headache,” said Bagley.

Aggie Blue Mint was created as part of a student flavor creation contest in 2005 and has quickly become the most popular flavor of ice cream.

Shaun Adams, a graduate student conducting food research in the nutrition and food science department works in Aggie Ice Cream production and helped develop the new flavor.

“I was in Professor Donald McMahon’s dairy technology class that was responsible for the development of Aggie Blue Mint flavored ice cream that has become so popular, and it’s been great to see its popularity grow,” said Adams. “I like Aggie Ice Cream even more since I’ve been working with it. I see how much work goes into its production.”

There are four important keys to making quality ice cream, said Bagley. They are butterfat content, overrun, which refers to the amount of air in the ice cream, fresh ingredients and quality flavors.

“Aggie Ice Cream contains 12 percent butterfat, less air and is aged slightly longer than other ice creams, which is what gives Aggie Ice Cream its rich, smooth taste,” said Bagley. “There is a lot of research that has gone into making Aggie Ice Cream a very premium product.”

“Even after I have graduated and moved away from Utah State, I will never pass up an opportunity to stop in Cache Valley for some Aggie Ice Cream,” said Robins.
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For the high school students, a day in a Utah State University chem lab offered a glimpse of learning opportunities that await them at the university level. For members of the USU Chemistry Club, the gathering offered a valuable lesson in peer mentoring.

Undergraduates from the club conducted a workshop for tenth graders from InTech Collegiate High School, one of Utah’s six early college charter high schools. InTech students make regular visits to USU’s Chemistry and Biochemistry Department to experience hands-on experimentation in a university lab. Located on the university’s Innovation Campus, InTech first opened its doors to students in 2006.

Decked out in safety goggles and gloves, the teens learned what happens when you mix and heat a few ordinary-looking liquids and solids. “Oh, that’s disgusting!” exclaimed one participant as students watched a “carbon snake” – a gray mass formed from an organic compound mixed with sulfuric acid – slowly bulge from a beaker.

“Allotrope” means something different than ‘carbon snake’,” USU undergrad chemist Sara Huefner explained to the group. “It’s one of the known ‘allotropes’ of carbon. Do you know what an allotrope is?”

“You are so correct!” answered Huefner. “Can anyone give me an example of another allotrope of carbon? I’ll give you a hint – what’s something really expensive you wear on your hand?”

“Diamond!” the students chimed in unison.

At another station, students stretched long, sticky strands of dissolving Styrofoam, in an amusement park fun, Dennison says it’s gratifying to hear youngsters’ lively discussions about free fall, drag forces, energy conservation and impulse. “Who says physics has to be dull?” he says.

In addition to the coordinating partners, Physics Day sponsors include ATK Thiokol, Boeing, Eastern Idaho Regional Medical Center, Idaho NASA Space Grant Consortium, Mathsoft Engineering, Micron, Moog Aircraft, North Wind Environmental, SAIC, S&S Power, the U.S. Navy, USU’s College of Science, USU’s Admissions Office and USU Bookstore.

Becky Atkins, USU College of Science Dean’s Scholar, is one of those alumni. Atkins, who graduated in 2007 with a 4.0 GPA, earned a bachelor’s degree in math education with a minor in physics. The Idaho native, who attended Physics Day while a student at Twin Falls High School, choose to attend Utah State because of the scholarship she earned as a Physics Bowl contestant.

An aspiring high school teacher, Atkins says she looks forward to encouraging hands-on learning activities and active participation in her own classroom. “Math and science are not just about plugging numbers into a formula,” she says. “It’s important to understand how and why things work.”

Two other notable Physics Day alums include 2006 Torino Olympics gold medal stars Julia Mancuso and Ted Ligety. As high school classmates at Park City, Utah’s Winter Sports School, the champion ski racers teamed up in 2000 for a Physics Day project.

While Physics Day includes a boatload of conventional
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“Isn’t it, like, when you have the same chemicals but in a different form?” ventured one student.

“You are so correct!” answered Huefner. “Can anyone give me an example of another allotrope of carbon? I’ll give you a hint – what’s something really expensive you wear on your hand?”

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“Chemical Reaction

Associate Dean Lisa Berreau, right, and undergraduate peer mentor Sara Huefner, left, guide high school science students through chemistry experiments.
You're hiring a new employee. A resume acquaints you with each candidate's skills, background and education, but nothing yields as much critical information as the face-to-face interview. When interviewers recount initial meetings with prospective employees, they speak of encounters that "just clicked" or prospects "who weren't the right fit."

In a situation where you rely on your gut to determine if a candidate is the right person to advance your organization’s mission, how do you keep your personal biases in check? Seems counterintuitive, right?

Utah State University undergraduates in Robert Mills’ Management Information Systems Development class undertook the daunting challenge of creating a training system to aid university employees in practicing unbiased employee recruitment and hiring practices.

The students’ endeavor bolsters the efforts of USU’s ADVANCE program, which seeks to promote gender equality and increased diversity throughout campus. USU is one of just 19 institutions nationwide to receive a National ADVANCING DIVERSITY Business undergrads, from left, Teri Lewis, Cammy Telford, Eduardo Martinez, Ashlee Gardner, Devin Hirschi, Adam Pitcher and Erinn Reed developed a training program to help university employers reduce bias in hiring practices.

experiment demonstrating what happens to polystyrene molecules when mixed with a solvent.

"It looks like a promo from a Spider-Man movie," quipped USU Chemistry and Biochemistry Department Head Steve Scheiner.

At yet another station, teens burst into giggles over white foam spewing from a flask.

"You like to blow things up, I see," said Lisa Berreau, associate professor and associate dean of USU’s College of Science. "OK, that doesn’t surprise me."

"It’s very interesting to see the different reactions from the kids," said James Ewell, a junior biochemistry major who helped with the workshop. "Some don’t care; some are fascinated."

"It lets the kids see that chemistry can be applied to everyday things," added Matthew Volk, a sophomore biochem major who also helped with the workshop. "Examples of chemistry are all around us."

A veteran of four peer mentoring gatherings plus three demonstrations for Aggie Family Day, Volk is an old hand at engaging youngsters in learning activities. Huefner still has some doubts.

"I have trouble keeping everyone on task," she lamented.

Maintaining focus and order among active teens, the mentors agreed, is a formidable challenge. But a worthwhile endeavor, faculty advisor Berreau, assured the undergrads.

"Inviting teens to campus is a key step in the recruitment process," she said. "We need to reach these kids early to spark their interest in science and let them know about the many opportunities that are available to them."

Berreau and other faculty members in the Department of Chemistry and Biochemistry tested the waters this past summer with a week-long chemistry workshop for students from InTech. Innovation funds awarded from the college’s budget draw-back will cover the cost of this year’s inaugural gathering. The goal is to expand the opportunity to students from other Utah high schools in coming years, she said.

The summer gathering garnered an enthusiastic response from the participants and their parents.

"Many teens simply don't know about all the learning and scholarship opportunities that USU offers," said Berreau. "Perhaps they haven’t even considered that college is an option they can pursue. Our outreach programs, bolstered by our undergrad peer mentors, are an effort to change that."
You’re hiring a new employee. A resume acquaints you with each candidate’s skills, background and education, but nothing yields as much critical information as the face-to-face interview. When interviewers recount initial meetings with prospective employees, they speak of encounters that “just clicked” or prospects “who weren’t the right fit.”

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Science Foundation grant to fund efforts to create a workplace that fosters gender equality in the university’s science, technology, engineering and math programs. The NSF funds were awarded in a five-year grant, which USU received in 2003.

In their report, “Excellence Through Diversity,” students Ashlee Gardner, Devin Hirschi, Teri Lewis, Eduardo Martinez, Adam Pitcher, Erinn Reed and Cammy Telford asserted that increased diversity among faculty boosts creativity, improves faculty retention and makes the university more attractive to prospective students and faculty.

“It’s impossible to create a bias-free environment,” said Ronda Callister, associate professor of management and human resources and a principal investigator for USU’s ADVANCE program. “The goal is to reduce bias.”

She and fellow investigators reviewed the students’ proposed training program at each step of its development and offered suggestions.

“We started with a thick notebook of data on science-based training programs and spent a lot of time sorting through the information,” Pitcher said. “USU’s ADVANCE team offered help along the way, including suggestions that we narrow our examples to case studies and research articles based specifically on academic searches.”

To aid hiring decision makers in their quest, the students reasoned that their training program should follow a two-pronged approach. Not only does their training packet include materials that explain the process of selecting a new employee, but it includes recommendations for the assembly of a search committee using a fair, unbiased approach.

The search committee, the students concluded, should include members of both genders and represent diverse backgrounds. Second, search committee leaders should serve as role models for all members. “Role models should be identified who are willing to reveal their own biases and how they deal with them,” students said.

“We think that makes a powerful statement,” said Martinez. “When committee members acknowledge their own biases, they encourage others to examine themselves honestly.”

Recognizing one’s own biases is the first step in developing ways to counter them, the students said.

Sometimes biases are very subtle and committee members aren’t even aware of them. “We’ve compiled a list of common biases to help people identify and deal with common pitfalls,” Pitcher said.

Frequent biases, the students wrote, including stereotyping, double standards, same-sex biases, projection and the so-called “Halo-horns effect,” where interviewers place too much emphasis on first impressions. Examples of the latter would be assuming a physically attractive candidate is a better worker and more qualified than a less-attractive person.

Quizzes are included in the training program to ensure that participants understand and retain the training material.

The second part of the training program instructs participants in the preparation of a hiring decision matrix and a position description that carefully identifies the specific needs and wants of the position along with the weight criteria of essential job functions.

Creating a culture of diversity requires diligent, conscious effort, the students concluded.

“Diversity means you have the presence of a wide range of variation in personal qualities and attributes,” said Pitcher. “Diversity increases ideas the perspectives and fosters a dynamic learning environment. That’s what makes the university more attractive to prospective students and faculty.”
A new round of rankings mark the start of a new academic year at Utah State University, including “Best in the West,” “Best Value,” and even a No. 1 recognition by U.S. News & World Report.

In a nutshell, USU is:

- No. 1 among public universities for graduates with least debt (U.S. News & World Report)
- Top 35 overall score among public national universities based on social mobility, research and service (The Washington Monthly)
- “Best in the West” and “America’s Best Value Colleges” by The Princeton Review

This year, USU was recognized by the U.S. News rankings as No. 1 among all national public universities for students carrying the least amount of debt upon graduation. This is a distinction of which Utah State University can be proud, said Raymond T. Coward, USU executive vice president and provost.

“The amount of debt a student leaves with is a result of many factors,” Coward said. “One of those factors is most certainly the cost of tuition. Our tuition is extraordinarily reasonable, especially when one considers the quality of education delivered at USU. A USU education is reasonably priced and well worth the value.”

In the Washington Monthly report, USU is ranked number 54 out of 242 national universities. It is a ranking that represents the combined score of the three metrics – social mobility, research and service. That is a score among all universities. When private institutions are removed from the list, USU is ranked in the top 35.
As Utah's space university, Utah State University has built an international reputation for expertise in sensor technology, data compression, real-time reconnaissance and payload systems.

Mechanical and aerospace engineering graduate students Scott Jensen and Patrick Jolley chose to attend USU because of its expertise and extensive heritage in the space industry. The choice has literally paid-off for both of them in the form of scholarship money received after competing as finalists in the Frank J. Redd Student Scholarship Competition at the 21st annual Small Satellite Conference.

Jolley placed second in the 2007 competition and received a total of $7,500 to further his education. He received the honor for his research with USU mechanical and aerospace engineering professor Stephen A. Whitmore. Jolley and Whitmore developed a way to build an aerodynamic satellite that can drop in altitude until it gets low enough to be able to fly around just inside the Earth's atmosphere and then boost back into space in a different orbit.

"Despite what we see in today's science fiction movies like Star Wars, we can't just fly around at will in space," Jolley said. Therefore, designing a system like this is a smart move. It saves time and money and also makes small satellites more responsive.

"If a satellite in orbit fails, it can take months to launch a spare," Jolley said. "This system would use existing satellites already in orbit and move them to other tasks as needed. Basically, we are designing a space vehicle that would be capable of achieving two missions in space for the price of one."

Jolley said that for the proposed technology to work, the design has to be aerodynamic, it has to be able to deal with high re-entry temperatures, and it requires a complex rocket propulsion engine to give it the thrust it needs.

Jensen received an honorable mention in the competition, giving him $2,500. Jensen's research is aimed at increasing the amount of small satellite missions in space by loosening the orbit restrictions imposed by the orientation of a satellite in space. His work with USU mechanical and aerospace engineering professor David Gellar has been to design an algorithm that will work well in a range of orbits.

"In the public institution light, USU shines," Coward said.

For example, the Washington Monthly’s rankings place USU as:

• One of only 19 public institutions in the nation listed in the top 35 two years in a row

• 3rd in the nation with regard to the percentage of funds in federal work-study money that goes to community service. (Ranked behind only the University of Nevada, Las Vegas, and the University of California, Riverside.)

Washington Monthly applies measures reflecting traits such as access, opportunity, service and quality.

USU once again made The Princeton Review’s list as one of 123 colleges and universities named a “Best Western College.” In addition, USU is also designated again as “one of the best overall bargains – based on cost and financial aid – among the most academically outstanding colleges in the nation.”

“Utah State University’s good marks in these areas place us in an elite group of public institutions, and they reflect many of the traits we value,” Coward said. “It is why I believe you also see USU consistently appear in The Princeton Review’s “Best in the West” and on “America’s Best Value Colleges” list as we are, once again, this year.”

Writer: John DeVilbiss, 435.797.1358 john.devilbiss@usu.edu
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“This type of algorithm is more difficult to develop than most, but it is useful, particularly in the small satellite community because they have a better chance of getting into space if they can “hitch a ride” with a larger satellite,” Jensen said.

The Small Satellite Conference is hosted annually on the USU campus and is attended by academia, industry and government agencies from more than 20 countries spanning the globe. The student scholarship competition is open to all full-time undergraduate or graduate students pursuing degrees in an engineering or scientific discipline at an accredited college or university.

More than 50 students from around the world submitted papers that included actual projects and concepts related to advancing and broadening the applications for small satellites.

“USU has qualified professors in many space-related fields, several coming from long careers at different NASA centers,” said Jolley. “I would have never received the honor of second place in the competition without their mentorship and encouragement.”

The panel of judges, which included representation from NASA, the Air Force Research Laboratory, academia and industry, read the papers and then whittled the finalists down to six. Jensen and Jolley were in prestigious company as they were chosen to compete against students from Washington University, Santa Clara University, the University of Missouri and The Tokyo Institute of Technology.

“This was a tough competition and the other universities had some great research,” Jensen said. “The aerospace community has always been one of the places where great minds and highly motivated people come together. Competing in the small satellite student competition allowed me to be a part of that. It was a great opportunity for me to showcase the significant amount of work that goes into this type of research.”

The potential of Jolley’s research obviously intrigued the competition’s judges and Jolley credits his USU professors’ enthusiasm, ideas and expertise in the area of rocket and spaceflight research for his success as a student.

“If you are looking to go into aerospace, USU is the way to go,” Jolley said.

Jensen echoed that sentiment, and said the USU professors he worked with are good at feeling out what direction the research should take and what aspects are simply not worth the work.

Jensen became excited about space research when he learned about the planets in elementary school.

“Space exploration has done more to advance science and technology than almost any other subject,” Jensen said. “There are always new and exciting discoveries.”

Jensen and Jolley received master’s degrees in mechanical and aerospace engineering in the summer of 2007. Their success in the classroom has transferred to life after USU. Jensen is working as an engineer in nuclear waste disposal for Bechtel Bettis, Inc., at the Naval Reactor Facility near Idaho Falls, Idaho. Jolley is employed at ATK Launch Systems in Magna, Utah, where he designs and analyzes new launch vehicles.

The Small Satellite conference is co-sponsored by the American Institute of Aeronautics and Astronautics. It has become internationally recognized as the premier conference on small satellites. More than 60 government agencies and top aerospace corporations exhibit at the conference, including ATK, Ball Aerospace, L-3 Communications, Lockheed Martin and NASA. International exhibitors included organizations from Canada, England, Scotland, Japan, the Netherlands and Sweden.

Scholarship funds for the Frank J. Redd Student Scholarship Competition come from space-related research companies and private donors. The scholarship money received by Jensen and Jolley can be used for any academic related expenses. Redd established the Small Satellite conference and was former deputy director for SDL, as well as a professor in USU’s mechanical and aerospace engineering department.

For more information about USU’s space research, visit the Center for Space Engineering Web site, http://cse.usu.edu/. For more information on the Small Satellite Conference, visit www.smallsat.org.

Writer: Maren Cartwright, 435.797.1355
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A LIFE-CHANGING EXPERIENCE

Life changing. Yes, she admits it’s a cliché, but Utah State University’s 2007 Summer Design Program in Switzerland was exactly that for Natalie Hartley, a senior from Boise, Idaho.

Many of Hartley’s 36 fellow students had the same reaction to the intensive, hands-on study abroad experience based in USU’s Department of Art and the Caine School of the Arts. Among the opportunities? Collaborating with the International Olympic Museum in Lausanne, Switzerland.

“The intensity of the program, its unique experiences and complete immersion for an extended period of time allowed me to learn in a way I will never forget,” Hartley said. “Not only did I learn valuable lessons about design, aesthetics and history, but also about myself, how I related to these things, this culture and, in a sense, who I am.”

Hartley is a bachelor of fine arts student with a graphic design emphasis. Her trip to Switzerland in the summer of 2007 was her second. She participated in the 2006 program as well.

“The great thing about this program is that you can have great experiences every day,” she said.

For fellow student and program participant Loni Pilcher, this was her first experience with the program and her first trip to Europe. Home base for the students was the alpine ski village of Leysin, where the USU group took over a small hotel.

“I knew since my first semester at Utah State that I wanted to have some kind of study abroad experience, and so it was just the
In addition to the Olympic Museum, USU students visited many museums in Switzerland. Here are some of the more

**INTERESTING MUSEUMS:**

- **Chocolate Museum**
  (with free, all-you-can-eat samples!)
- **Textile Museum**
- **Cheese Museum**
- **Medieval Paper Making Museum**
  (make your own paper)
- **And numerous art museums**

natural thing that, as a graphic design student, I would participate in the Switzerland program,” Pilcher said. “I’m so glad I participated. It’s a unique program because we got to see so much of the country. We didn’t spend time sitting in a classroom — we got to take full advantage of every second that we were in Switzerland. The whole country was our classroom.”

Pilcher, from Bluffdale, Utah, is a junior art major with a graphic design emphasis.

Now in its sixth year, the program is directed by associate professor of graphic design Robert Winward. The four-week long visit immerses both graduate and undergraduate students in Swiss design and European visual culture.

“Swiss designers have had a powerful influence on the design profession and continue to be a major force in the direction of international visual communications,” Winward said. “The program is enormously successful and broadens students’ world-views, exposing them to internationally acclaimed artists and designers.”

The program also offers students the opportunity to collaborate with international corporations and organizations on visual communication problems.

Summer 2007 presented an opportunity of Olympic proportions — literally. The summer’s assignment included work for the International Olympic Museum to produce prototype designs for the Olympic torch for the coming Olympics in Vancouver (2010) and London (2012). By the end of the assignment, the directors and staff at the museum were so impressed with the nine torch designs created by the USU students, they decided to put them on exhibition in the museum during the summer tourist high season. An unexpected honor for the USU students.

“This is an incredibly prestigious international venue on the Swiss Riviera, and it’s no small feat to be invited to exhibit there,” Winward said. “I’m very proud of what the students accomplished.”

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**September 2007**

**USU student groups have collaborated with prestigious organizations during the program.**

- **Swatch International**
- **Victorinox**
- **International Committee of the Red Cross**

![](image)
Art Leads Young Alum AROUND THE GLOBE

Justin Wheatley graduated from Utah State University in May 2006 with a degree in art education. That means he joined the ranks of the university’s alumni just over a year ago, but in the year’s time he’s earned a prestigious grant and has traveled the globe pursuing his love of art and education. All that thanks to learning experiences and skills he gained at USU.

As a young graduate, Wheatley has one year’s experience under his belt as an art educator at Cyprus High School in the Granite School District in Salt Lake City where he taught six sections of 3-D design. In his second year of teaching he will add a concurrent enrollment course, Exploring Art, that he will teach at Cyprus while students receive credit at Salt Lake Community College.

In his first year of teaching, Wheatley applied for and received an impressive grant that resulted in his acceptance in the Japan Fulbright Memorial Fund program, a rare, prestigious honor for a young professional.

The Japan Fulbright Memorial Fund was established to commemorate the 50th anniversary of the Fulbright Program, a U.S. government project created in 1946 to foster mutual understanding through exchanges of university students, faculty and teachers. The Japan Fulbright Memorial Fund continues a tradition of dialogue and exchange between the United States and Japan.

“The program is sponsored by the Japanese government and takes 200 teachers from the United States to learn about the country’s culture and educational system,” Wheatley said. “There were teachers from every state in the country, including three from Utah.”

According to Tamara Burnside, the K-12 fine arts specialist for the Granite School District, it is unusual for a first-year teacher to earn an honor like this. Professional development is encouraged throughout the district, and all teachers create a professional growth and evaluation program at the beginning of the year. The teachers rank their skills and set goals to enhance their performance. Through teachers’ professional development, students reap the rewards of new and exciting advancements in learning.

“Justin’s application must have been exceptional for him to receive this award,” Burnside said. “He’s the one who gets the credit for taking the initiative to reflect on the scholarship, then take charge and complete the detailed application process. Now, with the Fulbright experience fresh and alive in his mind, he will show students new, culturally diverse approaches and techniques to more richly express themselves.”

Justin Wheatley attended a tea ceremony, one of many activities during his experience with the Japan Fulbright Memorial Fund Program. (photo by Justin Wheatley.)
Wheatley said he had little previous contact with Japan prior to the trip.

"While growing up, I had a Japanese American friend who taught me to count from one to 10 in Japanese so, when I walked off the plane in Tokyo, I could confidently count from one to 10," he said. "I'd also gone to a couple of Obon festivals in Salt Lake, but that was it."

The Obon festival is an annual Buddhist event for commemorating one's ancestors.

Wheatley’s summer of travel began earlier than his trip to Japan, when he accompanied a group of Utah State University art students and professor Christopher Terry to Germany as part of a USU Study Abroad program. Wheatley had earlier participated in the program as a student and calls Terry a mentor. In the summer of 2007, he served as a teaching assistant, teaching a drawing class to 14 USU student participants.

"Justin is a good artist with strong drawing skills," Terry said. "More important, as a veteran participant I thought he'd not only understand the limitations and benefits of a study abroad teaching situation, but also be able to fill in the new students with practical knowledge — like where the laundromat is and how to find the best pizza. On a five-week trip to Europe, I've got a lot on my mind, and it was very reassuring to know that I didn't need to worry about the course Justin covered. The success of the overall trip was due in large part to his efforts."

A day after he got off the plane from Germany, he stepped onto a plane for the flight to Japan.

Wheatley’s Japanese stay combined educational and cultural experiences, starting with a one-week stay in Tokyo before splitting into smaller groups to travel to cities throughout Japan. His group of 20 traveled to Ogi in the Saga Prefecture.

“A prefecture is similar to a state,” Wheatley said. “Saga is on the island of Kyushu, just south of the main island of Japan.”

While in Ogi, the group visited local schools and museums. Members also spent two days and a night with a Japanese host family. The trip wrapped up with a return to Tokyo for three days to share experiences with other teachers.

“The experience was incredible,” Wheatley wrote in his blog. “The Japanese people were extremely kind and hospitable.”

From staying in a hotel next to the busiest train station in the world — picture 3.22 million passengers per day — to the quiet solitude of a Shinto shrine, Wheatley was able to expand his experience and continue to build his educational philosophy. He learned much about the Japanese educational system. For instance, a nearly zero percent illiteracy rate exists in all of Japan. Fifty percent of the population pursues some form of higher education. And, unlike the U.S. system, the Japanese educational system is a national system with an increasing push that emphasizes creativity, diversity and flexibility.

A day-by-day report on Wheatley’s trip can be found on his blog at http://wheatleyinjapan.blogspot.com/.

Toward the end of Wheatley’s stay in Japan, he attended a seminar about art education in Japan presented by Chihiro Tada, director of the Arts Education Institute and the National Toy Museum. Wheatley reports the presentation talked about the need for everyone — children and adults — to have time for play. And concerns in Japan mirror those in America.

“He talked about the growing concern over time spent on computers, playing video games, reading comic books and watching TV,” Wheatley wrote in his blog. “In Japan, kids spend 2,000 hours a year doing those four things. Compare that to the 700 hours spent studying in school.”

The speaker closed with a comment that rang true to Wheatley.

“I believe that art education is an important as three meals a day,” Tada said. “It is very important for the body and the spirit.”

That’s a belief Wheatley endorses.
As an aspiring teen scientist, you could hang at the library all summer perusing dusty tomes and surfin’ the ‘Net. But would that give you a true picture of what goes on inside the lab?

Utah State University’s Center for Integrated BioSystems invites intrepid scholars into the lab each July to experience cutting-edge research on a university campus. Since 2000, the CIB has offered its intensive five-day Summer Biotechnology Academy to provide high school juniors and seniors with the opportunity to work one-on-one with faculty mentors in a variety of disciplines.

“Students have the opportunity to choose projects from chemistry and biochemistry, biology; animal, dairy and veterinary sciences; biotechnology and genomics, food and nutrition sciences; biological and environmental engineering; plant and soil science and more,” says Afifa Sabir, CIB education coordinator. “The academy offers students an exciting glimpse of the wide range of study and career opportunities in biotechnology.”

USU Undergraduate Research Fellow Katherine Grover attended the academy between her junior and senior years of high school.

“I wasn’t really interested in science until I took high school biology and I wasn’t sure about Utah State,” says Grover, a biology major and Presidential Scholarship recipient. “But once I attended the academy and saw what the university had to offer, I was really excited. I was hooked.”

Grover presented research she’s conducting on genomic sequencing with faculty mentor Paul Cliften to Utah legislators at the 2007 Undergraduate Research Day on Capitol Hill in Salt Lake City. The Cache Valley native plans to pursue graduate work in medical research.
National Merit Scholar Keith Warnick also chose Utah State after attending the summer biotech academy. “I had narrowed my choices to two schools but decided on USU because it has a friendlier environment for undergraduate research,” says Warnick, who received an Honorable Mention in 2006 in the prestigious Goldwater Scholar competition.

A physics major, Warnick is researching acoustic and electromagnetic waves in groups of particles with faculty mentor Timothy Doyle.

Undergraduate Research Fellow Uyen Lam made her first foray into lab research as a high school student at CIB’s summer academy. “I was already looking at Utah State,” says Lam, who graduated from Utah’s Logan High School in 2004. “But the biotech academy taught me what research was.”

An aspiring physician, Lam believes her undergraduate research experience will aid in her quest to attend medical school. “Medical schools don’t even look at your application if you don’t have research experience.”

An active member of USU’s Asian American Club, Lam says she wants to reach other multicultural students to make them aware of undergraduate research and scholarship opportunities at Utah State.

“I want to let others know about opportunities to get scholarships and gain research experience here at USU,” she says. “Dr. Sabir and the other professors were great resources for me and helped me get settled on campus.”

Lam has returned to subsequent biotech academies to help out as a peer mentor and says she’s impressed with the new learning opportunities that are added each year. “I would have liked to have learned what the new participants are doing when I was their age.”

Writer: Mary-Ann Muffoletto, maryann.muffoletto@usu.edu, 435-797-1429
September 2007
Research Funding Up

Utah State University's total research awards increased to $132.7 million this past year, up $9 million from the previous year, for an increase of 7.8 percent. The latest research awards information encompasses fiscal year 2006-2007.

In addition to the research awards, USU was awarded $18.5 million for student fellowships and financial aid in the past year, bringing the total for all awards to $151.2 million. USU is ranked in the top 20 among land-grant universities in the nation and in the top 10 non-medical land-grant universities for federal research revenue generated, according to the National Science Foundation’s report based on fiscal year 2004 research expenditures. USU ranks first among all universities in the nation in money spent on aerospace research and development, according to NSF data. USU’s College of Education and Human Services ranks number two in the nation in total research awards behind Columbia University.

“Our success in obtaining grants and contracts reflects our stellar research faculty who submit proposals and receive funding in a highly competitive environment,” USU President Stan L. Albrecht said. “These are faculty who are recognized as being at the top of their fields.”

In addition to research contracts and grants, the increase in funding also comes from awards for international education and training, USU Vice President for Research Brent Miller said.

“Part of our success comes from our USU faculty, and another part of our growth comes from scientists and engineers at USU’s Space Dynamics Lab,” Miller said. “In some years, one or two major SDL awards account for much of the difference in funding from the prior year. Our research funding went down in 2004. This drop reflected the discontinuation of a very large U.S. Department of Defense contract at SDL. Fortunately, we have resumed an upward trajectory after that decline.”

While most of the funding for USU research comes from federal sources, private sources make up almost 20 percent of the total research funding. These sources include private industries, private foundations and other international government sources.

“The research conducted by our faculty is a very important benefit for our students because that cutting-edge knowledge carries over into the classroom,” said USU Executive Vice President and Provost Raymond Coward. “Many professors at USU have active programs of research that parallel their teaching assignments and enrich the experiences of our students. Such professors have the ability to provide students with knowledge and insights that simply cannot be found in any text. This adds real value to their learning experience.”
Winning the lottery is something many Americans dream of, but the odds are against most at taking home that "winning" random number. Utah State University computer engineering student Joseph Irvine is betting on those odds and literally winning with his software written specifically for school admission lotteries.

Irvine’s intelligent lottery software pulls names from a database and assigns numbers to every person vying for a spot in the school. The program then randomly generates a list from one up to 50,000. The number one slot opening will have a person’s identity number next to it, thus ensuring them a place in the school. The software is animated so audiences can see what numbers are being selected by the program, and allows the results to be printed and saved.

Irvine realized the niche market for his lottery software, and began selling the product when he was a freshman at USU.

"I noticed USU’s Edith Bowen Laboratory Elementary School held a kindergarten lottery," Irvine said. "I approached them and asked if they would be interested in using my software. They said they were and began using it for their 2007 kindergarten lottery."

"This software saved me hours of work," said Susan Wall, Edith Bowen Lab School secretary. "Our kindergarten lottery previously used decimal system software that was eight numbers long. Differentiating one applicant from another was a tedious task. With more than 100 kindergarten applications every year, it took a lot of work. Now that we are a charter school,"

Miller said most award funds are used to pay direct costs to perform the objectives of grants or the scope of work in contracts. Research awards are critically important for a research university because they help pay faculty, student assistants and other professional and technical personnel who work on the sponsored projects. They also help provide equipment, travel and operational costs. Most grants and contracts help pay a portion of the overhead, or facilities and administrative costs, involved in doing research.

"Research at Utah State University continues to grow and expand each year," said Miller. "As our faculty and students answer questions and solve problems, they provide expertise and innovation throughout society. With the research conducted at our university, we are securing our future by creating knowledge and solutions that benefit not just USU, but the state, the nation and the world."

For more information on USU’s Research, visit www.usu.edu/research/.

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October 2007

USU RESEARCH FUNDING
July 1, 2006–June 30, 2007

64.5% From Federal Sources ($85.7 million)
19.6% From Private Sources ($26 million)
14.3% From State ($19 million)
1.6% From Local ($2 million)

Research Total: $132.7 Million

USU RESEARCH FUNDING
July 1, 2006–June 30, 2007

$4 Million
Other Federal

$11.3 Million
Department of Agriculture

$10.5 Million
Department of Health & Human Services

$23.9 Million
Department of Defense

$6.1 Million
National Science Foundation

$3.6 Million
Department of Interior

$4.3 Million
Department of Education

$22 Million
NASA

SOURCES OF FEDERAL RESEARCH FUNDING
July 1, 2006–June 30, 2007
Winning the lottery is something many Americans dream of, but the odds are against most at taking home that “winning” random number. Utah State University computer engineering student Joseph Irvine is betting on those odds and literally winning with his software written specifically for school admission lotteries.

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“This software saved me hours of work,” said Susan Wall, Edith Bowen Lab School secretary. “Our kindergarten lottery previously used decimal system software that was eight numbers long. Differentiating one applicant from another was a tedious task. With more than 100 kindergarten applications every year, it took a lot of work. Now that we are a charter school,
have to hold a lottery for every grade and this software saves me a lot of time and effort.”

With the success of the Edith Bowen lottery, Irvine decided to try and sell the product to other elementary, junior and high schools that hold lotteries for coveted positions.

Knowing nothing about marketing, Irvine brought on USU business student Josh Kerkmann as his business partner to help sell and market the product. The marketing efforts paid off as the it has received interest from coast-to-coast with schools inquiring about the product from Washington, D.C., to San Diego, Calif. In fact, the product has been so successful it was featured in a Newsweek Magazine article in May 2006.

While the idea of selling the lottery software didn’t occur to Irvine until college, the idea for creating it was something he had been working on and perfecting since attending high school at the Tempe Preparatory Academy, in Tempe, Ariz.

“I went to a private, liberal arts high school that held a lottery every year to select its students,” said Irvine. “They had a fishbowl with handwritten numbers that were selected one-at-a-time. The process took hours.”

Irvine, who started using a computer at age 6, decided to put his expertise to good use. At the beginning of his sophomore year, he approached the administration at his school and asked if he could have a crack at creating a computer program that would run the lottery. The school said yes, and six months later he had what would be the first version of his school lottery software.

The high school used the software for its freshman lottery during Irvine’s junior year with resounding success, and is still using the program today.

After graduating from high school, Irvine’s interest in computers led him to USU.

“I received scholarship opportunities for several Arizona universities and after researching them, decided they were not the right fit,” Irvine said. “After hearing about USU and its expertise in computers and engineering I decided to check it out. Once I visited campus, I was sold. The university had everything I was looking for — a strong undergraduate research program, a great student-to-faculty ratio, and the location was perfect. I love to ski.”

Irvine has not regretted his choice and compliments USU on its ability to make students feel like they stand-out. USU is a larger school with lots of opportunities, but it is a safe and friendly campus with supportive professors, Irvine said.

Irvine is a USU Presidential Scholar, served as a USU Undergraduate Research Fellow during his freshman year and is a member of the Church of Jesus Christ of Latter-day Saints Institute Men’s Association, where he performs service throughout the Cache Valley community. Other accolades include receiving the National Foundation for Independent Business’ Young Entrepreneur Award and Scholarship in May 2006. He was honored with that distinction for a business he started when he was 12-years-old as a computer technician and programmer.

After graduating from USU with a degree in electrical and computer engineering, Irvine hopes to take his expertise to law school where he will focus his studies on intellectual property, patents and trademark law. Irvine then says he then might even gamble on the game called politics.

Writer: Maren Cartwright, 435-797-1355, maren.cartwright@usu.edu
September 2007
The Journalist as Researcher

Utah State University faculty member Michael Sweeney wants to make it clear that journalism includes a healthy dose of research so it is not a fluke that a journalist is included in the Sunrise Sessions.

Sunrise Sessions are a series of breakfast lectures in Salt Lake City that highlight timely and cutting-edge research at Utah State University.

Journalists aim to become “instant experts,” Sweeney said.

• Journalists use the interview as the primary information-gathering tool. Such interviews are constrained by multiple factors, including culture, politics, religion and education.

• Journalists aim to expand knowledge in new directions.

• Journalists publish their “findings” and receive feedback.

Sweeney, who is a professor of journalism at Utah State University and department head for Journalism and Communication, approached the task of collaborating on the memoir God Grew Tired of Us as a journalist. The book, written with John Bul Dau, was published by National Geographic in 2007. A popular documentary of
the same title chronicling the story of Dau, a Lost Boy of Sudan, was also released in the spring 2007, having won top honors at the 2006 Sundance Film Festival.

Sweeney was approached by National Geographic for the project, and following what he called an “audition interview” with Dau, he received the assignment. He completed extensive research before traveling to Syracuse, N.Y., for a 10-day marathon of interviews.

“There were difficulties to overcome,” Sweeney said of the project. “Difficulties in language, culture and background. Yet the collaboration was a success.”

The pair hit it off immediately, and their personalities are similar.

“He’s curious, pleasant and outgoing, and so am I,” Sweeney said with a smile.

Dau is an engaging speaker, and when he walks into a room, all can feel the power of his presence, Sweeney said.

“My Sunrise Session tells the story of John Bul Dau and the book,” Sweeney said. “I wanted to tell his story without getting in the way. This is his story. John Bul Dau was born a Dinka in Sudan and is now an American in Syracuse, N.Y. He is grateful to this country.”

Today, Dau spends his time as a motivational speaker and raising money for the John Dau Foundation to provide medical facilities in southern Sudan.

“John has raised $550,000 so far and one clinic has been built,” Sweeney said. “And now, there are more in the works. Medical care is scarce, and these clinics are important. Many of the medical problems in Sudan are preventable, and these clinics will play an enormous role. John is making an incredible difference.”

Since collaborating on the book project, Sweeney has continued contact with Dau, last seeing him in Park City in early September 2007. Dau loves coming to Utah, Sweeney said. Nearly half of the $550,000 Dau has raised for his foundation has come from Utah.

Sweeney wants to emphasize in his Sunrise Session that journalists do important work. Telling John Dau’s story is an example, but he has used that approach in all his books, which now total seven, five for National Geographic Press. The military, war time and censorship are areas of expertise and interest. He is the author of *The Military and the Press: An Uneasy Truce; From the Front: The Story of War Featuring Correspondents’ Chronicles* and *Secrets of Victory: The Office of Censorship and the American Press and Radio in World War II.*

“Many think that journalists are a mere pipeline, an echo chamber passing along information,” Sweeney said. “Others hold the opposite view that journalists are crafty, promoting a personal agenda. Neither is the truth. Journalists are just like any professional. We are trying to serve an audience — in this case, the public. We want to make a difference in the world. That’s what I teach and that’s what I practice.”

Writer: Patrick Williams, 435.797.1354
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October 2007
Utah State University’s fall headcount enrollment of 24,421 students, the largest in the university’s 119-year history, marks an increase of 3.4 percent from fall 2006. New freshmen, non-resident and regional campus enrollments are all up.

“We are very pleased with our numbers,” said Raymond T. Coward, USU executive vice president and provost. “Our enrollments represent tangible evidence that more students recognize the importance and value of a USU education.”

Coward said USU’s enrollment success this fall indicates that a wide range of students are taking advantage of the educational opportunities offered at Utah State in different locations and through different means of delivery at both beginning- and advanced-degree levels.

“All of these are positive trends for the future,” he said. “Last fall we saw the end of a three-year slide in student attendance. What these new numbers indicate is that we have passed a very important milestone: we have stabilized our enrollment and are beginning to see an upward trend.”

Here is a breakdown of USU headcount numbers:

- USU’s combined main and regional campus headcount enrollment grew from 23,623 students in 2006 to a new record high of 24,421—up 3.4 percent.
- USU main campus enrollment is 14,893, up 3.1 percent from last fall.
- USU regional campus enrollment is 10,736, for an increase of 6.2 percent. This reflects strongly on USU’s statewide reach with 42 percent of its students now attending USU’s regional campuses.
- The number of first-time freshmen on the main USU campus is up by 203 students, or a 7.7 percent increase. When viewed over the past two years, this upward trend becomes even more notable.
Growing up in a small farming community didn’t stop Utah State University graduate, Jessica Barney-Tilahun, from pursuing her dream of seeing the world. Since her journey began, she has spread knowledge of nutrition to Moldova, India, South Sudan and other countries around the world. She continues the effort now through her own Ethiopia-based consulting business as she works on a national nutrition strategy with the United Nations and the Ethiopian government.

Her time at Utah State University provided a valuable foundation for her future success. She was involved in the Peace Corps at USU and helped to organize events and activities with the student government. As a peer counselor at the counseling center, she realized how much she enjoyed working with people one-on-one. But it was from former USU professor Paul Savello that she gained her greatest inspiration. Savello was able to balance living in a small city in northern Utah and going abroad and doing the same kind of work that she hoped to do one day.

“It was his example — showing he had a normal life, and yet having the life I wanted working overseas,” she said.

In early September, Barney-Tilahun presented her experiences to students and faculty at USU. As she showed off some of the many treasures she’s accumulated from her travels, she spoke with passion about the world’s need of proper nutrition.

MAKING A DIFFERENCE

USU Alumni Jessica Barney-Tilahun recently addressed dietetics students about her work on a national nutrition strategy for Ethiopia and her time in the Peace Corps.

· The number of first-time freshmen enrolled in 2005 was 2,054. When compared against the fall 2007 number of 2,842, USU first-time freshmen enrollment has jumped 38.4 percent.

· USU main campus domestic minority enrollment reached 700 students for a 6.5 percent increase over last fall. Students in this category include American Indians, Asians, Blacks and Hispanics.

· USU main campus domestic minority enrollment among first-time freshmen is at 153 students, representing a 25.4 percent increase.

· USU males on the main campus increased 1.5 percent from 7,663 to 7,775.

· USU females on the main campus increased 5 percent from 6,781 to 7,118.

Full-time equivalent (FTE) enrollments by budget and line item, as reported by the Utah System of Higher Education, also reflect USU’s stabilized enrollment numbers. Budget-related headcount includes individual students enrolled in a course at an institution, whereas FTE approximates the number of students enrolled full-time (15 semester hours for undergraduate students and 10 semester hours for graduate students) per semester.

Some FTE enrollment equivalents of note at USU:

· Overall FTE equivalents are up 3 percent from 16,634 to 17,128.

· Non-resident equivalents rose from 2,033 to 2,258 for an 11.1 percent increase.

Coward said he expects enrollments at the Logan campus to remain stable over the near future but that enrollments at the regional campuses will continue to grow significantly as they did this year.

“Indeed, new partnerships with Snow College and the College of Eastern Utah funded by the legislature this year will increase further the number of students throughout the state who are enrolled in USU degree programs,” he said. “Students will be able to stay closer to home and, consequently, enrollment numbers in these outlying areas will increase.”

On Oct. 5, the university announced a $15 million gift to USU’s Uintah Basin campus by Marc and Debbie Bingham. The funds will be used to construct an Entrepreneurship and Energy Research Center. It will be located on USU’s new 138-acre campus in Vernal.

Writer: John DeVilbiss, 435.797.1358
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October 2007
MAKING A DIFFERENCE IN THE WORLD

After working in India and Sudan, recent dietetics graduate develops national nutrition strategy for Ethiopia

Growing up in a small farming community didn’t stop Utah State University graduate, Jessica Barney-Tilahun, from pursuing her dream of seeing the world.

Since her journey began, she has spread knowledge of nutrition to Moldova, India, South Sudan and other countries around the world. She continues the effort now through her own Ethiopia-based consulting business as she works on a national nutrition strategy with the United Nations and the Ethiopian government.

Her time at Utah State University provided a valuable foundation for her future success. She was involved in the Peace Corps at USU and helped to organize events and activities with the student government.

As a peer counselor at the counseling center, she realized how much she enjoyed working with people one-on-one. But it was from former USU professor Paul Savello that she gained her greatest inspiration. Savello was able to balance living in a small city in northern Utah and going abroad and doing the same kind of work that she hoped to do one day.

“It was his example — showing he had a normal life, and yet having the life I wanted working overseas,” she said.

In early September, Barney-Tilahun presented her experiences to students and faculty at USU. As she showed off some of the many treasures she’s accumulated from her travels, she spoke with passion about the world’s need of proper nutrition. The down-to-
earth atmosphere brought something extra to her many stories of children suffering from malnutrition. Taking surveys and rapid assessments in rural areas of Ethiopia have helped her further develop an early warning system for the Ethiopian government to notify people in case of a disaster.

Upon graduation from Utah State in 2000 with an undergraduate degree in Dietetics, Barney-Tilahun began working for a WIC (Women, Infants, and Children) clinic in Salt Lake County and stayed there for almost two years as a breast feeding advocate. Following WIC, she completed one of her lifelong goals and joined the Peace Corps working in the Republic of Moldova, a country in Eastern Europe.

“Ever since I was six years old I wanted to join the Peace Corps,” Barney-Tilahun said.

In Moldova she taught health education at high schools and at a community college. She also worked at a free women's clinic at a local hospital, helped run summer camps for at-risk and orphaned children, and she became fluent in the Moldovan and Romanian languages.

It was in Moldova that she realized she had been naïve about the ways of the world. Now that she better understands the freedoms U.S. citizens fight to protect, Barney-Tilahun said that she's more pro-American than she was when she actually lived in the United States.

“I feel like I'm a better American now,” Barney-Tilahun said. “I discovered what it really means to be American. It means standing up for ourselves.”

“When we see that something is wrong, we can work to fix it,” she said. “We can't be silenced. I like having my own opinion. I can speak without fear.”

During her time in the Peace Corps, Barney-Tilahun decided to go back to school for a master's degree, something she never anticipated. She returned to the states just long enough to attend a dual program with Tufts University and Harvard School of Public Health in Boston, Mass. At school, a door opened that allowed her to take an internship with UNICEF in Northern India, an experience she holds dear to her heart.

Barney-Tilahun received her master’s degree in Food Policy and Applied Nutrition with a dual emphasis in Nutrition Program Development and Humanitarian Crises, both designed to prepare humanitarian workers for natural disasters, refugee camps and other programs.

After receiving her master’s degree, she took a position with GOAL, an Irish-based Non-Governmental Organization (NGO) in Ethiopia. It was there she met her future husband, a native Ethiopian, who she married in June 2007.

Jessica Barney-Tilahun currently lives with her husband in Addis Ababa, Ethiopia, where she consults for the Micronutrient Initiative and United Nations. Her goal is to build solid nutrition programming and national strategies for Ethiopia.

*Writer: Joslyn Olsen, (435.797.1350) josolsen@cc.usu.edu*  
*October 2007*
And For Homework Today...

EXPLORE MACHU PICCHU

There were a lot of first-ever things happening at the College of Business as a group of 42 students participated in the South American Study Abroad program in May and June 2007. When one hears of the bungee jumping, hang gliding and motorcycle adventures that were a part of the trip it would be easy to get the wrong impression. When there’s talk of exploring Machu Picchu and walking the famous beaches of Rio de Janeiro the word “vacation” might come to mind.

It’s probably not a word one should use around the students who participated on the trip. They might give you a stern talk about the three weeks of intense class work that they had to weather before they left that kept them busy in classes from 8 a.m. to 9:30 p.m.

Students in accounting have never before been able to watch their professor go bungee jumping. Never before at the College of Business have students watched their business communications teacher float in the air after deliberately running off of a ledge some 1,700 feet above sea level. Students tackling international economics have never been offered the chance to climb Machu Picchu after class. Last June was the first time students taking a management and human resources class were ever asked to come up with a new breeding schedule for a guinea pig farm.

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Never before has any combination of classes at the College of Business included travel to Chile, Brazil and Peru.
Or, they might patiently explain to you that when the Logan class work was over and they arrived in Chile, they faced a packed schedule of lectures and meetings with academic, government and business leaders that filled their days when they were in South America.

When class was dismissed, however, the learning had only just begun. Students and faculty took to exploring, meeting people, bargaining for souvenirs and finding their way to local tourist attractions. Those moments of cultural immersion required students to adapt in a world where not very many people spoke English, where funny colorful money had value and where simple things like reading a menu were suddenly challenging.

For five weeks, free time and structured time became periods of intense learning. The mix of classroom time and unstructured time became a crucial part of the learning experience, according to many on the trip. Adam Phelps had heard people talking about the networking opportunities the trip would bring but didn't realize, initially, where most of his most effective networking was taking place.

"The network I'm building is with the people I've got on this trip with me," Phelps said. "I've got six or seven professors I can rely on anytime I need them. I've got 42 other students I've come to rely on, and in the future I wouldn't hesitate to call on them for anything I might need."

Several students said they appreciated the chance they had to get to know professors on the trip.

"We've really come to see our professors as people," USU business student Josh Kerkmann said. "They are not just there in the classroom anymore. They are real people we've got to spend time with, interact with and create friendships with. It's really been a rewarding time to talk with them."

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"There's a bet to take. Of all 110 winners that filled their days when they were in South America.

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"The network I'm building is with the people I've got on this trip with me," Phelps said. "I've got six or seven professors I can rely on anytime I need them. I've got 42 other students I've come to rely on, and in the future I wouldn't hesitate to call on them for anything I might need."

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Carnegie Professor OF THE YEAR 2007

Think teaching is a tough business? Tell that to Professor Lyle McNeal

Here’s a bet to take. Of all the nation’s 2007 Carnegie Professors of the Year — one from almost every state — Utah State University Professor Lyle McNeal has the most unique “teaching-is-tough” story to tell.

One of McNeal’s recent in-the-field lab experiences mixed one young student, one rowdy 400-pound ram and one much-loved professor’s much-loved nose. It seems the inexperienced student let the ram into a holding pen prematurely, and all McNeal remembers is turning around and seeing 400 pounds of angry, thick-horned ram reared up on its hind legs coming down for a head butt. McNeal’s nose took the blast, it exploded into pieces and off to the emergency room he went with a concussion.

“It wasn’t really the student’s fault,” McNeal said graciously. “That’s what we were there for, to learn and get some experience. I was just glad it was me and not one of the students, and it definitely taught them a lesson about dealing with animals.”

McNeal, an animal science professor in USU’s College of Agriculture, is one of 40 professors from across the nation honored recently (Nov. 15) in Washington, D.C., as a Carnegie Professor of the Year. The awards recognize outstanding professors for their influence on teaching and their outstanding commitment to teaching undergraduate students. This year, there are winners in 40 states and the District of Columbia. USU is home to eight of the last 13 Carnegie Professors of the Year in Utah.

When McNeal says that no two days are alike, he backs the claim up with bruises that are still coming to someone “somewhere over the age of 65.” He’s had Hepatitis B, hantavirus, both shoulders repaired after run-ins with animals, and he’s been accidentally poked with animal vaccine by students. Yes, teaching is a tough business.

“But then I also get things like this,” he said, holding up a card covered with personalized get-well wishes from dozens of students from the class. “When you get something like this two days later, then you know what this teaching business is all about.”

Teaching might be a tough business, but McNeal is a tough teacher with a huge soft spot in his heart for students.

“Professor McNeal is beloved by his students because he doesn’t sacrifice academic rigor for popularity, yet at the same time they know he also is deeply concerned with their personal well being,” said Noelle Cockett, vice president for Extension and Agriculture. “He is absolutely passionate about teaching, and he hasn’t lost one ounce of enthusiasm after all these years in the classroom.”
He gets to work by 6:30 a.m. most days, a time when “only the custodian and I are here — we’re good friends,” he said. He works most Saturdays, a day when he gets to have some one-on-one time, as he puts it, with himself. He has an enormous teaching load — 15 classes over the three semesters, including 12 undergraduate classes. And he has received 19 different awards excellence in teaching and mentoring since he came to USU in 1979.

“No student is a number in his class,” Cockett said. “He respects them all, cares for them all. He never pits students against each other. He asks them to compete against themselves, and he has a way of drawing the best out of each one of them.”

McNeal said he tries to get students focused on action, on “doing” things by raising the expectations they have of themselves.

“As a professor, you don’t give lectures and tests — you give lessons,” he said. “I look at them and I see minds ready to be stimulated, enhanced, enlarged. Sometimes you wonder if you’re getting through, but the gratitude often comes back later when they’re alumni. This relationship doesn’t end at commencement.”

Ann Berghout Austin, USU’s vice provost for faculty development and diversity, said that in addition to his enormous in-class teaching load, it might be impossible to find another professor who spends more time with students either in one-on-one consultation or in group hands-on activities. His field-trip schedule for any typical block of time is intense and goes on almost without break.

“And still ‘Doc’ McNeal has never lost his ebullient enthusiasm for his discipline, his boundless energy and, most importantly, his sincere love for his students,” she said.

His students are his family away from home, McNeal said. “They’re my extended family, and I try to treat them like it.” His young students sometimes are thousands of miles from home, and they need help adjusting. He thinks students learn better in a nurturing classroom environment, not through tactics that include fear and intimidation.

McNeal has a sign on the door of his office that he says sums up his philosophy about his role in teaching. It reads:

“Our students are the most important citizens on campus. They are not dependent on us … we are dependent on them. They are not an outsider in our university … they are part of it. We are not doing them a favor by serving them … they are doing us a favor by giving us the opportunity to do so.”

Several of McNeal’s students wrote letters in support of his nominations for the award.

“‘Not only did he give his time, he demonstrated a genuine concern for each student’s abilities, desires, limitations and life circumstances,’” former student Geoffrey Anderson wrote.

Another former student, sheep rancher John Meredith Wilson, wrote: “Dr. Lyle McNeal is the most accessible university professor I have ever known, and I have known many. He cares for people, for livestock, the land and for a way of life. After all, living the walk is the most important part of being a teacher.”

McNeal said it seems to him that higher education is in some ways becoming unbalanced, with the focus narrowing dramatically into specialization areas with less and less room for students to understand the big picture. To address that concern, he is teaching a new class called Sustainable Agriculture Systems with Animals, a class that discusses agro-ecology, alternative agricultural systems, sustainable agriculture and non-monoculture agriculture, among other topics.

“My Navajo family uses a term that means ‘harmony’ or ‘balance’ in life,” said McNeal, who was adopted into a Navajo family and into the tribe in appreciation of his efforts to save the endangered Churro sheep, which had both material and spiritual significance to the Navajo, or the Diné. The project received national attention, including major articles in The Smithsonian and National Geographic magazines. “I think it is important to teach students about taking a holistic approach to life,” he said.

In recent years, the children of former students have become his students, and that has been something of a reality check for him. At age 65-plus, most people begin thinking about retirement, perhaps especially people in jobs that leave them with broken body parts. But McNeal doesn’t understand the attraction of retirement.

“Retirement? What’s that? I’m scared of not working,” he said. “I’ve worked full time and supported myself since I was 11. I think I still have something to teach these kids, and they need this ‘transfer of knowledge.’ As long as I can still remember what I know, I’m staying!”

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CAUGHT IN THE ACT
USU Biochemists Catch Life-Critical Enzyme in Action

More than 80 percent of the air we breathe is nitrogen, yet it’s in a form neither humans, animals nor plants can access directly.

“It’s an incredible irony,” says Utah State University biochemistry professor Lance Seefeldt. “All living things need nitrogen to survive and we’re swimming in a sea of it, but we can’t get to it.”

Seefeldt and colleague Brett Barney, USU research assistant professor, have solved a long-sought piece of the puzzle of how enzymes known as nitrogenases convert nitrogen into life-sustaining compounds that are subsequently transferred to the soil and food sources on which all plants and animals depend.

The two led an interdisciplinary team including scientists from Northwestern University and Virginia Tech that succeeded in capturing three steps of nitrogen fixation; that is, the process by which nitrogen is converted to ammonia.

Their findings were recently published in the Journal of the American Chemistry Society, the Proceedings of the National Academy of Sciences, Chemical & Engineering News and Biochemistry.

“The structure of nitrogenase and the general site at which nitrogen gets bound and reduced has been known for more than a decade,” Seefeldt says. “But until now, we didn’t know anything about how that process works.”

The researchers developed a chemical methodology to trap and detect intermediates in nitrogenase-catalyzed reductions and flash-freeze samples. Using spectroscopy, they confirmed that the samples were indeed enzyme-bound intermediates.

Trying to capture nitrogenase in action is similar to trying to catch a single frame of...
movie film on a moving reel, Barney says. “You have to catch it in the act and freeze the frame so you can actually look at it and understand it.”

Using the same metaphor, Seefeldt explains that “once we collect all the frames we can watch the whole movie.”

“We will be able to understand how the enzyme functions,” he says. “This will drive a lot of research around the world and eventually could enable an alternative, clean method of producing nitrogen.”

Currently, science and industry rely on the nearly century-old Haber-Bosch process to produce nitrogen for fertilizer, paper, pharmaceuticals, mining and explosives. Developed by German Nobel prize winners Fritz Haber and Carl Bosch in the early 20th century, the process, Seefeldt says, is costly, energy-intensive and a source of pollution.

Seefeldt and Barney hope their current research will lead to methods that “fix nitrogen in a much more ecologically friendly process that requires less fossil fuel.”

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November 2007
Large earthquakes can have catastrophic consequences. Collapsing buildings, road and bridge damage, landslides, fires and lack of basic necessities necessary for human survival can ultimately lead to loss of life.

USU structural engineering professor Keri Ryan is looking for solutions to minimize the impacts of earthquakes on society through research funded by the National Science Foundation and the Network for Earthquake Engineering Simulation. NSF gave Ryan a $1.5 million grant to lead a team of researchers who are focused on studying seismic isolation.

Seismic isolation is a way of improving a structure’s performance during an earthquake. Seismic isolation systems consist of rubber pads or friction bearings placed underneath a structure that allow it to move above the isolation system during and earthquake.

“By making the structure more flexible, we decrease the input forces to a structure which allows it to deform elastically, and remain damage free in an earthquake,” Ryan said. “Earthquakes can be very disruptive to our society and the seismic isolation we are studying could help ease that disruption because it gives a building a much higher structural performance, thus lessening the chance of impact to humans following an earthquake.”

In order to understand the exact nature of how elastomeric bearings perform during an earthquake, Ryan went to Japan where scientists and engineers have built thousands of structures using isolation technology. Japan has studied the technology so thoroughly it has the largest shake table testing site in the world. Called E-Defense, the facility allows for full-scale replicas to be built on top of a shaking device that simulates an earthquake. E-Defense allows researchers, builders, engineers and architects to see how large structures using elastomeric bearings handle earthquakes.
The technology Ryan is studying is not new to earthquake engineers and has, in fact, been around for about 30 years.

“What Utahns will find interesting is that the City County building in downtown Salt Lake City was the first building in the United States to be retrofitted with elastomeric bearings in the late 1980s,” Ryan said. “The technology is currently being used to renovate the state capitol.”

However, Ryan said that for the most part, isolation bearings are not widely used in the states.

“Stricter design requirements, higher building costs and non-accommodating business practices are reasons this technology is not used more often,” Ryan said.

One of Ryan’s research goals is to work with regulatory agencies, designers and builders to allow a greater understanding of the technology so it might become a more standard way of building in the future.

Ryan said using the technology can definitely add to building costs, and part of her research is looking for ways to cut those costs through smart design solutions.

“Currently, most isolation systems are located at the foundation level and the foundation has to be specially designed to incorporate the bearings,” Ryan said. “We are now looking for ways to possibly place the isolators at the top of the first story to help cut costs.”

After graduating with a master’s and doctorate in structural engineering from the University of California at Berkeley, Ryan was offered a job at USU in 2004. Shortly after arriving, she received a USU ADVANCE grant funded by NSF to begin working on her research. ADVANCE grants fund female professors conducting research in science, technology, engineering and math areas. Ryan said the grant allowed her to make contact with a structural engineering professor at Berkeley who would eventually become part of her research team.

Ryan is now collaborating with researchers from Japan, U.C. Berkeley, State University of New York University at Buffalo and University of Wisconsin Green Bay. The group is funded through the NSF grant and is called Tools for Isolation and Protective Systems (TIPS).

The Network for Earthquake Engineering Simulation also co-sponsors the research. NEES is a shared, national network of 15 experimental facilities, collaborative tools, a centralized data repository and earthquake simulation software, all linked by ultra-high-speed Internet connections.

For more information on the research, visit the TIPS Web site: www.neng.usu.edu/cee/faculty/kryan/NEESTIPS/

For more information about NEES, visit: http://www.nees.org/About_NEES/

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December 2007
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