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DEPARTMENT OF BIOLOGICAL SYSTEMS ENGINEERING NEWSLETTER, Vol. 3, Issue 1, June 2007

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DEPARTMENT OF
BIOLOGICAL SYSTEMS ENGINEERING

VOL. 3 ISSUE 1 NEWSLETTER OF ACHIEVEMENT JUNE 2007

Award Winning Academic Advisor

Members of our faculty continue to demonstrate their excellence and to be recognized for it. Dr. Dennis Schulte plays a leading role in contacting prospective students and encouraging them to chose the University of Nebraska and the Biological Systems Engineering Department. Every summer he works in New Student Enrollment, and during the year he maintains close contact with his many Department advisees as he guides them through their academic careers. Recently at this year's Honors Convocation, Dennis was recognized with the Student Foundation/Builder's Award for Outstanding Academic Advising. This campus-wide award recognizes faculty members who have demonstrated outstanding academic advising and who, by their service to UNL, have made a considerable contribution to the educational enrichment of UNL students. Earlier in the year Dennis was recognized for the ninth time by the Parents Association and the UNL Teaching Council for his significant "contribution to students" as an advisor.

Graduation
See pages 6-7

Hall of Fame 2007

Leslie W. Jochens, P.E.

Leader in the Irrigation Industry

Born in Abbott, Colorado, Les's family moved several times in his early years, and eventually settled in the Fairbury area. He graduated from Fairbury High School and worked in the area until he joined the U.S. Army in 1941. He served as a bombardier navigator in the Army Air Corps. After the war, he entered the University of Nebraska in January 1946, and graduated with a degree in agricultural engineering in 1949. That class of graduates, nine in all, included LeRoy Thom, Richard Schleusener, and future Nebraska State Senator, Howard Lamb.

Les began his career in the irrigation industry in 1949 as a pump expert for a Colorado company. He was co-owner of Rocky Mountain Irrigation in Denver, and worked 17 years for the Rain Bird Corporation. He established Western Irrigation Supply House (WISH) in 1975 to serve the agricultural irrigation community in the Central Plains. A premier irrigation supply center, WISH continues to specialize exclusively in wholesale distribution of quality irrigation equipment, and represents over 100 of the top manufacturers and suppliers for agricultural, commercial, industrial, and residential applications. WISH has six locations in Nebraska, Florida, Texas, Colorado, and Idaho.

BIOLOGICAL SYSTEMS ENGINEERING DEPARTMENT
HALL OF FAME

A registered Professional Engineer, Les has been praised by leaders in the irrigation industry for his technical knowledge, practical approach, and commitment to teaching effective irrigation practices. He has been recognized for establishing a system to provide irrigation dealers with easier access to custom sprinkler packages and parts for center pivots, and for founding a network of supply houses. His ideas and concepts have changed the face of the center pivot sprinkler packaging business. Les continues to be a positive influence in the industry and the lives of many individuals. He leads, guides, explains, and teaches proper irrigation practices and product application. Understanding both the irrigator and the requirements involved in technical irrigation engineering, Les provides the solutions that make business sense for the industry.

Les met his wife of 63 years, Harriet, while they were students at Fairbury High School. Harriet is an integral part of the WISH operation. Their son, Bob, is the president of WISH, and their daughter, Ann, is a research scientist on the oceanography faculty at Texas A&M University.

Contact the
Biological Systems Engineering Department
223 L. W. Chase Hall
Lincoln, Nebraska 68583-0726
402-472-1413
Web: bse.unl.edu

University of Nebraska Lincoln

From the Department Head

Ron Yoder

As many of you know, 2007 is the centennial year for our professional society, ASABE. In the most recent issue of *Resource* magazine, which features the history and contributions of the Society and of our profession, the roles and contributions of Nebraska, Nebraskans, and the University of Nebraska appear quite prominently. And as most of you also know, our Department was there at the beginning of the profession. This rich history and tradition continues today as the Biological Systems Engineering Department continues to address traditional areas of education, research, and outreach such as machinery and controls for agricultural production systems and soil and water conservation engineering, while also addressing contemporary issues such as bioenergy production, bioenvironmental engineering, and applying engineering to human health.

In this issue you will read about the recognition accorded to our excellent students, faculty, and staff, and will meet two new members of our faculty, Dr. Simon van Donk, our Irrigation and Water Resources Engineer at the West Central Research and Extension Center in North Platte, and John Hay, who has joined us as an Extension Educator providing educational programs related to energy. These additions to our faculty strengthen our ability to address energy and water issues in Nebraska, and we welcome them. We hope you enjoy this issue of the Biological Systems Engineering Department newsletter, and as always, we welcome your comments and visits to the Department.

Ron Yoder

Biological Systems Engineering Newsletter

Ron Yoder . . . . . Editor
Gail Ogden . . . . . Editorial Coordinator
Sheila Smith . . . . . Graphics and Design
Contributors. . . . . Eileen Curtis, Mike Henry, Roger Hoy, Faythe Colburn

Meet the Faculty

In this section we feature our newer faculty, highlighting their unique expertise and commitment to excellence. In research, teaching, and extension, our faculty provide the creative energy that makes this department so widely acclaimed.

The Bashford name in the Biological Systems Engineering Department has previously meant tractors and agricultural engineering. This name now also represents biomedical imaging and signals with Leonard's son, Greg, who joined the faculty in 2003. The current movement in national health care is toward preventive care; biomedical imaging and signal sensing play a large part in this shift. Medical imaging uses a variety of energy sources including electromagnetic and sound: electromagnetic waves are used in magnetic resonance imaging (MRI), X-ray, and computed tomography (CT), and sound waves are used in ultrasound. From the large—fetal monitoring, to the subtle—intravascular probes, ultrasound is just one portion of the medical imaging field that seems constantly to be breaking new frontiers.

Dr. Bashford's interests in bioimaging and biosignal analysis were developed during his undergraduate years in electrical engineering at UNL, when he became interested in using signal analysis in the area of medicine, and were developed further in graduate school (biomedical engineering at Duke, Ph.D.). Courses he teaches include Introduction to Biomedical Engineering (junior-level), junior/senior-level Biomedical Signal and System Analysis, senior/graduate-level Medical Imaging Systems, and graduate-level Advanced Ultrasound Imaging. Dr. Bashford's research group is working with ultrasound imaging, Doppler blood flow detection, and in a new area—aural signal processing for use with the hearing impaired. Before joining the faculty, Dr. Bashford worked for Acuson Corporation (Mountain View, CA) on ultrasound instrumentation, GE Medical Systems (Milwaukee, WI), also on ultrasound instrumentation, and LI-COR in Lincoln, on imaging technology for use with automated DNA sequencing instruments. He maintains his relationship with LI-COR through consulting and referring students for internships, e.g., Laura Podany's (BSEN, senior) internship for the summer of 2007.

Establishing partnerships and collaborative environments for research has many benefits for both the department and outside agencies. Students have the opportunity to participate in these collaborations through ARD fellowships and UCARE research projects, giving them experience in applying engineering in real-world medical environments. A strong collaboration has been established with Dr. Judy Burnfield, (Director, Movement Sciences Center and Clifton Chair in Physical Therapy and Movement Science) at Madonna Rehabilitation Hospital, working on a variety of engineering projects with application for physical rehabilitation. Graduate student Amy Jorde is working on analyzing signals from an armband accelerometer to record the physical activities engaged in by rehabilitation patients. Recently graduated senior Nick Tomsen worked on a collaborative project with Dr. Burnfield and Dr. Kornelia Kulig (University of Southern California); the team discovered that by analyzing ultrasound images of the Achilles tendon, they were able to predict, with over 80% accuracy, whether the subject had sustained injury to the tendon, resulting in tendinosis. These data will be useful in quantitatively tracking a rehabilitative patient's progress over time. In another project, student Gwenn Skar has been working on an experimental protocol to detect enamel and dentin thickness in a tooth in a collaborative project with Dr. Mark Beatty, UNMC Dental College in Lincoln. Her Honors Thesis is based on this research. Students also have had the opportunity to work with Dr. Ed Truemper at Children's Hospital in Omaha on developing a Transcranial Doppler (TCD) instrument for use with pediatric patients during surgery.

Though often developed for biomedical purposes, much of this technology is also finding other applications in industry, e.g., in nondestructive testing, which is defined as ". . .those test methods used to examine an object, material or system without impairing its future usefulness. The term is generally applied to nonmedical investigations of material integrity." [The American Society of Nondestructive Testing website.] Future directions and goals for Dr. Bashford include establishing a Center for Bioimaging and Biosignal Analysis, which would serve as a resource for researchers interested in a wide array of biological and biomedical applications—from externally sensed signals such as ECG, EMG, and invoked potentials, to internal signals such as systems theory applied to cellular signaling.

Left to right: Matt Lamb, Dan Jahraus, Mike Hauger, Mike Peterson, Kurt Petersen, Ken Buell.

John Deere Dealership Management Banquet

Each year, Mechanized Systems Management (MSYM) students participating in, and those who are interested in the John Deere Dealership Management Program gather for a banquet hosted by Ken Buell. Mr. Buell is the Manager for College Partnerships with the John Deere Company.

The Deere Company partners with five universities (Missouri, Kansas State, Nebraska, North Dakota State, and Illinois) to provide scholarships, teaching aids, contacts, and assistance to students who will become the next generation of dealers/managers in the Deere network. In addition to a four-year curriculum planned specifically for them, students complete two summer internships and a project as part of their requirements. The Deere Company is looking for students with interests in business, management, and technology since each aspect is involved in the three major components of a dealership: sales, parts, and service.

After introductory remarks by Drs. Campbell and Weller, guest speaker Matt Lamb (1997, B.S., MSYM) shared his career experiences. Mr. Lamb began a corporate career with Deere, then shifted to ownership of a multi-site dealership based in Wisconsin, and recently moved back to Nebraska and his current position as the general manager for Platte Valley Equipment in Fremont and Wahoo. While a student at UNL, Matt was heavily involved in campus activities, and developed his "commitment to get it done." That attitude has helped him succeed on many levels in the Deere Company. Matt talked about the challenges and opportunities available to students with a can-do attitude, leadership skills, and the ability to motivate people.

Following Matt's talk, four MSYM students in the Deere program made presentations describing their dealer internships. Mike Peterson interned with Landmark Implement in Holdrege, NE, which recently consolidated four stores. He has worked for them for three summers and is heading back for a fourth. Dan Jahraus interned with Bennington Equipment, located near Elkhorn, NE, as a Safety Manager and an Assistant Service Manager. In addition to creating a company safety manual and compiling material safety data sheet books; Dan also conducted safety training and implemented a forklift preventative maintenance program.

Mike Hauger completed the SCC Milford John Deere Parts Program and then transferred to MSYM. He assumed a lot of responsibilities during his internships, first with a one-store operation at Madison Implement in Madison, Minnesota, and most recently with Plains Power & Equipment, a six-store operation based in Seward, NE. Kurt Petersen had his first internship following his freshman year working in parts, sales, and service for GreenIron in Ord, NE. During his second internship with Bennington Equipment, Kurt gained experience in customer relations and started a spill containment program for the dealership. His third internship was with New Holland Harvest Support in the western Great Plains. Kurt began his career as a Service Administrator with Platte Valley Equipment in Fremont after graduation in May.

The John Deere Dealership Management Program provides a focal point for MSYM students to bring many skills together. The technology and business skills needed in today's workforce are changing rapidly. As evidenced by the students above, meeting the challenges of a rewarding career is possible thanks to the John Deere Dealership Management Program. Learn more: http://www.jdpowerup.com

Alumni Profiles: Mike Henry

Michael Henry (2000, B.S., BSEN)

Both personally and professionally, the Biological Systems Engineering (BSE) program equipped me with the necessary essentials to begin a successful career. I am currently an environmental engineer in Nebraska for Terracon Consultants, Inc., working from both the Omaha and Lincoln offices. My role varies from performing environmental site assessments to remediation system design, installation, and operation. Since entering the workforce, I have worked as both a civil design engineer and as an environmental engineer.

Like many student engineers, I felt the first couple years of my tenure at the University were pretty well set in stone and did not allow for much variation. Core engineering classes took up a good portion of my early college education. However, once I became more involved with the BSE program in my junior and senior years, I discovered the flexibility to pursue activities and goals I was trying to achieve, either through course- or project-selection in individual classes.

The BSE program also strengthened my problem solving abilities in a more real-world, trial-and-error environment. In my experience it is difficult to account for all the unknowns, and oftentimes changes must be made to accommodate a dynamic construction process. I feel the Senior Design Project process was a good precursor to "real-world" design and implementation challenges. The course taught me to make changes in my thought process in response to feedback I was receiving from the project, the client, and my team members, eventually culminating in a successful project although not without some stumbling blocks along the way. Throughout my time in the BSE program the departmental faculty was supportive, available, and ready to assist as necessary. I always felt the faculty wanted us to succeed.

After graduation, I began working in Terracon's Omaha Nebraska office as a Field Engineer. My initial responsibilities included conducting field assessment and oversight work, where I learned many valuable lessons critical to successful project management. I made a career change after approximately two years and worked as a project engineer with a civil design firm. During that time I was responsible for designing municipal water supply and distribution systems, as well as sanitary collection and treatment systems. After two years of working in the civil design field, I realized that environmental work was more satisfying for me and returned to Terracon. My responsibilities have increased and the variety of projects that I work on has expanded significantly, from working on sites contaminated with heavy metals and chlorinated compounds to a site contaminated with low-level radioactive waste. Each site has its own unique set of challenges that set it apart from other sites contaminated with similar materials.

In addition to playing an important role in project work, I have found my education to be equally important in growing my role within Terracon. I continue to actively work towards larger goals, such as obtaining my Professional Engineer's license, and working on larger and more complex projects. Overall, my experience at UNL, especially in the BSE program, helped develop the skills necessary to succeed as an Environmental Engineer.

Contribute your alumni profile to: gogden1@unl.edu.

Student News

Husker 24, a new program named for the 24 campus columns representing the Nebraska Tradition of Excellence, selects 24 students each year based on their leadership and spirit. Three BSEN majors: **Laura Podany** (Clarkson, NE), **Megan Krause** (Omaha, NE), and **Issar Yazhbin** (Yavne, Israel) were selected as members of the inaugural group. The Husker 24 were honored with a banquet on February 16, and presented with a Nebraska Ring during the annual ring ceremony in April. This program is a joint effort of the Student Alumni Association and the Nebraska Alumni Association.

The following students were recognized at the Nebraska Engineering Recognition held at Othmer Hall. **Bart Coffman** (Hinton, Iowa) was awarded the 2007 Agricultural Engineering Outstanding Senior and **Nicolas Tomsen** (Minden, NE) was awarded the 2007 Biological Systems Engineering Outstanding Senior. **Erica Levorson** (BSEN, Overland, KS), a member of Tau Beta Pi, received the 2007 O.J. Ferguson Outstanding Senior Award. **Brent Hanson** (BSEN, Kearney, NE) received the 2007 O.J. Ferguson Outstanding Sophomore Award.

In April, **Megan Krause** (BSEN, Omaha, NE) received a scholarship from Sigma Tau, an engineering honorary society.

Milton Mohr Scholarships were awarded in April to **Stephanie Baird** (Sioux City, IA), **Wei Jian Chin** (Pukit Mertajam, Malaysia), **Luke Ferguson** (Omaha, NE), **Brant Hubbard** (York, NE), **Shannon Killion** (Lincoln, NE), **Erica Levorson** (Overland, KS), **Michaela McBride** (Lincoln, NE), and **Abby McTaggart** (Dubuque, Iowa). All recipients are BSEN majors. The Milton Mohr Scholarship and Fellowship fund from the UNL Center for Biotechnology and the College of Engineering recognizes outstanding students in the sciences of biotechnology and engineering.

Isaac Mortensen, AGEN, received an Outstanding Undergraduate Research Award from the College of Engineering Graduate Program.

Alpha Zeta is a professional fraternity for men and women pursuing careers in agriculture. Mechanized Systems Management students **Benjamin Robinson** (Alma, NE), **Tyler Ruf** (Cambridge, NE), and **Patrick Trout** (Tecumseh, NE) were welcomed as new members during a program held at the East Campus Union on March 6, 2007.

Dr. Milford Hanna (left) congratulates Denis Mutiibwa

Denis Mutiibwa, a graduate student from Uganda, received the Bill A. and Rita Stout Outstanding International Graduate Student award for 2007 during the annual spring banquet. Denis is working with Dr. Suat Irmak on evapotranspiration research.

Ajay Kumar, a Ph.D. student from Patna, India, is the first recipient of the Aquila Energy Sciences Fellowship, awarded through the NU Foundation and the Nebraska Center for Energy Sciences Research (NCESR). The Fellowship is to support research aligning with the mission of the NCESR: to conduct energy research that produces new technologies, processes and systems that provide new or significantly enhanced energy sources and improve the quality and economic opportunity for Nebraskans. Additionally, the Office of Graduate Studies presented him with a fellowship awarded from a combination of the Henry F. and Jean D. Holtzclaw and J.J. and Eleanor Ogle funds in recognition of scholastic performance and accomplishments. His advisor is Dr. Milford Hanna.

Ai Pheeng Wee, a recent graduate (B.S. in BSEN) who is continuing as a graduate student, was awarded the Richard H. Larson Fellowship. Larson Fellowships are designed to assist departments with the recruitment of superior graduate students who enhance the diversity of the graduate population in the Department and the University.

Ramesh Singh, a graduate research assistant pursuing his Ph.D., was awarded a Water Resources Research Initiative (WRRI) fellowship from the UNL Water Center. This fellowship is awarded on a competitive basis to top-ranked candidates based on past academic performance (GPA, GRE score, publications), relevant experience (job, internships, etc.), academic goals, and potential. Ramesh was also awarded a Milton Mohr Fellowship. Ramesh is from Jamui, India, and his advisor is Dr. Ayse Irmak.

Heartwin Pushpadass, a Ph.D. student from Nagercoil, India, advised by Dr. Hanna, received a combined fellowship from the J.J. and Eleanor Ogle and the Sue Wilson funds for the academic year beginning in August 2007. Heartwin is working on biodegradable and edible polymers, and is on leave from his government position while pursuing his doctorate.

Weighing in at 197, wrestler **Craig Brester**, a redshirt freshman from Howells, NE, and a Mechanized Systems Management major, was named to the first-team Academic All-Big 12. In order to be nominated to the first team, a student-athlete must earn a minimum grade point average (gpa) of 3.2 and wrestle in 60 percent of the team's competitions. Craig was one of six UNL wrestlers who qualified for the NCAA Championships in March, was runner-up for the Big 12 Championship, and was voted Most-Improved on the team.

Issar Yazhbin, a senior from Yavne, Israel, was nominated for Student Athlete of the Year. He lettered in Track and Field, has excelled in his sport—the hammer throw, served on the Student Athlete Advisory Committee, and is an outstanding scholar. During the Nebraska Open track meet on April 29, he broke the school record with a throw of 207'3".

Student News

At the Student-Athlete Academic Banquet on April 22, 2007, five departmental students were recognized for cumulative grade point averages greater than 3.0. Congratulations to:
Craig Brester, Howells, NE, (Wrestling, Honors, MSYM)
Wes Cammack, DeWitt, NE (Football, Highest Honors, AGEN)
Newt Lingenfelter, Plainview, NE (Football, Honors, MSYM)
Kurt Mann, Grand Island, NE (Football, Highest Honors, MSYM)
Issar Yazhbin, Yaven, Israel (Track & Field, Highest Honors, BSEN)

Four departmental students were inducted into 2007 membership for Mortar Board, a national honorary society recognizing scholarship, leadership, and service. Congratulations to **Robert Corn** (Omaha, NE), **Brant Hubbard** (York, NE), **Megan Krause** (Omaha, NE), and **Laura Podany** (Clarkson, NE).

On the evening of February 13, 2007, outstanding junior and senior undergraduate women from UNL were honored for their achievements in science at the February Forum Banquet held at The Cornhusker Hotel in downtown Lincoln. This annual event is sponsored by the Center for Science, Mathematics & Computer Education Department at UNL. During the program, Department Head Ron Yoder introduced **Carmen Ayala**, **Megan Krause**, **Erica Levorson**, and **Dipika Singh**, who were recognized as honorees from the Department. Each of these BSEN students received a certificate of excellence for her achievements.

Anna Furby, from Papillion, NE (BSEN), and **Liz Norris**, from Ceresco, NE (BSEN), spent their spring semester studying abroad in Brazil. Funded by the U.S. Department of Education (FIPSE-CAPES), they participated in a reciprocal university exchange program with the Universidad Federal do Ceará.

L. Octavio Lagos, a Ph.D. student from Chile, received the Milton Mohr Fellowship awarded through the Center for Biotechnology and the College of Engineering. He also received the Mary and Charles C. Cooper/Emma I. Sharpless Fellowship from the College of Agricultural Sciences and Natural Resources. Dr. Derrel Martin and Dr. Suat Irmak are his co-advisors.

Photographed by Gary DeBerg, this wild turkey was an early spring visitor in front of L.W. Chase Hall.

Chef Schulte (right) looks on as Evan Curtis (left) lines up the entry made by (left to right) Kate Johnson, Kurt Fox, and Erik Mellgren.

The Incredible, Edible Vehicle Competition

The Great Plains Room in the East Campus Union buzzed with students, parents, and guests for E-day, the 15th annual design and poster presentation held on December 5. The tension built as fourteen freshman teams finished building their cars, tweaking the components, and sizing up the competition. Would it roll? The competition was to see whose vehicle, constructed only from food items, could survive two trips down an incline ramp, with a pit stop between runs, then meet the unspeakable fate of being consumed by team members at the conclusion of the contest. There were some bizarre food combinations we wouldn't recommend, such as jello inside a hollowed block of cheese. Despite being soaked in heated water, the dry spaghetti axles were a bit hard to chew and choke down for another team. Ably assisted by the racing management team of Evan Curtis and Dr. Don Edwards (former Dean of CASNR), Chef Dennis Schulte kept the action rolling with help from the judging team of Dr. George Meyer and Dr. Curt Weller.

In addition to the competition, student posters from Machine Design in Agricultural Engineering (AGEN 424), Instrumentation and Controls (AGEN/BSEN 460), and Advanced Modeling in Biological and Environmental Systems (BSEN 951) were displayed. Eight alumni, representing the companies they work for also attended. Our thanks to: Billy Cutsor (NMPP Energy), Jeremiah Szynskie (U.S. Army Corps of Engineers), Michael Henry (Terracon), Steve Tippery (Claas Omaha), Andy Nickel (Geneseek), Kelly Kinnison and Stacy Modelski (NRCS USDA), and Darren Jack (WLA Consulting, Inc.).

Going to be in Lincoln on the afternoon of December 11, 2007? Plan to join us for E-day in the East Campus Union as a guest, or as a company representative. Please contact Diann Young, and we'll provide information and a parking pass if you would like to participate or attend. dyoung5@unl.edu or 402-472-1413.

Graduation

The final academic achievement—graduation—is a time to celebrate the accomplishments of our students. Whether continuing their education or beginning a career, we wish these students all the best in their future endeavors.

December 2006 Graduates

Agricultural Engineering

Shannon Rose Bates	Ogallala, NE
Isaiah LaRue	Omaha, NE
Tyler Saatmann	Ohiowa, NE
Austin Story	Gallatin, MO
Loran Zumbrunn	Albion, NE

Biological Systems Engineering

Josh Dodson	Norfolk, NE
Abby Luettel	Lincoln, NE
Honors Thesis: A Comparison of Focal Zone Placement in Quality Matrices for Ultrasonic Breast Cancer Detection	
Caroline McMurray	Monument, CO
Reggie Rector	South Sioux City, NE
Brian Twombly	Troy, KS

Mechanized Systems Management

Cole Fredrick	Grand Island, NE
Jonathan Hazen	Sterling, NE
Michael Kohles	Omaha, NE
Newt Lingenfelter	Plainview, NE
Jon Niebuhr	Dunbar, NE
Scott Reinhart	Albion, NE
Adam Roelfs	Diller, NE
Brant Schmall	Mitchell, NE
Tyler Smith	McCool Junction, NE
Heath Vogt	Elmwood, NE

Graduate Students

Katrina Christiansen	Pender, NE
Thesis: Understanding the Parameters Affecting Lipid Extraction from Grain Sorghum	
Troy Ingram	Lincoln, NE
Thesis: On-the-go Mapping of Soil Mechanical Resistance Assumed to Change Linearly with Depth	
Jody Kraenzel	Hebron, North Dakota
Thesis: Prediction and Validation of Hydraulic Conductivity of Compacted Soil Liners	
Justin Speichinger	Malmo, NE
Thesis: Development of an Instrumented Subsoiler for Variable Depth Tillage	

College of Engineering (CoE) Graduate Recognition, December 2006. Left to right: Shannon Rose Bates, Caroline McMurray, Reggie Rector, Brian Twombly, and Dr. Dennis Schulte, BSE faculty member.

Mechanized Systems Management students at the CASNR Salute to Graduates in December 2006. Left to right: Dr. Ron Yoder, Jon Hazen, Jon Niebuhr, Scott Reinhart, Tyler Smith, and Heath Vogt.

Katrina Christiansen, M.S., and Dr. Schulte at CoE Graduate Recognition Day, December 2006.

Biological Systems Engineering students at the CoE Graduate Recognition, May 2007. Left to right: Dean David Allen, Dr. David Jones, Gwenn Skar, Nick Tomsen.

Agricultural Engineering students at the CoE Graduate Recognition, May 2007. Left to right: Jake Marotz, Bart Coffman, Dr. David Jones, Christina Knapp, Clay Bramble, Dean David Allen.

May 2007 Graduates

Agricultural Engineering

Clay Bramble	Hastings, NE
Bart Coffman	Hinton, IA, With Highest Distinction
Christina Knapp	Fremont, NE
Jake Marotz	Stanton, NE
Max Porter	Columbus, NE

Biological Systems Engineering

Carmen Ayala	Humphrey, NE
Sarah Book	Sioux City, IA
DelShawn Brown	Omaha, NE
Kim Cluff	Phoenix, AZ
John Finkner	Lincoln, NE
Jacob Johnson	Harvard, NE
Daniel LeMaistre	Round Rock, TX
Allan Provorse	Omaha, NE
Aaron Ryan	North Platte, NE
Gwenn Skar	Omaha, NE

Honors Thesis: Improving Accuracy in Ultrasonic Tooth Enamel Thickness Measurement

Nicholas Tomsen	Minden, NE, With Highest Distinction

Honors Thesis: Discrimination of Tendinosis Using Spatial Frequency Parameters in Ultrasound Imaging

Ai Pheeng Wee	Selangor, Malaysia

Mechanized Systems Management

Steven Fleer	Hoskins, NE
Luke Freeouf	Crete, NE
Colby Gardine	Bertrand, NE
Landon Heinrichs	Carleton, NE
Ross Miller	Davenport, NE
Daniel Minarick	Morse Bluff, NE
Kurt Petersen	Burwell, NE

Graduate Students

Naeem Ebrahim — Lincoln, NE
Thesis: Process-Based Modeling of Odor Dispersion from Area Source Livestock Facilities

Govindarajan Konda Naganathan — Paramakudi, India
Thesis: Prediction of Beef Tenderness Using Hyperspectral Imaging

Nicholas Sutko — Kearney, NE
Thesis: Development of a Storm Runoff Simulator: Sediment Mixing and Delivery Mechanism

4.0 High Scholars Honors
Receiving A's in all coursework this academic year

Freshmen:

Heidi Gengenbach	Blair, NE, BSEN
Cassandra Wehling	Lincoln, NE, BSEN

Sophomore:

Joseph Holoubek	David City, NE, MSYM

Juniors:

Brent Hanson	Kearney, NE, BSEN
Issar Yazhbin	Yavne, Israel, BSEN

Senior:

Erica Levorson	Overland Park, KS, BSEN

High Scholars Honors this academic year

Freshmen:

Santiago Arciniegas	Omaha, NE, BSEN
Bethany Barber	Gretna, NE, BSEN
Lena Butterfield	Omaha, NE, BSEN
Brady Folck	Bloomfield, NE, AGEN
Kurt Fox	Wright Patterson AFB, OH, BSEN
Nguyen Thao Nguyen	Lincoln, NE, BSEN
Melissa Steiner	Columbus, NE, BSEN
Aaron West	Omaha, NE, BSEN

Sophomores:

Dennis Bierle	Harrisburg, SD, BSEN
Wes Cammack	DeWitt, NE, AGEN
Luke Ferguson	Omaha, NE, BSEN
Shannon Killion	Kearney, NE, BSEN
Mary Regier	Julesburg, CO, BSEN

Juniors:

Rob Corn	Omaha, NE, BSEN
Megan Krause	Omaha, NE, BSEN
Laura Podany	Clarkson, NE, BSEN

Seniors:

Steven Fleer	Hoskins, NE, MSYM
Colby Gardine	Bertrand, NE, MSYM
Landon Heinrichs	Carleton, NE, MSYM and DIVAG
Brant Hubbard	York, NE, BSEN
Abby Luettel	Lincoln, NE, BSEN
Isaac Mortensen	Curtis, NE, AGEN
Jon Niebuhr	Dunbar, NE, MSYM
Jake Riggle	Elkhorn, NE, BSEN
Tyler Smith	McCool Junction, NE, MSYM

Undergraduate Creative Activities and Research Experiences—UCARE

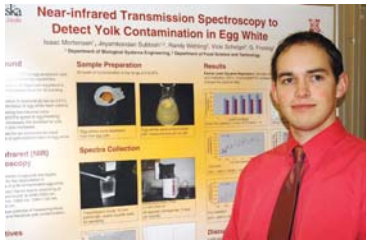
Three of our students presented their research projects at the April Undergraduate Creative Activities and Research Experiences (UCARE) poster presentation held in the City Campus Union.

Bart Coffman (AGEN) researched Testing Perfomance of Tractors with Continuously Variable Transmissions. **Isaac Mortensen** (AGEN) presented Near-infrared Transmission Spectroscopy to Detect Yok Contamination in Egg White. **Brian Twombly** (BSEN) researched Field Monitoring of the Hydrologic Impacts of Conservation Bench Terraces in the Republican River Basin.

UCARE is a university-wide program that allows students to work directly with faculty in conducting research, serving as research assistants, or doing independent research projects.

UCARE is funded by the Pepsi Endowment and Program of Excellence Funds.

Bart Coffman



Isaac Mortensen

Brian Twombly

Honors Convocation

The Annual Honors Convocation recognizes students for the academic year, 2006-2007.

Nicholas Tomsen (BSEN, Minden, NE) was selected as a Chancellor's Scholar and was the keynote speaker at the Convocation. Nick received A's in all the courses he completed.

Superior Scholars have achieved a standing in the upper three percent of their college, or have been on the Honors Convocation list since matriculation as freshmen.

Bart Coffman	Hinton, IA, AGEN
Ross Miller	Davenport, NE, MSYM
Kurt Petersen	Burwell, NE, MSYM
Al Provorse	Omaha, NE, BSEN
Reggie Rector	South Sioux City, NE, BSEN

In Memoriam

Mr. Norris P. Swanson, who served on the faculty of the Agricultural Engineering Department, University of Nebraska-Lincoln, as an USDA Agricultural Engineer, died at the age of 90 on Thursday, February 15, 2007, in Vermillion, South Dakota. He worked as an irrigation engineer beginning in 1955 and retired in 1980. He rose to the rank of Lt. Commander in the Naval Reserves after he finished active duty. When visiting the department in retirement, Norris often had a bit of department history to share with everyone. He was a member of the Lincoln Northeast Kiwanis Club, a Fellow in ASABE, and a Fellow of the Soil and Water Conservation Society. Norris is survived by his wife, Ruth; a son, Joel; two daughters, Jane and Beth; 11 grandchildren; three great-grandchildren; and one great-great-grandchild.

Alumni News

1990s

Matt Lamb (1997, B.S., MSYM) is the General Manager for Platte Valley Equipment in Fremont, Nebraska. He and his family are glad to be back in Nebraska.

Celebrating ten years with Altec Industries, Inc., **John Dickmeyer** (1997, B.S., MSYM) is the Missouri Service Manager in St. Joseph. He enjoys life there with his wife Tammy and their sons Blayne and Braydon.

Employed with the Nebraska Corn Board as the Ag Promotion Coordinator, **Kelly Brunkhorst** (1995, B.S., MSYM) is immersed in grants and research at the forefront of corn and livestock production, a position that also keeps him in contact with UNL researchers.

2000s

Nick Sutko, newly graduated (2007) with his Masters in Environmental Engineering, has begun his career in Kansas City with Black & Veatch as a Water Resources Engineer.

Josh Dodson (2006, B.S., BSEN) is working for WaterAirLand in Lincoln, NE, as a project engineer.

Following Peace Corps service in Panama, **Zach Kippenbrock** (2004, B.S., BSEN) is working as a Water Resources Engineer for Kimley-Horn and Associates in Fort Worth, Texas.

Ivan Leaders (2004, B.S., AGEN) is Senior Associate Engineer with Caterpillar, Inc., in East Peoria, Illinois. He began employment with Caterpillar after graduation and completed a 13-month Engineering Rotational Development Program to achieve his current position. He is working in the Transmission Business Unit – Hauling Transmission Team, as a Transmission Design Engineer, leading transmission development programs for large mining trucks.

Also working for Caterpillar, Inc., **Erich Scott** (2004, B.S., AGEN) is a Machine Development Engineer in Peoria, IL. *(See Eric's Alumni Profile on page 11 on the web:* http://bse.unl.edu/newsletter_August06.pdf)

Girish Ganjyal (2004, Ph.D.) completed his MBA at Benedictine College in Atchison, Kansas. He is a Principal Scientist with Midwest Grain Products in Atchison.

Kim Ryland (2003, B.S., BSEN) received her M.S. in Mechanical Engineering from UNL.

Krista Evans (2002, B.S., BSEN) is living in St. Paul, Minnesota. She earned a M.S. in Biomedical Engineering at the University of Minnesota-Twin Cities in August 2006. She modeled the ankle joint for a Gait and Biomechanics lab at Gillette Children's Hospital in St. Paul. Krista works for BrainLAB, Inc., in Westchester, MN, as an Image Guided Surgery (IGS) Support Specialist. Krista enjoys being the engineer-in-the-room, advising and teaching surgeons and nurses how to use the equipment for cranial, spine, ENT, knee, and hip procedures.

Randy Ahrens (2000, B.S., AGEN) is living and working in Waterloo, Iowa. He is a Product Test Engineer with the John Deere Product Engineering Center.

Amy Dietz (Pflanz) (2000, B.S., BSEN) is with George Butler Associates as an Engineer 1 in Lenexa, Kansas.

Jeremy and Ginger L'Heureux made a big move this year from Waterloo, Iowa, to Hanford, California. Ginger (Wingate) (2002, B.S, BSEN) is an Associate Engineer with Quad Knopf in Visalia, California. Before moving, Ginger completed her second degree, a B.S. in Communication Studies from UNL. In her new position, Ginger is working on various projects in public works and land development. Jeremy (2000, B.S., AGEN) is an engineer with John Deere focusing on product validation and verification. In their free time, the L'Heureux's have been exploring the variety that California has to offer, from Yosemite to Alcatraz, and the towering Sequoia trees. They are looking forward to more adventures from the mountains to the coast to escape the blazing Central Valley heat.

Greg Wigington (2002, B.S., BSEN) will be working as a Clinical Research Coordinator at Creighton University a little longer, and then will enter the University of Nebraska College of Medicine (UNMC), Omaha, in August of this year. He volunteers with the UNMC Emergency Department, and also as an HIV Counselor/Test Site Volunteer for the Nebraska Aids Project in Omaha. Greg is the Vice President of the Pre-Medical Society and the Treasurer/Secretary of the Pre-Medical American Medical Student Association, both at Creighton University. Greg has two publications to his credit.

Anna Dugas (Charron) (2002, B.S., BSEN) recently married and moved from Evanston, Illinois, to Baton Rouge, Louisiana—no more snow to shovel. She is working in the Biological and Agricultural Engineering Department at LSU as the Teaching Associate/Lab Coordinator, which entails teaching undergrads about software and keeping them from blowing up themselves or the building. She has started her Master's in BAE with plans to research nanoparticle synthesis and gene delivery.

Not all students party over spring break. **Josh Dodson** (2006, B.S., BSEN), pictured, and **Nathan Jacobitz** (2006, B.S., MSYM) spent spring break 2006 working in and around New Orleans repairing some of the damage created by Hurricane Katrina. Part of a faith-based group, they did a little of everything from drywalling to general clean up. They said they had never seen anything like the devastation left from the storm, and that it was a life-changing experience.

The department welcomed alumna **Angela (Wild) Pannier** back to campus in the fall semester as a guest speaker. Angela is a Ph.D. candidate in the laboratory of Dr. Lonnie Shea in the Department of Chemical and Biological Engineering at Northwestern University in Evanston, IL. Originally from Fremont, NE, Angela received her B.S. in Biological Systems Engineering (BSEN, 2001) from UNL, with highest distinction and honors. A Barry M. Goldwater scholar and a National Science Foundation fellow, Angela received her Master's degree in BSEN from UNL in 2002, and studied transdermal delivery of antisense oligonucleotides with Dr. Rhonda Brand. Her current research focuses on substrate-mediated gene delivery for tissue engineering and diagnostic applications.

We want to include your information.
Go to: *bse.unl.edu*
Click on: ***Alumni Update***

Faculty News

Viacheslav Adamchuk was promoted to Associate Professor and awarded tenure.
Tami Brown-Brandl was promoted to Adjunct Associate Professor.
Roger Eigenberg was promoted to Adjunct Associate Professor.
Richard Stowell was promoted to Associate Professor and awarded tenure.

Left to right: Gary Zoubek (nominator), Suat Irmak, and Dean Elbert Dickey at the Holling Family Award ceremony.

Suat Irmak received the Holling Family Award for Junior Faculty Teaching Excellence in a recognition ceremony held on March 6, 2007, in the East Campus Union.

Bill Kranz, David Shelton, and Simon Van Donk are part of a team of environmental researchers awarded an EPA grant to study feedlot waste. The grant is for nearly $700,000 over three years.

Greg Bashford received the 2007 Holling Family Distinguished Teaching/Advising/Mentoring Award.

Slava Adamchuk is one of three collaborators on an $864,139 grant awarded for Robotics and GPS/GIS in 4-H: Workforce Skills for the 21st Century. This three-year project is a partnership between UNL, Carnegie Mellon University's Robotics Institute, and Nebraska 4-H to develop, deploy, and evaluate a comprehensive robotics educational intervention. The proposed project will incorporate student activities and lessons from Carnegie Mellon's Robotics Explorer 2.5 curriculum, as well as newly developed lessons focusing on Geographic Information Systems (GIS) and Global Positioning System (GPS) receivers.

Rick Koelsch received the Excellence in Extension Award from the National Association of State Universities and Land Grant Colleges (NASULGC).

Bill Campbell was recognized by the UNL Parents Association and the UNL Teaching Council for his significant Contribution to Students as an advisor at a ceremony in February.

Dennis Schulte served as a session moderator and on the conference planning committee for the International Ammonia in Agriculture Conference in Ede, the Netherlands, in March 2007. Attendees from more than 20 countries participated.

Yiqi Yang, a dual-appointment professor with the BSE Department and with the Textiles, Clothing and Design Department, has been named a Charles Bessey Professor. This Professorship is awarded to faculty members who demonstrate an exceptional record of distinguished scholarship and creative activity. The five-year renewable appointment honors Charles Bessey, an NU professor at the turn of the 20th Century, and a pioneer in botany and education. Dr. Yang's research focuses on developing non-traditional fibers (biofibers) from agricultural byproducts for textile, composite, and medical applications.

Snow storms closed airports all over the country this past winter, delaying flights, rerouting luggage, and making travel a daunting prospect. Still, **Roger Hoy**, Director of the Nebraska Tractor Test Lab (NTTL), and faculty member **Mike Kocher** persevered as they traveled to Paris, France, in February as the American representatives at the meeting of the Organization for Economic Cooperation and Development (OECD). This annual meeting is used to formally approve changes to the OECD tractor test schemes that have been previously reviewed at lower levels, and to decide the direction for new work. They were able to present UCARE research results (see page 8) by honors student **Bart Coffman** (AGEN) on Infinitely Variable Transmissions, an area of research being led by the NTTL. Roger's proposal for a change in the seat index point as stated in the test codes was formally accepted, and will have significant worldwide implications with technically harmonized standards, codes, and government regulations. Roger was elected the president-elect to the OECD Tractor Test Schemes, which entails membership on the advisory board, a six-year commitment.

Ron Yoder has accepted a part-time assignment as Associate Director for Agricultural Water Management in both Nebraska Extension and the Agricultural Research Division.

Suat and Ayse Irmak welcomed their second daughter, Ceanna Nergis, on March 27.

Comings and Goings

Dr. Simon Van Donk

Dr. Simon van Donk has joined the faculty as a new water resources and irrigation engineer, and will be based in North Platte at the University's West Central Research and Extension Center. In his previous position with the U.S. Department of Agriculture's Agricultural Research Service in Manhattan, Kansas, he spent seven years conducting wind erosion research. He also addressed crop growth, soil/water balance, and residue decomposition during his time with ARS. Prior to working for ARS, Dr. van Donk spent four years in West Africa assessing dryland crop yields using a satellite greenness index and rainfall data. His area of research included nine countries comprising an area about the size of the U.S.

Simon grew up on a dairy farm in the Netherlands, where he earned B.S. and M.S. degrees in agricultural engineering, with an emphasis on ag meteorology, from the University of Wageningen. He earned his Ph.D. in Biological and Agricultural Engineering from the University of Georgia in Athens.

In view of his prior research on evapotranspiration and water balance models, Simon hopes he can help develop ways to best manage water resources for sustaining agriculture in the West Central area of Nebraska. With his appointment (50% research and 50% extension) he will educate and inform Nebraska agricultural producers about his research results, as well as already-existing methods for growing more with less water. (Photo courtesy of George Hipple, North Platte.)

John Hay

John Hay recently joined the department as an Extension Educator after three years in Pierce, Nebraska, as an Extension Educator for Pierce, Madison, and Wayne Counties. John finished an undergraduate degree in agronomy from the University of Nebraska-Lincoln (UNL) in 2001, followed by a master's degree in agronomy from Texas A&M University in 2003. John's position is 100% Extension. He will be focusing on energy and biofuels issues, specifically issues related to the ethanol and biofuels industries. John currently leads a work group of educators and specialists working to provide extension programs focused on biofuels. He is excited to be here and to be working with many department members to provide education for Nebraskans. He and his wife Brooke, who works for UNL as a civil engineer in the facilities department, are living in Palmyra.

Dr. Teshome Regassa

Dr. Teshome Regassa joined our department and will be working with Dr. Rick Koelsch and Dr. Charles Wortmann (agronomy) as a Water Quality Project Coordinator through the Nebraska portion of the Heartland Water Quality grant. He received his Ph.D. from the Department of Agronomy and Horticulture at UNL, in the area of Crop Production and Physiology with research that focused on water stress on sorghum and response to nitrogen fertilizers. Prior to moving to the U.S., Dr. Regassa was a senior research officer and division head at the Institute of Agricultural Research in Ethiopia. His research, extension, and collaborations with international agricultural research institutions operating in Africa were directed towards identifying holistic and multi-disciplinary research efforts for sustainable crop and livestock production systems in environments where moisture is the most limiting factor. In his spare time, Teshome likes jogging, hiking, and listening to country music with his family.

Vikas Kumar

Vikas Kumar is a new Postdoc in Dr. Subbiah's lab. His hometown of Barauni is in the state of Bihar, India. Dr. Kumar received his Ph.D. in Mechanical Engineering from the Thapar Institute of Engineering and Technology in Patiala, India. His B.S. is in Agricultural Engineering and his M.S. is in Energy. He will be researching heat transfer modeling for food safety applications.

Terry Bartels

Born and raised in Tecumseh, native Nebraskan **Terry Bartels** has joined the Industrial Agricultural Products Center as a Research Technician III. He works with biofuels and biopolymers, and knows the parameters of the equipment in IAPC when setting up and running experimental designs for graduate students. Terry proudly served seven years in the Nebraska National Guard as a Tracked and Wheeled Vehicle Mechanic. He received a degree in Electronics Technology, computer and automation specialty, from Central Community College in Columbus, and is working towards an Advanced Safety Certification through the National Safety Council. His goal is to be a safety professional. Terry has worked in research and development with various industries as an Engineering Technician. He enjoys gardening, home brewing, as well as building and flying radio-controlled aircraft.

Govindarajan Konda Naganathan

Govindarajan Konda Naganathan, known around the department as KN, is a new research engineer, working for Dr. Jeyam Subbiah. He graduated in May with his M.S. in BSE, and is also working towards his Ph.D.

Debbie Burns retired from the department in March 2007. She served as secretary for the Power and Machinery Bay for ten years.

We appreciate all who have established endowments, or made contributions to funds that support BSE programs.

For information about establishing new endowed funds, or contributing to existing funds, contact Ann Bruntz, NU Foundation, 402-472-0372 or abruntz@foundation.nebraska.edu

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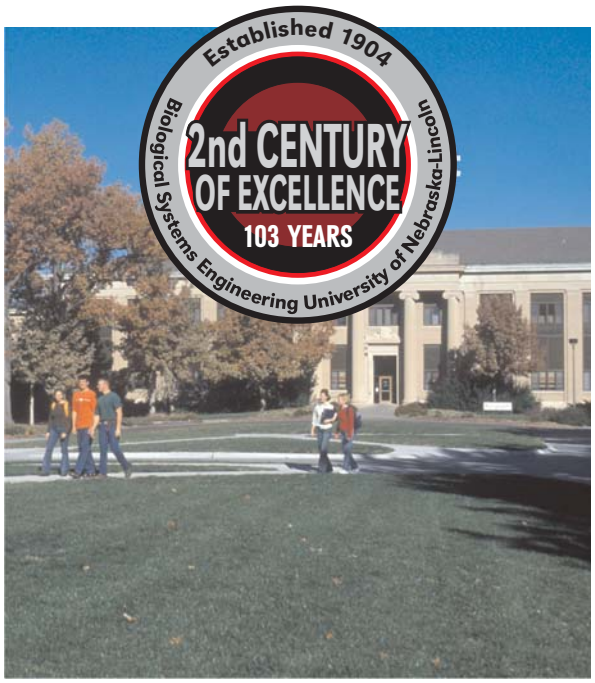

Photo: University of Nebraska—Lincoln, Institute of Agriculture and Natural Resources

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