FORESIGHT

Fall/Winter 2012, Volume 38, No. 2

It's All About People.



UNIVERSITY OF WYOMING COLLEGE OF ENGINEERING AND APPLIED SCIENCE

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On the cover: A collage of individuals that comprise the UW College of Engineering and Applied Science; faculty, alumni, students and staff.

From the Dean

As the cover of this *Foresight* issue proclaims, the college is all about people – what they seek to accomplish and have accomplished; how the college's programs of education aim to prepare students for career success; and how the college also celebrates the achievements of its students, faculty, and staff.

Associate Dean Steve Barrett, in his ensuing editorial, outlines attributes of the college's high quality programs of education delivered to ensure students embark upon successful careers. In this regard, a significant attribute is indeed Dr. Barrett himself. He is a wonderfully motivating and empathetic professor, highly regarded by students and colleagues. In his role as the college's Associate Dean for Academic Programs, Dr. Barrett oversees and guides the college's programs of undergraduate education, doing so with remarkable commitment and care. Before joining the college 13 years ago, he served twenty years in the U.S. Air Force, where he rose to the rank of Lt. Colonel, retiring as a professor and the Deputy Department Head of Electrical and Computer Engineering at the United States Air Force Academy in Colorado Springs, CO.

Progress continues with the Engineering Complex Project, aimed at substantially upgrading and expanding the college's facilities. Presently, we await the outcome of the Wyoming Governor's Energy, Engineering, STEM, Integration Task Force, which was established in part to assist the college's programs move toward even higher levels of excellence and student success.

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Robert Ettema Dean



Right: Rob Ettema, Dean Center: Bust of Professor H.T. Person Left: Steve Barrett, Associate Dean for Academic Programs

A Message from the Associate Dean for Academic Programs

We are quite excited about recent developments concerning the new facilities. In the previous *Foresight*, Dean Ettema highlighted ongoing development related to the Engineering Complex Project. Also, the Enzi Science, Teaching, Engineering and Math (STEM) Laboratory Facility will provide undergraduate laboratory space for computer science and atmospheric science courses. Coupled with outstanding infrastructure is the long standing commitment to provide effective engineering and applied science programs for our students. Quality undergraduate education programs have always been the hallmark of our college. The combination of outstanding programs and facilities will serve the people of Wyoming for generations to come.

This caliber of programs is founded on the bedrock of accreditation, providing student services, serving the needs of our constituents, and dedicated classroom instructors. All of these attributes are necessary for a successful program. I review each in turn.

Accreditation. All engineering and computer science undergraduate programs in the College of Engineering and Applied Science have received ABET accreditation. One further program, Earth Systems Science (Atmospheric Science) is accredited under UW's overall accreditation. "ABET is recognized as the worldwide leader in assuring quality and stimulating innovation in applied science, computing, engineering, and engineering technology education [www.abet.org]." Accreditation is the primary mechanism to insure students are learning what is required by industry within a specified educational environment. It also insures that all programs enjoy an active process of continuous improvement. Achievement and ongoing retention of ABET accreditation requires considerable effort on the part of many dedicated faculty and staff members within the college. On a related note, the college was notified in late September that our newest degree program, Energy Systems Engineering, has received ABET accreditation. This degree is the first of its kind in the nation.

Student Services. The college provides a wide variety of student services. We are dedicated to attracting students to the college and then work very hard to retain them. To attract students, the college participates in a number of recruiting programs including the Engineering Summer Program, the High School Institute, TEAMS, Mathcounts, Discovery Days, Women in Engineering, and several others. However, the most important recruiting tool we provide is the numerous one-on-one meetings with prospective students and their parents. We have heard over and again that the personal attention received at UW is a contributing distinguishing factor. Additonally, we offer a host of scholarships to incoming freshmen, transfer students, and continuing students. These scholarships are made possible by our gracious donors. We also provide a number of academic assistance programs to our students including a resident teaching assistant on the engineer floors, free tutoring via Tau Beta Pi throughout the academic day and early evening, and Power Groups for incoming freshmen. When Dr. Ettema became Dean, he established the Center for Student Services (CSS). This provides one stop shopping for student needs including advising, job placement, scholarship assistance, and job skills such as resume building and interview techniques. As stated before there are many dedicated faculty and staff to make these programs possible.

Constituent Needs. Our commitment toward "Working for Wyoming and The World," is one we take very seriously. Each department has an advisory board as does the college. These boards consist of dedicated volunteers who have a deep commitment to our college, to the University of Wyoming, and the Great State of Wyoming. They play an integral role in insuring that programs meet the needs of industry, while being our strongest advocates. We also meet regularly with companies throughout the region to help them meet their needs on curricular content and student placement. It is the selfless service of many people that make our advisory boards so vital to our success.

Dedicated Classroom Instruction. We place a high premium on dedicated classroom instructors. This includes our faculty, staff, and graduate teaching assistants. To help maintain the quality of instruction, the college launched a seminar series on classroom teaching fundamentals last January. The seminar series has continued this semester to include sessions on balancing research commitments with effective teaching, mentoring, and classroom tips for success. We have also taken every opportunity to put forth our faculty for outstanding teaching recognition.

Licensure. I would be remiss to not mention the help we provide students toward becoming a licensed professional. A four step process is required to become a licensed professional engineer: possess an ABET accredited degree, successfully pass the Fundamentals of Engineering (F.E.) examination, practice as an engineer for four years, and then successfully pass the Professional Engineering (P.E.) examination. We provide the first two steps to our students. We require students to provide a "good faith" effort on the F.E. exam. This exam is important for students' professional development as well as providing vital assessment data for our programs. Our graduating seniors continue to outscore the national pass rate. In October 2011 we recorded an 87.6% first time pass rate as compared to 76.9% nationally. In April 2012, we recorded a 79.8% first time pass rate versus a national average of 77.5%. This trend has continued for the past five years. Again, it is the dedication of a number of faculty and staff members who make these results possible.

In closing, we have something special going at the the College of Engineering and Applied Science: new facilities on the way, quality educational programs, and outstanding people to make all of this happen. We also count on your continued support. Many of our programs rely solely on the gracious contributions of our alumni, industrial partners, and friends. Thank you!

Stevenflacent

Steve Barrett Associate Dean for Academic Programs

B.S. in Energy Systems Engineering The First ABET Accredited Program of its Type in the United States



In August 2012, the Mechanical Engineering Department achieved accreditation for its innovative Energy Systems Engineering (ESE) Bachelor of Science degree program. The ESE program has a novel curriculum introduced to support the region's energy-dominant economies and is the first program of its kind in the United States to earn ABET accreditation from the Engineering Accreditation Commission. Accreditation was awarded retroactively to include all past graduates of the program.

The goal of the ESE program is to prepare graduates to address one of the United States' foremost challenges; to achieve energy independence and continue to meet the growing demand for energy, while simultaneously addressing critical environmental concerns. Coursework is similar to that taken by mechanical engineering students, but with more focus on environmental, ethical, economic, legal, and permitting aspects of energy conversion systems. Students may elect to take various courses in alternative energy systems that are expected to play an even larger role in a carbon-constrained future. The overarching goal of the curriculum is to present a comprehensive, or "systems" approach to addressing new energy challenges.

Currently, there are over 50 undergraduate students enrolled in ESE (and 300 in Mechanical Engineering). There have been 14 graduates from the ESE program through May 2012, with all readily finding energy-related positions or moving on to graduate school. Employers of ESE program graduates include Halliburton, WY Completion Technologies (design of well service tooling), Kiewit Mining, the Alaska Department of Environmental Conservation, the Alliance for Green Heat (a non-profit lobby), KB Energy (meteorological data acquisition for potential new wind energy sites), and Stanley Consultants (wind, solar, and hydro-electric control systems).

- Dr. Paul Dellenback, Head, Department of Mechanical Engineering

2012 H.T. Person Distinguished Homecoming Lecture Governor Mike Sullivan



Paul Rechard, Gov. Mike Sullivan, Dr. Charlie Dolan, Baillie Miller

Observations and Reflections on the Benefits & Importance of an Engineering Education "The graduates of the College of Engineering and Applied Science have had a profound and positive impact on the growth and quality of life in Wyoming. State-wide transportation infrastructure, water distribution, environmental quality, energy production, and improved weather modeling are some of the more visible contributions. But the impact reaches far beyond these physical attributes and into issues addressing public policy, safety, and economic development." - Gov. Mike Sullivan

H.T. Person Chair, Dr. Charlie Dolan, was pleased to introduce Governor Mike Sullivan to present the 2012 H.T. Person Distinguished Homecoming Lecture. Governor Sullivan earned his B.S. of Petroleum Engineering and Juris Doctor from the University of Wyoming and served as Governor of Wyoming from 1987-1995. He was also appointed by President Bill Clinton to serve as the United States' Ambassador to Ireland from 1999-2001.

Governor Sullivan's lecture emphasized the significance of an engineering education in today's increasingly complex society. He further discussed the significance his own engineering education had throughout his personal professional development in spite of the choice to not follow an engineering profession. Attendees filled the Agriculture Auditorium as Governor Sullivan delivered an inspiring and informative lecture. Following the talk, he met with students and alumni to expand on their roles within the state.



Back in the Saddle and Riding Hard: Petroleum Engineering Receives ABET Accreditation



Once again, the University of Wyoming has a fully ABET-accredited B.S. of Petroleum Engineering. In 1996, the decision was made by UW to discontinue the B.S. of Petroleum Engineering. At this time, undergraduate enrollment was only 26 students, the last of which graduated in 1999. Six years later, in 2005, the short-sightedness of this decision was recognized and the decision was made to reinstate the program. In 2006, 47 students joined the program, and currently, fall 2012, there are 220 undergraduate students and 31 graduate students enrolled. These enrollment numbers come as no surprise. Due to increasing industry demand, petroleum engineers are receiving higher starting salaries than most other engineering majors and students are responding.

An education in petroleum engineering prepares students for all aspects of the industry; working with geologists and geophysicists to find reserves, drilling and producing crude oil and natural gas, and moving these products to refineries and customers. Reservoir characterization and reservoir engineering are key areas of strength in the UW program. Students additionally learn about hydraulic fracturing (fracking) to produce unconventional reservoirs and enhanced oil recovery to utilize existing resources.

Dr. David Bagley, head of the Department of Chemical and Petroleum Engineering explains the importance of regaining ABET accreditation and length of time required to regain this status:

"Engineering is a profession and, like all professions is strictly regulated. A professional engineer, or P.E., has demonstrated her or his competence to practice engineering through education, experience and the completion of two national tests. Our job at UW is to ensure that students meet the education requirements. For most states, including Wyoming, that means our engineering programs must be accredited by ABET, the organization that oversees engineering program quality."

Receiving ABET accreditation is a demanding process. We could not even request review until we had graduated students from the restarted program. And the review is strenuous. It started with a 500-page report in the summer of 2009, included a visit by evaluators in the fall of 2009, and then finished with three follow-up reports in 2010, 2011 and 2012 to fully demonstrate that we met the standards. I am very proud of the faculty in the department. They did, and continue to do, an outstanding job educating our students while also preparing the materials needed to achieve this milestone."

Today, crude oil demand is strong and continues to increase worldwide as countries such as China further develop their economies. Although natural gas prices are currently low, this will drive innovative uses for natural gas that will increase demand and price. Due to advanced technologies such as fracking, that have consequently opened up unconventional reservoirs, the goal of energy security in the United States appears achievable in the near future. This future looks very bright for petroleum engineering, and once again, UW will be educating the professionals needed for this crucial industry.

- Jonathan Barrrett and Dr. Dave Bagley, Head, Department of Chemical and Petroleum Engineering

New Faculty



John Davis • Career Coordinatior / Academic Professional Lecturer Dean's Office / Center for Student Services PhD in Electrical Engineering, University of Wyoming (2013 Candidate)

> Research Emphasis Signal and Image Processing Pattern Recognition Sonar



Dongliang Duan • Assistant Professor Department of Electrical and Computer Engineering

PhD in Electrical Engineering, Colorado State University at Fort Collins

Research Emphasis Power Systems Monitoring and Control, Smart Grid Communications Phasor Measurement Unit (PMU) Development and Applications, Energy Efficient Communications Detection Fusion Techniques, Power Quality Analysis



Shane Murphy • Assistant Professor Department of Atmospheric Science PhD in Atmospheric Science, California Institute of Technology

Research Emphasis Optical Properties of Aerosol Particles Particle Formation from Gas/Oil Operations Development of a Novel Optical Particle Counter for Balloon and Antarctic Measurements



Kam Ng • Assistant Professor Department of Civil and Architectural Engineering PhD in Civil Engineering, Iowa State University

Research Emphasis Foundation Engineering, Soil-structure Interaction Geotechnical Reliability Theory, Site Investigations, Underground Structures and Pipes Soil and Rock Mechanics, Slope Stability



Noriaki Ohara • Assistant Professor Department of Civil and Architectural Engineering PhD in Civil Engineering, University of California at Davis

> Research Emphasis Hydrologic Modeling, Snow Hydrology Hydrologic Field Observation, Hydrometeorology Theoretical Treatment of Scale Gap

New Faculty

Michael Stoellinger • Assistant Professor Department of Mechanical Engineering PhD in Mathematics, University of Wyoming

Research Emphasis

Modeling and Simulation of Turbulent and Reactive Flows, methods: Probability Density Function (PDF), models for Reynolds Averaged Navier-Stokes (RANS) Large Eddy Simulation (LES)



Research Emphasis Vadose Zone Hydrology, Groundwater Hydrology Contaminant Transport, Climate Change and Uncertainty Ecohydrology, Soil Physics





The Computer Science Department Bids Farewell to Department Head, Dr. Jerry Hamann



The time I spent with the Computer Science Department was professionally and personally satisfying. I have a very strong respect for the students, staff, and faculty of the Department. They are dedicated to their respective roles and striving to become the very best that they can be. It was an immense pleasure to participate in the process of enabling initiatives presented by each of these groups, including the establishment of the Upsilon Pi Epsilon International Honor Society and continued sponsorship of student participation in regional and national programming and security competitions. Computer science both enables and serves so many disciplines of professional study and research, and the computer scientists at the University of Wyoming are some of the best at what they do.

- Dr. Jerry Hamann

... and Welcomes New Department Head, Dr. Jim Caldwell



Dr. James Caldwell

Dr. James Caldwell was recently appointed the new Head for the Department of Computer Science. Jim has been an Associate Professor at the University of Wyoming since 2004. He received his Ph.D. from Cornell University in 1998 and was recipient of an NSF Career award from 2000-2003 for his research in applying mathematical logic to the problem of developing correct-by-construction software systems. Additionally, he was awarded the NASA Graduate Studies Award from 1990-1993.

Jim brings to the department a wealth of experience having worked previously as a computer scientist for the NASA Langley Research Center, a software engineer for General Electric Corporate Research and Development, a software engineer for Phoenix Data Systems, and a systems programmer for the CMT Trade Center.

Alicia Martin Engineers in Action / Women in Engineering

Many dream of the opportunity to spend their days in a powersports shop, refining their riding skills on homemade corner tracks, and regularly travelling to renowned snowmobile and motocross destinations across the western United States. For mechanical engineering graduate student Alicia Martin this has been her entire life. A drive for pushing boundaries, surmounting obstacles, and pursuing what lies beyond the next horizon is engrained in her spirit.

Growing up in Evanston, WY, Alicia's father was the owner of Mountain Air Power and Sports, a regional western Wyoming hub for the powersports industry. Alicia and her brother grew up competing in snocross and hill climb events in the Mountain West Racing (MWR) circuit, an affiliate of the International Series of Champions (ISOC). This culture provided a natural inclination towards an interest in powersports and engineering.

Alicia began her education at UW as a BS in Mechanical Engineering student. During this time, she was awarded numerous scholarships that have funded her education, including; the Hathaway Scholarship, the Samuel C. Phillips Memorial Scholarship, the Dr. Dwight W. Senser Mechanical



Engineering Scholarship, the Joe and Arlene Watt Scholarship honoring H.T. Person, the PacifiCorp Scholarship, and the Rocky Mountain Power Scholarship.

Alicia also participated in multiple CEAS student societies, including; member of the Tau Beta Pi Engineering Honors Society 2009-present, Treasurer for the Society of Automotive Engineers 2008-2011, and member of the Society of Mechanical Engineers 2008-present.

Prior to graduation, Alicia participated in two summer internships with British Petroleum (BP), gaining valuable energy industry-related experience. She spent the summer of 2009 working at BP's Painter Complex located just north of Evanston, WY. Throughout the summer Alicia provided day-today engineering support, while also performing structural, piping, and compressor analysis. In 2010, she was asked to take a second internship with BP at their Houston, TX facilities. In Houston, Alicia provided engineering support for the maintenance and reliability of rotating equipment, while also supporting BP sites across the United States providing structural, compressor, and procurement analysis.

Eli Krahenbuhl • R&D Engineer, TREK Bicycles

Engineers in Action

www.uwyo.edu/ceas/news/engineersinaction



Jeremy Nelson • Founder, ROLL Recovery

Engineers in Action is an article series developed to highlight a select group of individuals who have combined their engineering expertise with a passion to push themselves and respective sports to the limits. The most advantageous aspect of being an athlete as well as an engineer is that after graduation is complete, the opportunity exists to design, test, and in some cases invent, the products used by generations of existing and upcoming athletes following in their footsteps. This can often lead one to the far stretches of the world, pushing both the physical and mental aspects of human capabilities.



These internships gave Alicia insight into the operational channels that exist within these plants including an understanding of their functions in a real-time environment. Graduating with a BS in Mechanical Engineering, she was offered a lucrative full-time position at BP America. She chose to remain at UW to continue her education toward a MS in Mechanical Engineering under the mentorship of Dr. Carl Frick.

Alicia is currently working in the Advanced Materials Lab, part of the Mechanical Engineering Department. Her research activities involve characterizing new materials for use in emerging technologies, with a focus on developing and characterizing "active materials" that have the ability to respond to certain prescribed stimuli. Alicia is studying a polymer matrix composite with multi-walled carbon nanotubes as reinforcement. The goal of this research is to induce an amorphous-to-crystalline transition of the composite via resistive heating when an electric current is applied.

Alicia has been named a Graduate Fellow in the Science Posse and will continue working with this organization through the summer of 2013. The Science Posse comprises a group of graduate students in STEM (science, technology, engineering, and mathematics) fields that share a passion for science and education. They regularly travel throughout Wyoming sharing their knowledge with middle and high school students, providing unique, enriching educational experiences. They also host annual workshops for teachers of grades 5-12 to enhance their experience with science and engineering topics.

After completion of her MS degree in the spring of 2013, Alicia intends to pursue employment within the powersports industry. Embodying the knowledge and intellect required to engineer the complex systems associated with these sports, while simultaneously understanding the dynamics of these sports from the athlete's perspective, provides her with the skill set sought after in this highly competitive industry. Consistently demonstrating a fearless and unvielding determination, Alicia has established herself as a role model for current and future generations of women engineers.

Women in Engineering

www.uwyo.edu/ceas/news/womeninengineering



Emily Huth • MS in Environmental Engineering*



Amy DiRienzo • PhD in Mechanical Engineering*

Women in Engineering is an article series developed to highlight a select group of women that continue to set the standard of academic and extracurricular excellence. While declining female enrollment in undergraduate engineering programs has been a continuing issue at universities nationwide, the women of the College of Engineering and Applied Science continue to emerge as some of our College's top leaders. These scholars continue to hold significant leadership roles and are being recognized for their unprecedented work ethic and academic achievement. * Denotes Candidate

At a Glance • Homecoming 2012



Pistol Pete and the Mechanical Engineering Moon Buggy

The 2012 Homecoming celebration kicked off Friday, October 12, with the 2nd Annual Breakfast on the Lawn. The college, with support from the College of Agriculture and Natural Resources, College of Arts and Sciences, College of Education, School of Environment and Natural Resources and School of Energy Resources provided breakfast in the Prexy's Pasture common area. The event was catered by Turtle Rock Coffee and drew a crowd far larger than could have ever been anticipated. Appearances were also made by the UW cheerleading squad and Pistol Pete.

Additionally, the Dean's Office open house was held throughout the day with a fresh supply of sweets and hot cider for all visitors. This led into the 2012 H.T. Person Distinguished Homecoming Lecture presented by Gov. Mike Sullivan. This lecture reflected the importance of an engineering education in today's increasingly complex society. Following the lecture, a reception was held in which Governor Sullivan met with students and alumni. This provided a unique experience for attendees to personally meet with Governor Sullivan, who has had a significant influence on not only the State of Wyoming, but also the United States and the World.

Students from the Mechnical Engineering Department represented the college in the Homecoming Parade on Saturday. They rode on the float and threw frisbees to guests, commemorating the accreditation of the BS in Energy Systems Engineering. It was a memorable weekend for all of those participating in the events.



New Staff



Jonathan Barrett • Manager of Marketing and Communications Dean's Office BA in Economics (International) MS in Psychology MBA in Global Management (2013 Candidate)



Erin Essary • Office Associate Department of Civil and Architectural Engineering BA in Political Science Juris Doctor



Kimberly McMaster • Office Assistant, Sr Dean's Office BA in History



Bridget Schabron Department of Civil and Architectural Engineering BS in Mechanical Engineering MS in Electrical Engineering (2017 Candidate)

SUBMIT OUTSTANDING ENGINEERS FOR AWARDS

Each year Tau Beta Pi recognizes two outstanding engineers with the **Wyoming Eminent Engineer Award and the Outstanding Engineering Alumnus Award**. The Wyoming Eminent Engineer Award recognizes an outstanding engineer who has made outstanding contributions to the Great State of Wyoming and the engineering profession. The Outstanding Engineering Alumnus Award recognizes a college alumnus who has distinguished themself through outstanding contributions to engineering. Nomination forms may be obtained at **uwyo.collegiatelink.net/organization/tbp/about** or requested from Steve Barrett at **SteveB@uwyo.edu**. Nomination packages are due by Friday, February 15, 2013 to Steve Barrett.

Outstanding engineers and scientists can additionally be submitted for the college's **Hall of Fame recognition**. These awards recognize and honor graduates who have distinguished themselves with outstanding professional and community leadership achievments throughout their careers. Nominations and additional information can be obtained by contacting Baillie Mille at **BMille42@uwyo.edu**.

Faculty Highlights and Achievements

NCEES Honors Wyoming Professional Engineer David Whitman for Service

David Whitman, Ph.D., P.E., of Laramie, Wyoming, has been awarded the NCEES* Distinguished Service Award for his dedicated service to the engineering and surveying professions. Whitman received the honor at the organization's 91st annual meeting, held August 22-25, 2012, in St. Louis, Missouri. The award was the second recognition for his contributions to the professions this year: he received the NCEES Western Zone Distinguished Service Award in May.

Whitman has been a member of the Wyoming Board of Registration for Professional Engineers and Professional Land Surveyors since 2001, serving as board chair for the past six years. His many contributions to NCEES include serving as vice president of its Western Zone in 2006-2008 and as president in 2009-10. He has also been an important voice

Bio-mimetic Optical Sensor for Real-Time Measurement of Aircraft Wing Deflection

For the past decade Electrical and Computer Engineering faculty members Cameron Wright and Steve Barrett have led



a research team to develop a next generation vision sensor, based on the common housefly. The fly's vision system is massively parallel (fast) and is very good at detecting minute movements in adverse conditions. The research team, in col-

laboration with Dr. Susan Frost of NASA Ames Research Center (UW Ph.D. EE 2008), recently received funding to adapt the sensors for measuring aerodynamic properties of a wing. This effort will support research at NASA that is focused on reducing the environmental impact of aviation. Current approaches to measuring wing deformation utilize strain measurement devices, accelerometers, GPS solutions, or high-resolution digital cameras. Existing sensor solutions

TRB Soil Mechanics Section 2012, Best Paper Award - Kam Ng

Kam Ng recently received the Transportation Research Board (TRB) Soil Mechanics Section 2012, Best Paper Award. TRB is a division of the National Research Council with the mission to promote innovation and progress in transportation through research. Soil Mechanics Section is part of the TRB's Design and Construction Group. This section consists of nine committees focusing on different soil mechanics-related transportation issues. Each year, in encouraging engineering schools to use the FE exam as a tool for assessing student performance.

A licensed professional engineer since 1981, Whitman is a professor in the Electrical and Computer Engineering Department and a former associate dean for



the college. He is a member of the Wyoming Engineering Society, the American Society for Engineering Education, the National Society of Professional Engineers, IEEE, and the Mortar Board honor society.

Nina Norris, NCEES Director of Public Affairs * National Council of Examiners for Engineering and Surveying

are hindered by high computational requirements and the complexity of calibrating the measurements with resulting deflection. Hence a real-time solution is not feasible at this time. The project's objective is to design, build, and demonstrate a prototype bio-mimetic



(inspired by biology) sensor based on the common house fly eye for detecting aircraft wing formation in real-time. The sensor makes use of revolutionary optical sensor design resulting in significantly improved motion detection capabilities when compared with conventional optical sensors. The simple analog architecture allows for real-time solution at any bandwidth to enable accurate 3-D orientation measurements of multiple points along a wing or fuselage.

hundreds of papers are received by the Soil Mechanics Section while only approximately 25% are selected for publication. One of the selected papers is chosen by the committees as the best paper. The title of Kam's paper is "Verification of Recommended Load and Resistance Factor Design and Construction of Piles in



Cohesive Soils". The award will be presented at the upcoming 92nd Annual TRB Meeting in Washington D.C.

Jerry Hamann and David Whitman, ASEE Annual Conference Best Paper Award

"The Effect of Cooperative Education on the Self-Efficacy of Students in Undergraduate Engineering," has been selected as the Best Conference Paper for the ASEE* Annual Conference Best Paper Awards. These awards recognize high-quality papers selected from among those presented during the 2012 ASEE Annual Conference.

Contributors to the paper included; Ms. Rachelle Reisberg, Northeastern University; Professor Joseph A. Raelin,

Christopher Nicholson is Promoted to WRDS Director

Chris Nicholson was recently promoted to Director of the Water Resources Data System (WRDS) and the Wyoming State Climate Office at the University of Wyoming. Prior to this appointment, Chris served as the Outreach and Technology Coordinator for the WRDS.

WRDS is a clearinghouse of hydrological and climatological data for the State of Wyoming. It is funded by the Wyoming Water Development Office, and is housed within the

Northeastern University; Professor Margaret B. Bailey, Rochester Institute of Technology; Dr. David L. Whitman, University of Wyoming; Dr. Jerry C. Hamann, University of Wyoming; and Dr. Leslie K. Pendleton, Virginia Tech.

To view the award winning paper online, please visit: http://www.coe.neu.edu/pathways/CooperativeSelfEfficacy. pdf

*American Society for Engineering Education

Department of Civil and Architectural Engineering. WRDS provides a variety of services ranging from the development of enhanced drought-monitoring products to the online dissemination of water resources publications. WRDS also supports a variety of stakeholder groups by assisting in the development of the State Water



Plan and helping to coordinate long-term monitoring efforts throughout the region.

Student Highlights and Achievements

Industrial Controls Course Designs Concrete Curing Box

The EE5880 Industrial Controls course designed and fabricated a Concrete Curing Box (CCB) for Professor Mark Rehwaldt's Engineering Summer Program class. Concrete hardness relates to how well a stable and warm temperature is maintained while concrete cures. The CCB maintains a set temperature for a number of concrete samples over a long period of time. Fourteen senior and graduate-level students in electrical and mechanical engineering participated in the class project. The students elected Ivo Wambeke (MSEE, UW 2012) as project manager who led the team members in project design and management. Wambeke of Deaver, Wyoming is now employed by Micron Technology, Inc., Boise, Idaho. Andrew Davis will complete a dual BS in Mechanical and Electrical Engineering in December. He begins a MS in Electrical Engineering at UW in January. Andrew is joining the research team of Dr. Cameron Wright who is working on a Department of Energy sponsored project to detect sensitive materials using naturally occurring muons. The industrial control course, taught by Professor Steve Barrett, provides the essentials of industrial control using embedded controllers and programmable logic controllers. Industrial control fundamentals are vital to Wyoming industry. The course and supporting laboratory are supported by a grant from Bruce and Carla Pivic, Infinity Power and Controls, Rock Springs, Wyoming in



honor of long time University of Wyoming faculty member Professor Ken Beach. The college is expanding coursework in the area of industrial and process control in the coming year.

Photo:

(Left to right: Steve Barrett, Ivo Wambeke, Mark Rehwaldt, Andrew Davis) For additional student highlights and achievements please visit: www.uwyo.edu/ceas/news

Surveying Courses Offering Career Options for Distance Learning Students Nationwide

The college offers 35 credit hours of courses in land surveying. The courses are available nationwide through UW's Outreach Credit Programs, a division of the UW Outreach School.

Completion of 24 credit hours will earn a Certificate of Study in Land Surveying. This certificate program provides a way for students who have previously earned degrees from other institutions to take these courses without having to pay increased tuition associated with graduate study. The courses are made up of lectures of one to two hours weekly, and are delivered via streaming video through the Internet, and audio teleconference sessions during an assigned weekday evening so students can participate no matter where they live.

For additional information please visit; http://www.uwyo.edu/civil/landsurvey

Mark Rehwaldt, P.E., L.S., Academic Professional/Assistant Lecturer



31 Years of Service to UW

Mike Allen Retires After 31 Years of Service to the College and UW

This semester marked the retirement of Mike Allen, Master Technician of the college's Machine Shop. Mike earned his BS in Mechanical Engineering from Purdue University in 1976.

Mike began his service to UW in February of 1981. During his time at UW, Mike worked in the Agricultural Engineering Department for five years, the Civil and Architectural Engineering Department for 12 years, and he spent the last 14 years as a Master Technician in the Machine Shop. In addition to fabricating sophisticated parts for research projects, Mike also provided design assistance on many projects including a rainfall simulator for Agricultural Engineering, parts for the Electrical Engineering Department's hexapod project, and parts for a complex telescope camera for the Physics Department. In addition, he assisted



countless students with the design and fabrication of their Senior Design projects, and taught many students the basics of precision machining techniques. Mike is a true master craftsman, and his skills and contributions will be missed by all in the college.

- Rob Erikson, CEAS Shop Manager, Assistant Lecturer

The Mentoring Resource

Patricia J.S. Colberg, PhD, "College Mentoring Champion"

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The Mentoring Resource program was developed to provide an open forum to help the college's faculty members better understand the dynamics of the classroom and nurture professional development at UW.

The program is led by Dr. Patricia Colberg and a group of experienced faculty members. *The Mentoring Resource* continues to serve all teaching and/or research faculty in the college, regardless of rank or years of service.

All pre-tenure faculty in the College of Engineering and Applied Science are welcome to attend any or all of the roundtable discussions. The most recent event featured discussions on the recruitment and mentoring of graduate students, and on working abroad. The panel for this discussion included Dr. David Mukai, Dr. Jerry Hamann, and Dr. Jonathan Naughton. The college provided lunch, and participants shared personal experiences and preparations that helped their careers advance.

For additional information please visit: http://www.uwyo.edu/ceas/dean/mentoring

Center for Student Services

The mission of the college's Center for Student Services (CSS) is to help students develop their full potential by creating a culture of success through active involvement in education and career planning.

The CSS works with students to ease their transition from student to working professional, particularly by facilitating connections between students and our industrial partners. For students seeking to start their careers with internships and first full-time placements, a central resource is provided for advice on resumes, cover letters, and job search strategies.

Similarly, for employers, CSS provides a single point of contact for distributing job requisitions and arranging visits to the college for recruiting and networking with students. It coordinates with UW's Center for Advising and Career Services, as well as personnel from the

UW Foundation, and our counterparts across campus, to maintain existing partnerships, while also working to initiate and foster new partnerships. CSS receives continual employer feedback that UW graduates are valued additions to their organizations. In addition to their widely recognized high level of technical competence, our graduates are prized by employers for their strong work ethic, "can-do" attitude, and excellent potential as technical and organizational leaders. It is our pleasure to do whatever we can to assist our students and our industrial partners in making lasting connections with one another, and with the college.

If you or your organization would like to get involved with the Center for Student Services please contact via email, John Davis, at JDavis7@uwyo.edu or by phone at 307.766.4215.

On the web at: http://www.uwyo.edu/ceas/advising





⁻ John Davis, Career Coordinator/APL

In Memoriam

Since the last issue, we regret to announce the passing of the following alumni, our greatest sympathy is extended to the families of these valued friends.

Mr. Walter L. Woodward Mr. Milton DeGering Mr. C Mack Erwin Mr. Ira D. Woodward, Jr. Mr. James E. Bellis Mr. Thomas W. Garrod, Jr. Mr. William L. Allen Mr. Joseph Holowich Mr. Russell E. Mai Mr. Robert E. Sundin Mr. Don Lamb Mr. Robert W. Blessing Mr. Billy D. Ray Mr. Richard F. Colleoni Mr. Louis F. Hunt Mr. Phillip H. Watenpaugh Dr. James Choromokos, Jr. Mr. John B. Barton Mr. Gerald D. Hergert Mr. Ralph F. Menke Mr. Charles E. Stevens Mr. Ted Greenhalgh Mr. Justin B. McCarthy Maj. Douglas J. Davis (Ret) Mr. Edward T. Froehlich Mr. Benjamin M. Lin Mr. Ronald J. Garret Mr. Roy C. Anderson Mr. C. Dean Yonts Mr. William A. Mentock Mr. Paul Jelaco Mr. Gordon L. O'Byrne Mr. David J. Atkinson

Mrs. Jo Bellamy Mrs. Jean Boresi Mrs. Mary Alice Sutherland

Mr. Benjamin J. Schulze Mr. Michael Skretteberg Mr. Robert M. Spalding

BSCE '38 BSCE '39 **BSME** '40 BSCE '42 **BSME '48 BSEE '48 BSAR** '49 BSGenEng '49 BSCE '49 **BSME '50** BSCE '51, MS '52 BSCE '52 **BSME '54 BSME '55 BSEE '56** BSGenEng '58 MSCE '63, PhD '70 BSEE '61 **BSEE '61 BSPE** '62 **BSPE '62 BSME '63 BSEE '63** BSCE '64 BSAgEng '67 **MSEE '67** BSEE'68 **BSPE '69** BSAEng '74, MS '78 BSCE '76 **BSPE '77 BSPE '85 BSEE '87** Wife of John C. Bellamy

Wife of John C. Bellamy Wife of Art Boresi Wife of Robert Sutherland

Alum, Non-Grad Alum, Non-Grad Alum, Non-Grad

Spokane, WA Orem, UT Vista, CA Spokane, WA Wheatland, WY Scottsdale, AZ Arlington, TX Berlin, MD Houston, TX Chevenne, WY Laramie, WY Thousand Oaks, CA Auburn, WA Keller, TX Saratoga Springs, UT Grapevine, TX Cocoa Beach, FL Cornelius, NC Pueblo, CO Hardin, MT Williston, ND Las Vegas, NV Portland, OR Fountain Valley, CA Greenfield, WI Moorhead, MN Fort Worth, TX Calgary, AB, CA Scottsbluff, NE Sheridan, WY Littleton, CO N/A Broomfield, CO Laramie, WY Laramie, WY Laramie, WY

Newcastle, WY Brighton, CO Tigard, OR I/we would like to make my/our gift to the College of Engineering and Applied Science:

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