Students Place 2nd at National ASME Finals

Three MET students recently earned second place in the challenging American Society of Mechanical Engineers (ASME) design championship for their bottling process design. After winning the western regional ASME design competition in Washington last spring, the team – Kevin Amende (Sr.) from Sheridan WY, Dustin Cram (Jr.) from Cody, WY and David Story (Sr.) from Corvallis, MT – refined and improved their design. The team spent countless hours on the project throughout the months of May through November 2000 and were able to reduce costs.

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Capstone Projects Synthesize Engineering Curricula

Capstone design courses have served an important role in the engineering curriculum at MSU for decades. Professional business and design practice, with a focus on communication skills, team-oriented problem solving and real-world problems are the hallmarks of these capstone courses.

Each department’s capstone series is structured slightly differently. Duration, credits, contracts with sponsors, team size, and the number of projects run each year vary by department. Civil engineering’s format uses a single, multi-faceted project as the focal point for the entire class. In the first semester, small teams “compete” during the proposal process, with frequent feedback sessions from instructors and project sponsors. During the second semester, the entire class forms a single firm charged with completing the design of the project. ChemE, ME, MET, IME, ECE, and CS capstone design formats use multiple projects, multiple sponsors, and small team approaches that may be single- or multi-disciplinary to achieve a similar goal – allow students to bring to bear all they have learned in their undergraduate career as they tackle challenging, real world problems. Sponsors cover direct costs for projects and define project requirements and goals. Students work with sponsor contracts, develop and meet budgets, meet defined time-lines, and prepare final reports for sponsors.

Information technology gives students frequent, often real-time feedback from industry and enhanced communication improves all aspects of the design process. For example, Tektronix Corporation is currently sponsoring a multi-disciplinary project aimed at developing a new generation oscilloscope probe. The project team includes two ME students, two IME students, and three ECE students along with faculty supervisors from each discipline. Students are responsible for complete development of the new probe including probe electrical design, mechanical design, and manufacturing aspects. Each week, MSU students and faculty supervisors meet with Tektronix project supervisors via a teleconference phone call. At mid-semester, students conduct an interactive video conference with company engineers in Beaverton, Oregon, summarizing their work-in-progress to an audience of MSU students and faculty and Tektronix engineers. This allows students to obtain important and immediate feedback as they work toward a final design solution. A similar video conference occurs at the end of the semester when students present the final solution.

Capstone design experiences like this are representative of what engineers and computer scientists experience every day, in a work environment where colleagues, design partners, and clients might be in the next office, the next town, across the country, or overseas.

 Alumni and friends wishing to sponsor a design project should contact individual department heads in engineering or computer science.
Letter from the Dean

Dear Friends of the MSU-COE,

What an exciting time in the history of the College of Engineering at MSU. As we prepare to send off the 105th graduating class, we should pause thank recently retired dean Dave Gibson for his combined 32 years of service and leadership, as well as to look forward to a new era of leadership with the hire of a new permanent dean later this year. I am honored and thrilled to help in this transition as interim dean. But don’t for a minute think the college is on hold. I am happy to report on a number of initiatives that are currently moving forward.

The first initiative refocuses on our mission-driven objectives to attract and retain the highest quality students and faculty that we possibly can. Our programs and graduates enjoy an outstanding reputation within industry as well as with students and parents. I recently met with a prospective student and his father from Portland, Oregon. The father was a teacher and admittedly knew little about engineering or MSU, but he had done some homework and interviewed a number of engineers in the Portland area. He asked these individuals to recommend five schools that would provide a first-rate engineering education. MSU was the only school to make each of the engineer’s respective lists! This resulted in their visit to our campus for a tour of the college. Of course this is anecdotal, but it speaks to our excellent reputation, strong student body, excellent faculty and facilities.

As strong as our college’s reputation is, we cannot afford to “rest on our laurels.” Thus we see a need to adapt our scholarship process to one that is better able to attract outstanding prospective students to the college. We are making strategic changes in our scholarship offers to include larger awards for top-tier students and multiple-year scholarship offers as appropriate. An equally important focus for the college is on renewing our efforts to retain capable students who may struggle early on with their engineering coursework. A faculty committee is currently developing mechanisms to help identify such students earlier in their career and to help increase their performance and ensure their long-term success in engineering.

Last fall, our new computer engineering program underwent its initial review for ABET accreditation. This was our first experience with the new “EC2000” criteria. As you may recall from Dave Gibson’s overview in the last newsletter, these new criteria allow each program to establish its own mission, goals and educational objectives (rather than largely prescribed under the old standards). We fully expect to be granted accreditation in CmpE later this year.

In the coming months, look for reports regarding new initiatives in our graduate education as well. There is growing demand for graduate education in engineering and computer science. We are developing plans to help meet this demand. Finally, let me invite you to visit our new college website (www.coe.montana.edu) which should be published by the time this newsletter reaches your door. Look for a fresh new look with new information and resources for friends of the college.

Thank you,
Robert Marley

New to Engineering

Paul Kraft joined the College of Engineering as interim assistant to the dean in January 2001. In the COE, Kraft oversees student counseling/advising, curriculum for the college, class scheduling, and coordinates college scholarships. Prior to this, Kraft held advising positions with MSU’s general studies office and worked as an intern with the Montana office of the Commissioner of Higher Education. He also served as interim VP for student affairs and director of the counseling and career development center at Northern State University in South Dakota.
Cutting Edge Transportation Research at MSU-Bozeman

As you drive down a winding rural road do you worry what is around the next corner—maybe a deer, a patch of black ice or snow blowing across the roadway? Founded in 1994, The Western Transportation Institute (WTI), part of the Civil Engineering Department at Montana State University-Bozeman, is researching these challenges to road travel. Established as a national and international center for rural transportation and research, WTI has been designated a University Transportation Center (UTC) by the U.S. Department of Transportation, with a mission of “making rural travel and transportation safer, more efficient, and more convenient through high quality research, education, collaboration and outreach activities.” As the focal point for transportation research at MSU—Bozeman, WTI has grown to 50 engineers, researchers and other staff and students, who work on projects with an annual research budget of $6 million. WTI’s contract and grant research projects are conducted for a variety of sponsors—including state and federal departments of transportation, the National Park Service and others. Currently WTI conducts research in 26 states on a wide variety of rural transportation issues, which fall into four main categories: weather and winter mobility; transportation management and public safety; travel and tourism; and pavement and materials.

Wildlife Encroachment Project

WTI’s research on animal-vehicle accidents relates to a project entitled “Animal-Vehicle Crash Mitigation Using Advanced Technologies.” Twelve states are participating in three-year, pooled-fund study to investigate the most promising roadway animal detection and driver warning systems to mitigate animal-vehicle crashes. The goal is to build a prototype animal detection and driver warning system and evaluate its effectiveness in reducing animal-vehicle crashes. The following sites will host prototype driver warning systems beginning in fall 2001.

- **Montana**, US 191, about 50 miles south of Belgrade, Montana (predominantly elk-vehicle collisions in winter months)
- **Indiana**, I-90, 5 miles west of Howe, Indiana (white-tailed deer, 3 miles equipped with two 1 mile control sections)
- **Iowa**, US 20, about 30 miles west of Dubuque, Iowa (white-tailed deer)
- **Oregon**, US 97, about 15 miles south of Bend, Oregon (white and black-tailed deer)

National Park Projects

WTI is also involved with research projects at several national parks, which are a significant source of traffic and economic activity in many parts of rural America. Yellowstone and Grand Teton National Parks are the focal point of a tri-state corridor including Idaho, Montana and Wyoming, in which advanced technologies are being investigated for the potential of improving traveler safety, reducing congestion at the park entrances, and promoting better traveler information. WTI has led this effort, producing a strategic plan guiding an advanced technology vision for the region, and is now helping to implement and evaluate these technologies. In Yosemite National Park, WTI has been involved in developing a visitor management system, which will integrate several different types of data from the park on a real-time basis to provide better information to visitors, as well as fleets servicing the park. Building on experience in these projects, as well as a conference WTI organized and co-sponsored on national parks at Big Sky, Montana in 1999, WTI is taking the lead, working with the National Park Service and the Federal Highway Administration’s Federal Lands Highway Division, to develop a decision support “transportation toolkit” to help federal lands managers better assess the challenges facing their particular parks, and identify potential solutions.

For more information on WTI and its diverse research projects, visit the institute’s website at: www.coe.montana.edu/wti.

Design Finals

*continued from page 1*

Design Finals continued from page 1

their bottling time from ninety seconds to thirty seconds. They took their project to the ASME National Design Competition in Orlando, Florida in November and returned home with the second place prize. Our team bested competitors from the likes of Michigan State, US Air Force Academy in Colorado Springs, and Virginia Tech.

This is the second year that students from the Mechanical & Industrial Engineering Department at MSU have earned honors for their design acumen. Last year, MSU’s Mechanical Engineering team brought home first place honors from the same national meeting.
WTI Student Honored

Alyssa Reynolds, ’99 CE, was recently named Western Transportation Institute’s (WTI) University Transportation Center’s Outstanding Student of the Year by the Research and Special Programs Administration of the U.S. Department of Transportation. Ms. Reynolds is pursuing an MS in civil engineering. Her interest in the transportation field began with work at WTI in the summer of 1998. A winner of both undergraduate and graduate fellowships from WTI, Ms. Reynolds has experience in a number of areas including rural traffic management and rural intelligent transportation systems. Her current work involves research on the applicability of intrusion detection at low volume, high-speed railroad crossings, a joint venture between WTI and the Oregon Department of Transportation.

Ms. Reynolds has been involved in the Institute of Transportation Engineers (ITE) for the past several years and currently serves as student chapter president. Alyssa’s ITE activities include MSU Kid’s Day—a summer camp that exposes children to campus programs—and Expanding Your Horizons—a program that emphasizes the benefits of math and science for middle school girls. Ms. Reynolds has also helped restructure on-campus recruiting for civil engineering students and create a civil engineering career fair. Additionally, she served one term as student chapter president for the Intelligent Transportation Society of America.

COE Recognizes Dick and Diane Cromer

The College of Engineering wishes to extend a special thanks to Dick Cromer, ’67 ME, and Diane Cromer, ’67 Nurs, for utilizing the Montana Tax Credit for Endowed Philanthropy to make two planned gifts to benefit MSU—the first in 1999 and the second in 2000. Their deferred gifts will establish the Richard and Diane Cromer Excellence Endowment with annual income being distributed among the College of Engineering, the College of Nursing, and the MSU Foundation.

The Montana Tax Credit for Endowed Philanthropy is an excellent way to support philanthropic causes in Montana while gaining significant state income tax credits. Individuals, corporations, LLC’s, S. Corps, and partnerships are eligible for this program; specific rules apply. Under current legislation, 2001 is the last year for donors to take advantage of the credit. For more information on tax credit gifts, contact Linda Wyckoff in the College of Engineering at 406 994-2223.

COE’s Best and Brightest Recognized at Banquet


Construction Dinner Recognizes Industry Leaders

The Department of Civil Engineering hosted its 3rd biennial Construction Recognition Dinner on Friday, February 16th. The event was very successful with over three hundred thirty attendees (company representatives, guests, MSU administration, faculty, and students). Forty-three companies sponsored tables. MSU’s new president, Geoff Gamble, welcomed the group and Montana’s Lieutenant Governor, Karl Ohs, was the keynote speaker. The highlight of the evening was the award presentation to contractors and builders from Montana; award winners were nominated and elected by their building organizations. Those receiving awards included John Norrish, John Agnew, Alan Hobbs, John and Bonnie Prince and Tim Barnard.
COE Employee Awards

COE outstanding instructor and staff awards are an important tradition in recognizing outstanding contributions to the college. Students in each department select the outstanding instructor in each discipline. The college has open nominations for classified staff awards. Recipients receive a certificate and a small cash award for their recognition.

(Above) COE Outstanding Classified Employee Award Recipients: Standing, L to R: Cindy Bridgewater*, Dean’s Office; Terry Kennedy*, MIE; Renee Hecox, CE. Not pictured: Muriel Holquist, ECE. (*denotes previous year’s winners.)

(Below) COE Outstanding Instructor Award Recipients: Bottom Row, L to R: Kevin Cook, MET; Tom Valente, CET; Brenda Sonderegger, CS, Middle Row, L to R: Ted Lang, CE; Tom Reithman, MIE; Ron Larsen; ChemE. Top Row: Paul Schillings, 1&ME. Not pictured: John Hanton, EE; Harley Leach; EEET; MSG Walter Prosser, Army ROTC; Maj. Mark Jenkins, Air Force ROTC.

EMPower Diversity Program

MSU’s Engineering Minorities Program (EMPower) is designed to encourage under-represented populations (especially Native Americans and women) to seek careers in the engineering fields. The college minority program awards scholarships to attract and retain quality engineering students. EMPower also has active pre-college outreach programs and a mentoring/retention program.

This fall and spring, EMPower’s staff and volunteers invited several GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) groups to visit the campus. This March, 125 students from Ronan Middle School enjoyed a two-day visit. Other recent visitors include Lame Deer High School, Rocky Boy High School American Indian Science and Engineering Society Chapter, Browning Middle School and the Brady Science Olympiad team.

For this scholarship cycle, the following corporations and individuals have funded scholarships for the EMPower program: Shell Oil Company Minority Scholarship, Hoechst Celanese Corporation Scholarship, DOW Chemical Scholarship, Leslie M. Heathcote Scholarship, David and Cecilia Lee EMPower Scholarship for Native American Students in Engineering, and Conoco American Indian Science and Engineering Society Scholarship.

For more information on EMPower, contact program director Mary Lukin, 406 994-4541 or mlukin@montana.edu.

From the College Development Office

Greetings from the College of Engineering Development Office and a special “thank you” to our friends and alumni who support the college so faithfully. Here are some updates for you:

• The Lloyd Berg Memorial – It has been heartwarming to witness the affection and gratitude expressed by friends and alumni who supported the Lloyd Berg scholarship in ChemE.

• New Endowed Funds – Norm Shyne, ’62 PhD EE and David Kem ’67 CE, HDR ’00, and Judith Raines have established new funds. These types of scholarship and program gifts ensure the best possible education at MSU.

• Engineering’s Annual Fund Drive – Thank you to all of you who participated in the college’s annual fund drive this year. Your support enriches the education of students in all departments at all levels. Gifts received before June 30, 2001 will be credited to this fiscal year and recognized in the fall honor roll of donors.

• On-line Giving – If you have internet access and wish to explore on-line giving, take a look at the options at www.montana.edu/wwwulf/online_giving.htm

• Please note the stories on the college’s new endowed funds established in honor of recent retirees Dave Gibson (p. 7), Bob Taylor (p. 7), and Don Pierre (p. 6).

— Linda Wyckoff

Student Awards in Biofilm Engineering

Two Center for Biofilm Engineering (CBE) doctoral students recently received prestigious W.G. Characklis Awards for important research contributions to the Center for Biofilm Engineering. Award winners John Komlos and Eric Kern embody the collaborative and cross-disciplinary spirit that the center fosters. The award was established in memory of W.G. (Bill) Characklis, CBE founder.

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**Don and Mary Pierre Graduate Award**

The family, former students, and colleagues of Don Pierre have initiated an endowed fellowship to recognize Don and Mary Pierre. Don retired last spring after 38 years on the EE faculty. Over the years he taught courses, advised students, conducted research, served as department head for five years, served on journal editorial boards, and wrote over 100 papers and two books. Perhaps his greatest recognition came from his peers when he was selected to be a Fellow in the IEEE in 1991.

It was the family’s wish that the endowment be kept a secret from Don until it grew to reach a critical mass. As of this printing, the fund has reached 88% of the minimum endowment level of $15,000, working toward a goal of $20,000, which will make possible a $1000 graduate award every year. It is a fitting time to share this news with Don Pierre, and to let other friends and graduates know of this wonderful honor.

When the endowment achieves the $15,000 minimum, it will begin to support the Don & Mary Pierre Graduate Award, to be given each year to a graduate student in the ECE Department. For those who wish to participate in honoring Dr. Pierre, contributions may be made to the Don Pierre Honorary Fund c/o the MSU Foundation, Montana State University, P.O. Box 172750, Bozeman, MT 59717-2750. Don Pierre can be contacted at donp@ece.montana.edu.

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**Society of Women Engineers**

The Society of Women Engineers’ (SWE) mission is to “stimulate women to achieve full potential in careers as engineers and leaders, expand the image of the engineering profession as a positive force in the quality of life, and to demonstrate the value of diversity.” The student section strives to provide a support system, to increase understanding of engineering, and to enhance professionalism of its members.

SWE’s fall semester activities included attending the regional conference in Boise, ID, Bowling for Kids’ Sake, and a networking event with local professionals. This semester the group started a new mentoring program for members. SWE volunteers also work on the “Math Counts” program and serve as group leaders for “Expanding Your Horizons,” a MSU program for middle-school aged girls that explores hands on activities with a math/science emphasis.

SWE is not only for women. Membership rolls include those who support women in engineering as well as technical majors in math and the sciences. Student chapter president, Heather Estvold, is an applied math major. Heather explains, “There are many opportunities within SWE to earn scholarships, participate in technical competitions, give service to the community, and explore opportunities that will more roundly educate us as engineers.” At this time, SWE has no professional chapter in Montana. SWE student chapter members encourage you to visit the SWE web page at http://coe.montana.edu/swe.htm.

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**Theodore “Murph” Murphy passes away at 81**

Theodore Roosevelt Murphy, better known as “Murph” to his many students and advisees, passed away in January, in Bozeman, of congestive heart failure. During his years as a professor of mechanical engineering at MSU, Murph served as faculty advisor for the development of mechanical engineering technology curriculum. His relationships with his students, particularly those for whom he served as faculty advisor, often survived for many years after their graduations and were one of his greatest sources of pleasure. An outstanding teacher, he was honored after his retirement by the establishment of a scholarship in his name by one of his former students. At the time of his death, the family suggested that memorials be contributed to the Theodore R. Murphy Mech. Eng. Scholarship Fund, c/o the MSU Foundation, 1501 S. 11th Ave. Bozeman, MT 59771-2750.
Bob Taylor Scholarship

This fall, a number of College of Engineering faculty and staff members came forward to establish an endowed scholarship in Bob Taylor’s name, in recognition of his 30 years of service to MSU and his accomplishments as a teacher, department head, and founder and director of both the Montana Manufacturing Extension Center (MMEC) and the University Technical Assistance Program (UTAP). The W.R. “Bob” Taylor Scholarship was announced at Bob’s retirement reception in October 2000. The first Taylor Scholarship will be awarded in fall 2001. Friends and alumni who wish to support the scholarship may send contributions to the MSU Foundation, P.O. Box 172750, Bozeman, MT 59717-2750. Gifts should be designated to the W.R. “Bob” Taylor Scholarship.

2001 Spring Engineering Festival makes two in a row...

The Department of Civil Engineering in conjunction with the student chapters of the American Society of Civil Engineers (ASCE) and the Institute of Transportation Engineers (ITE) hosted the 2001 Spring Engineering Festival at MSU on February 22-23. Professor Ted Lang served as the surprise guest speaker at the Thursday luncheon, assuming the role—in full dress regalia—of one of America’s greatest engineers, James Buchanan Eads. (Is Ted becoming one of the premier civil engineering historians in Montana?) Over 125 professionals attended technical sessions for continuing education credits. The highlight of the festival was the student-organized banquet. Students and professionals enjoyed the evening activities—a civil engineering career fair and a crash attenuator competition (eggs served as test dummies). The student chapters of ASCE and ITE wish to thank all the professionals whose participation made this event a success.

Thanks also to the Consulting Engineers Council (CEC) for sponsoring the students’ meals for the luncheon: more than 75 students from CE, EE, ChE, ME, and I&E attended.

Retired COE Dean Gibson Honored

As reported in the December Collegian Magazine, long-time COE dean, David F. Gibson recently retired. Committed to a strong college and to providing a state-of-the-art education to engineering students, the hallmark of Gibson’s tenure was his commitment to undergraduate engineering programs at MSU. Dave joined the faculty in 1969 and moved through the ranks, serving as dean for the past 17 years.

One of Gibson’s greatest achievements was taking the college’s Engineering and Physical Sciences Building from its concept stage in the 1980s to its completion in 1997. Endowments, an important measure of a college’s health, also rose during the Gibson years. The college’s endowment has grown from less than $1 million when Gibson took over to more than $10 million today; these funds give the college that extra edge that makes excellence possible, providing funds for student scholarships, software, equipment, and facilities upgrades for the college.

Gibson has signed on for a three-year post-retirement stint, working one-third time as Professor and Dean Emeritus. His focus is on outreach, strengthening industrial partnerships and increasing alumni support for the college.

David F. Gibson was recently honored through the establishment of a new student leadership award in his name. In recognition for his passion and dedication to the field of engineering education, alumni and friends have established the David F. Gibson honorary endowment. When the endowment is fully funded, it will provide Student Leadership Awards to special engineering students who are active in student organizations and community service, and who demonstrate outstanding potential as leaders. We invite you to join friends and alumni in this tribute to Dr. David F. Gibson.

Contributions may be sent to the Gibson Student Leadership Endowment, c/o the MSU Foundation, P.O. Box 172750, Bozeman, MT 59717-2750.
A GE Engineer Remembers MSC

Sixty years after he graduated with a degree in electrical engineering, William R. Fraser decided he wanted to give something back to Montana State’s College of Engineering. He tells something of his life after receiving his degree in an autobiography he forwarded to the college in December. In the letter that accompanied it, he explains that the reader “might understand why I would use a scholarship to thank the State of Montana for providing the opportunity of an education.”

Fraser was eighteen in 1939 when he enrolled in MSC as an electrical engineering major. “The class work was hard for me but I worked at it and managed to survive the freshman year. During his four years in school he had little time for socializing. But he made some very good friends and pledged Sigma Chi Fraternity.

Fraser was close to graduation when Dean E. W. Schilling contacted a recruiter for General Electric and suggested they consider hiring the young engineer. Fraser joined GE as a test engineer at a starting pay rate of 65 cents an hour. It was, he felt, “a prestigious introduction to the real world of engineering.” He worked for GE in plants in Erie, Philadelphia, Pittsfield, Schenectady and then in Syracuse, NY. His engineering work for GE included design, testing, radar, broadcast engineering, and communications transmitters. He closed his career with a long stint in “over-the-horizon” radar work. When he retired from the company, he was just shy of 43 years with GE.

“My career with GE was most rewarding and I could not have made a better choice. The treatment was good, the wages were competitive, and we were in the forefront of technology. The people with whom I worked were outstanding engineers and the atmosphere was professional.” Fraser feels strongly that his education from MSU made possible his successful career. He knows that students from Montana often face real challenges in financing an engineering education. He wants to help them out as much as he can.

Fraser now gives other young students the opportunity to pursue professional and rewarding engineering careers. He has done this by establishing the William R. Fraser Engineering Scholarship. His former employer, GE, has provided a 100% match to Mr. Fraser’s gift of almost $50,000 of GE stock.