MSU’s Engineers Without Borders Plans Kenyan Clean Water Projects

For centuries, girls in Kenyan villages have carried water in clay vessels from distant springs and back home. When the school bell rings in Shirali and Munyanza, elementary schools in Kenya’s western province, schoolgirls are still carrying water. A group of MSU students hopes to help the girls get to class on time.

In 2003 a dozen COE students formed a local chapter of Engineers Without Borders (EWB), a national non-profit organization initiated in 2000. The 20 members volunteered for a water and sanitation project at two primary schools in rural Kenya. They are generating design alternatives, researching technologies and raising monies in response to a village leader's request for EWB’s assistance, which was prompted by contamination of potable water and fear of disease.

"Essentially, the rural areas around Khwisero lack enough water points, wells or springs, for the population density, and there is a water-quality problem because people only have pit latrines,” said Tucker Stevens, an MSU senior, ’05 ChE, and project manager for the Kenya project.

Stevens and 2004 MSU graduate Heather Mullins spent two weeks in Kenya in January planning projects that the group hopes to implement beginning in December 2005. Stevens and Mullins examined and tested the available water sources, photographed dilapidated outhouses, and met with community leaders.

COE’s Engineers Without Borders project.


Two hundred thirty sixth graders attended the “Engineerathon” on campus. The middle school students learned about different engineering disciplines by visiting hands-on booths created by COE students. The Institute of Transportation Engineers demonstrated crash attenuators using a ramp, a toy truck, and a crash-test egg. The Society of Automotive Engineers demonstrated gear ratios in auto and bike design; Chi Epsilon, the CE honor society, explored tension and compression intersections in loaded bridge beams; and the American Indian Science and Engineering students displayed an oil pipeline project.

Cargill, Inc. of Minnesota sponsored a Women in Engineering Dinner. Female high school students joined engineering faculty, students, and alumni to celebrate women’s accomplishments in engineering.

Cargill sponsors the annual event to encourage women to pursue engineering careers. Three women who hold supervisory positions, Helene Michael, ’85 MET, from Boeing; Kara Boettches; ’02 ChE, from Chevron-Texaco and Julene Kautzman, ’96 ChE, from Cargill, spoke about their experiences. The speakers, three alumnae panelists, and Carina Beck, Director of Career Services at MSU, answered participants’ questions. The alumnae panelists include Julie Kmetzo, ’04 CS, a Usability Engineer with RightNow Technologies, Linda Thompson, ’84 ChE, a Senior Process Engineer with ConocoPhillips, and Anne Camper, ’95 CE, COE’s Associate Dean for Research.

High school juniors and seniors attended classes with MSU engineering students during the “Shadow an Engineering Student” event. Fluor Government Group provided lunch for participants. On the final day, MSU engineering students hosted Girl Scouts for “Introduce a Girl to Engineering Day.” Girl Scouts earned their “Making it Matter” engineering badge by exploring different engineering concepts. Badge Day was sponsored by the Western Transportation Institute and the COE.

COE Alum Lends Playfulness to National Engineers Week

"I never knew an engineer when I was growing up. If I'd known what engineers do, my life might have been very different.” says Meredith Short, ’02 ME, BP’s new Engineers Week project manager.

At 32, Short has landed a demanding, high profile job after less than two years as a mechanical engineer with BP. As remarkable as her rapid rise may be, her path to engineering is even more so.

As a child, Short’s two main interests were building mechanical structures and vehicles with LEGO®s – and reading novels. Novels led to her bachelor’s degree in English literature, but summer jobs led her to a four-year banking career.

Choosing to become a mechanical engineer, Short enrolled in the COE where she found connections to summer jobs, which again shaped her future. At the Jet Propulsion Laboratory in Pasadena, Calif., she joined a group testing design features for the International Space Station. Using LEGO®s, Short designed an award-winning apparatus to raise and lower a probe into liquid nitrogen. The next summer she worked at MSU’s Space Science and Engineering laboratory.

(see Short, pg. 2)
Letter from the Dean

Spring greetings from the College of Engineering at MSU. We have had a hectic, but productive spring semester and graduated 374 students at the beginning of May. As always, Commencement was a happy occasion. We were especially pleased to award an Honorary Doctorate degree in Engineering to a good friend of the college, Joel T. Long, founder of JTL Group, of Billings (see Long, pg. 7). Our graduates were highly sought after again this year. Many outstanding students chose to stay in Montana; others are off to places far and wide, putting their education to use.

We had a productive Engineering Advisory Council meeting this April, and I want to recognize the dedicated group of alumni and friends who serve the college in this capacity. Our group photo is shown on page six, next to the listing of council members. I am grateful to this group of individuals for their commitment to their respective disciplines and departments as well as to building the strength of the college, overall. We also count on their sharing industry perspectives while they are here on campus. This ensures that we are responsive to industry needs and trends in the course of educating fine, young engineers.

Strong industry support for COE diversity initiatives continues. Council members advised us to continue efforts to recruit and retain both Native Americans (see Designing, pg. 7) and women to the college.

Two “new” programs are featured in the newsletter. Actually I should clarify that statement: “new” to the COE at MSU. Our student chapter of Engineers without Borders, under the capable leadership of advisor Sue King, is making great strides on its water and sanitation project in Kenya. Impressively, the group’s outreach effort has captured the hearts and minds (and financial support) of the Bozeman area community, and the team looks to be on schedule and on budget. (see MSU’s Engineers, pg. 1).

Our second new program is now only in one sense. For the first time, our National Engineers’ Week programs were run by students for students. Outreach activities were phenomenal and the activity-packed schedule drew many prospective students to the COE (see Youth, pg. 1).

I hope you will enjoy reading about our alumni involvement, faculty and student honors, and program and research achievements. A special thanks to COE alumni and friends for your loyalty to the COE. Your interest, involvement and ongoing support make it possible for us to report the COE’s increasingly strong position.

As always, I look forward to hearing from you with your updates and comments.

Mission:

The College of Engineering will serve the State of Montana and the nation by supporting student achievement, integrating learning and discovery, and by developing and sharing technical expertise.

EWB, continued from pg 1

After assessing water needs and researching types of wells that could produce potable water, they struck on a solar-powered pumping system for a 200-feet-deep well. Most local wells are 70-feet-deep, hand-shoveled pits, but a deeper well is less likely to run dry and will ensure clean water year round.

The project will also provide a more lasting solution for safe, clean toilet facilities made of rigid plastic and an adjacent handwashing stand. The club assessed composting toilet systems and plastic structures manufactured in Nairobi. They plan to import their knowledge but use local materials: cement, lumber, corrugated metal.

“Engineers Without Borders pledges to not work for communities in need, but work with them,” said Kim Slack, ’04 CE, past president of MSU’s EWB chapter. “Ideas for projects come from the community itself, and local people are included from start to finish. In this way the people of the community are educated on the upkeep and maintenance of the project. EWB projects are therefore a great opportunity for students to have hands-on experience in sustainable design.”

Short, continued from pg 1

Moving to the oil industry in her third summer job, Short worked for Conoco on pipeline projects. Upon graduating, she accepted British Petroleum’s job offer. Short started as a project engineer, did a stint in reliability engineering, followed by turnaround planning.

“My time management has become even better, I’ve learned about project controls, scheduling and estimating as well as how to get my hands on the best resources.” In her current role, she will hone all these skills and learn more about leadership.

Short is a prime example of how fascinating and varied an engineering career can be. “It’s been great and change has happened very fast. I’ve gone from mechanical engineering to an international job promoting engineering,” said Short. When she’s not working, she has a book nearby, but more important, she’s still playing with LEGO’s.

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Forty Montana State University students were recognized as the university’s top seniors at the 23rd annual Awards for Excellence Banquet held Feb. 22. The banquet, sponsored jointly by the Montana State University Alumni Association and the Bozeman Chamber of Commerce, honors the university’s top students for academic performance, leadership, and community service. In turn, the award-winning students each select a mentor to be honored with them at the event.

The 2005 Awards for Excellence winners from the College of Engineering are shown with their mentors.

**MSU Honors Top Students and Mentors with 2005 Awards for Excellence**

**Recipients**

**Wesley Anderson** – Mechanical Engineering. MSU Air Force ROTC’s 2004 Outstanding Student Award, Residence Hall Association senator, Tau Beta Pi engineering honor society, Arnold Air Society, church nursery volunteer.

**Raymond Gamradt** – Civil Engineering. Chi Epsilon engineering honor society, secretary for Institute of Transportation Engineers, American Society of Civil Engineers regional first-place concrete canoe team, Habitat for Humanity volunteer, Bozeman Special Olympics volunteer, Presidential Scholar, National Dean’s List.

**Steven Honig** – Computer Engineering. National Society of Collegiate Scholars; Tau Beta Pi engineering honor society; Golden Key, Alpha Lambda Delta and Eta Kappa Nu honor societies; Institute for Electrical and Electronic Engineers student member, Campus Crusade for Christ technical sound manager and member of Impact Leadership Team.

**Ruben Martin** – Computer Science and Business Management. College of Engineering Student Ambassador, Mortar Board, National Society of Collegiate Scholars, Alpha Lambda Delta honor society, Microsoft Student Ambassador, Boeing industrial engineering intern, RightNow Technologies, Inc. software development intern.

**Stacey Pascoe** – Civil Engineering, Member of Tau Beta Pi engineering honor society, National Society of Collegiate Scholars, Mortar Board, Chi Epsilon National Civil Engineering honor society treasurer. Volunteer for Bowl for Kid’s Sake.

**Blake Rasmussen** – Industrial Engineering. ASMSU student body president, MSU Advocats, MSU Greek Interfraternity Council president, Pi Kappa Alpha fraternity vice president, Institute of Industrial Engineers treasurer, Septemviri honor society, Alpha Pi Mu industrial engineering honor society, Alpha Lambda Delta national honor society, Golden Key honor society.

**Brian Story** – Civil Engineering, National Society of Collegiate Scholars, Alpha Lambda Delta, Chi Epsilon and Tau Beta Phi honor societies. Member of the winter Search and Rescue Hasty Team, Bio-Resource Engineering club president and All-Northwest Jazz Band pianist.

**Ellen Swogger** – Chemical and Biological Engineering. Student judicial board member, President’s List, Undergraduate Scholars Program research assistant at the Center for Biofilm Engineering and member of MSU cross-country and track team.

2005 Awards for Excellence Winners: (from left to right) Back: John Paxton, Prof., CS; Ruben Martin (CE); Heidi Sherick, Asst. Dean; Stacey Pascoe (CE); Ellen Swogger (ChBE); Robert Marley, Dean Middle: Wesley Anderson (ME); Shaw Swidowski, AFROTC, M.Sgt.; Joel Cahoon, Assoc. Prof., CE; Brian Story (CE); Raymond Gamradt (CE); Max Deshbert, Assoc. Prof., ChBE Front: Jim Peterson, Dept. Head, ECE; Jerry Stephens, Assoc. Prof., CE; Blake Rasmussen (IE), Paul Schillings, Assoc. Prof., M&IE

**Alums Honored at the Biennial Construction Industry Recognition Dinner**

MSU alumni were among those honored at the Fifth Biennial Construction Industry Recognition Dinner hosted by MSU’s Department of Civil Engineering on February 25. Bob, ‘56 Arch. Engr. ’95 HonDoc Eng., and Pat Sletten (Sletten Construction) and Jon Peterson (Fluor Government Group) received Program Advocate of the Year awards from the Civil Engineering Department. The Montana Contractors Association (MCA) selected Bradley Talcott as recipient of the Contractor of the Year award. The Associate Contractor of the Year Award went to Greg Miller of Holcim. The Montana Building Industry Association honored John Harding as Builder of the Year and the Associate Builder Award went to Corey Hill, ’92 Bus.

The CE department hosts the dinner on a two-year cycle, working with MCA and MBIA to recognize industry and community leadership in the heavy construction and building industries.

Bob and Pat Sletten jointly gave $1 million to the Montana State University Trust for several years. The Sletten-Thomas Family endowed scholarship gift to the College of Engineering. The Sletten-Thomas Family established the Sletten-Thomas Family Scholarship, an athletic scholarship, and a general, University Scholar’s scholarship. Bob is a current member of the MSU Foundation Board of Governors and has previously served on the College of Engineering’s Advisory Council.

Bradley Talcott, ’79 CET, was awarded Contractor of the Year by Montana Contractor’s Association (MCA). Talcott has owned and operated James Talcott Construction in Great Falls since 1980. He served as MCA’s 2004 president and has been a member of its Health Care and Retirement Trust for several years.

In 2004 Brad helped direct a Dufresne Foundation of Great Falls endowed scholarship gift to the College of Engineering. The scholarship will support students from Montana high schools who want to study engineering at MSU.

The next dinner will be held in Feb. 2008.
WTO Designs Information Services for Travelers in Montana’s Scenic National Parks

People who travel in and around Yellowstone and Glacier National Parks are likely to soon benefit from projects underway at the COE’s Western Transportation Institute (WTO). WTO researchers are working on several projects with representatives from both parks, the Montana and Idaho Departments of Transportation and other consultants to keep travelers informed about bad weather, sudden road closures, and the status of the Going to the Sun Road rehabilitation project.

One project addresses challenges along the U.S. Highway 89 transportation corridor. The growing numbers of visitors to Yellowstone and the growth of communities along the northern route to the park, between Livingston and Gardiner, have increased congestion along the corridor. Limited room for infrastructure expansion requires innovative solutions to problems. Travelers along this route do not have access to real-time weather updates or details on alternative routes in case of bad weather or sudden road closures. The long distance between alternate routes makes it particularly important for motorists to have such information before they reach critical decision points, notes David Kack of WTO.

The research team and stakeholders are evaluating dynamic message signs, Internet, Highway Advisory Radios, kiosks, and the 511 system as possible ways to get information to travelers. The group is also assessing ways to reduce traffic through ride sharing.

MMEC Reaches Milestones and UTAP Offers New Service

Montana Manufacturing Extension Center (MMEC) has reached several milestones in its service to manufacturers across the state since 1996. The Center signed on its 500th client, Nutritional Laboratories International in Missoula, in 2005 and is nearing completion of its 1,000th project.

MMEC has a proven record of helping companies improve processes and business practices as they strive to be more competitive. An independent survey of completed projects over the past two years shows that clients increased or retained sales of $22 million as a result of MMEC direct services, had cost savings of $4 million, and hired more than 120 new workers.

The University Technical Assistance Program (UTAP), under the direction of Steve Holland at the MMEC, is a partnership of higher education with key leaders in business, government, and civic groups.

This year, UTAP was one of only six university center programs in a 10-state western region to successfully compete for a three-year grant from the U.S. Economic Development Administration.

UTAP offers a new marketing systems service to help business owners get more return on their marketing dollars. The service will help businesses reach target markets, learn what customers value, and better position products and services. UTAP partnered with the Montana World Trade Center at the University of Montana to offer the service.

Graduate students work directly with companies under supervision from professionals at each campus outreach center. The new service complements productivity improvement services that UTAP offers to manufacturers who cannot afford more expensive professional consulting services.

Center for Biofilm Team Wins Two Awards

Center for Biofilm Engineering researchers, consultants, and drinking water utilities have collaborated to disinfect drinking water. The resulting project was awarded the American Academy of Environmental Engineer’s Excellence in Environmental Engineering Grand Prize in Research and the American Council of Engineering Companies of Massachusetts’ Grand Conceptor Award for the project “Evaluation of Ozone and Ultraviolet Light.” The team confirmed that a combination of ozone and UV can yield a high degree of disinfection, lower levels of harmful byproducts and minimize unfavorable distributed-water effects. Anne Camper, Associate Dean of Engineering, was one of the research participants on the project led by the consulting company Black & Veatch.

Murdoch Charitable Trust and NSF Fund Research

Dr. Jim Becker, Assistant Professor in the department of Electrical and Computer Engineering, has been awarded a $205,000 NSF Major Research Instrumentation Award and $207,000 in funding from the M.J. Murdoch Charitable Trust. The combined funding will be used to establish a state-of- the-art test facility devoted toward the development of millimeter wave devices and circuits for applications ranging from radar to communications.

Dr. Richard Wolff has been awarded a $176,000 National Science Foundation (NSF) Major Research Instrumentation Award. Co-PIs are Joseph Shaw, ECE, and William R. Babbit, Physics. Dr. Wolff’s current research focuses on applications of emerging wireless and optical technologies for telecommunications applications. The researchers will establish a state-of-the-art test facility enabling exploration of fiber optic and wireless technologies for high-speed telecommunications. Wolff holds the Gilhousen Telecommunications Chair in the ECE department.
More than 400 people attended the 2005 Spring Design Showcase. COE students displayed more than 25 capstone engineering design projects in MSU’s Strand Union Building on April 29.

Project: "Cold Smoke Ski Binding," by Travis Eliasen, ’05 MET (shown at right); Tanner Claridge, ’05 MET; and Evan Bouchier, ’05 MET; Sponsor: Evan Bouchier

Project: "Scope Cover Assembly Automation," by Chris Winters, ’05 MET; Colt Moedl, ’05 MET; Rion Kulaga, ’05 MET; and Spencer Metzler, ’05 MET; Sponsor: Quake Industries

Project: "Advanced Capabilities for ECE 101 Robots," by Sarah Ray, ’06 EE (shown); Michael Thomas, ’06 CpE; and Stilson Applin, ’05 EE; Sponsor: COE’s ECE Department

Project: "Radio Coverage Measurements in Rural Terrain," by Ryan Hawes, EE; Doug Wickens, ’05 EE (shown in middle); and John Wong, ’06 CpE (shown at left); Sponsor: Midtech Technologies
Paxton: Unassuming CS Powerhouse

Paxton Wins Excellence in Teaching Award

Sustained excellence in teaching characterize the three recipients of the 2005 President's Excellence in Teaching Award. Professor John Paxton, computer science, and two other professors each received a $2,500 honorarium.

Paxton, an expert in artificial intelligence, has engaged his students with his excitement for computer science by developing or co-developing 14 new courses during his 15 years at MSU. He was named “Computer Science Teacher of the Year” eight times and received the MSU Alumni Association/Chamber of Commerce Award for Excellence six times. His students often remark that he has a knack for explaining difficult concepts and is able to adjust difficult explanations to fit the audience. Paxton’s curiosity and creative teaching style has taken him to several countries including El Salvador, New Zealand and Morocco to teach mini courses in computer science.

Ferdinand Johns, architecture, and Marvin Lansverk, English, also received 2005 President’s Excellence in Teaching recognition. The awards were among those presented at the University Honors Banquet on May 6.

Students Learn about Ireland’s Software Industry

The CS department’s first study-abroad course was held at the National University of Ireland in Galway, Ireland this summer. Eleven students enrolled in “Web Programming in Ireland,” a 3-credit course during the first six-week summer session. Students learned about common web programming languages and interfaces such as Perl, PHP, Java Server Pages and XML. Ireland has attracted a thriving software industry despite its somewhat remote location. Students learned how Ireland accomplished this by visiting a Microsoft campus in Dublin. John Paxton, CS Professor, taught the course. Paxton suggests that knowledge gained on this trip can be applied to developing Montana’s software industry. To learn more, visit www.cs.montana.edu/paxton/classes/ireland.

Paxton Investigates Ways to Improve Search Engine

RightNow Technologies, a Bozeman-based software company, is funding a project to investigate how a site-specific website search engine can be improved through machine learning techniques such as genetic algorithms. The improved search engine will be able to suggest ways to improve existing web pages on the local site as well as provide local users with more accurate results to their queries. John Paxton, Computer Science professor and the principal investigator on the project, is assisted by Jeff Elser, a CS master’s degree student and RightNow Technologies employee.

RightNow Technologies, a growing firm specializing in web customer service solutions, has a close relationship with the CS department at MSU. In addition to funding this project, RightNow provides two scholarships per year and is a long-term employer of CS grads. www.rightnow.com

Family Honors Legacy of Thomas E. Sparling ’39 EE

Thomas E. Sparling grew up in Flaxville, Montana, and earned his Electrical Engineering degree from MSU-Bozeman in 1939.

Mr. Sparling married Dorothy Landaker in 1943 and they settled in Seattle where Thomas worked as a designer for the Puget Sound Naval Shipyard in Bremerton, Wash. In 1947 he started the firm now known as Sparling (the nation’s largest EE and technology consulting firm) with partner Jeff Pavey. His distinguished career and innovative contributions to engineering won him national recognition and many awards, including the Richard Howard Kaufmann Award from the Institute of Electrical and Electronic Engineering in 1997. Thomas retired in 1985.

Thomas was devoted to his wife and four children, with whom he enjoyed fishing, camping, boating and traveling. He served as a board member of Boy Scouts Chief Seattle Council and participated in scouting activities with his three sons.

After Thomas’ death in December 2004, his family initiated the Thomas E. Sparling Electrical Engineering Memorial Scholarship for Montana State’s College of Engineering students. They chose to memorialize his life and his work in a way that would reflect his commitment to excellence in engineering. This summer, Mr. Sparling was selected to receive a posthumous Alumni Achievement Award through the MSU Alumni Association; it will be awarded to the family this fall.
MSU Army ROTC Wins Two Performance Awards

The MSU Army ROTC program received two awards from Cadet Command for 2004. The program won its first award for being the most improved program within Cadet Command and its second award, the “15 Percent Award,” by ranking among the top 15 percent of the nation’s 270 ROTC programs.

MSU Students Exceed National Pass Rate for FE Exam

MSU’s engineering students demonstrate knowledge of engineering fundamentals and solid performance on the FE (Fundamentals of Engineering) exam. The eight-hour exam is one step toward acquiring a professional license. For the most recent test, COE seniors across all engineering disciplines achieved an outstanding pass rate at 88 percent; while the aggregate national pass rate was just 78%. “This is a tremendous statement about the quality and dedication of our students and faculty at MSU,” according to engineering dean Robert Marley.

Micron Technology Expands Support of COE and ECE

Micron Technology Foundation, Inc. of Boise, Idaho, provided $100,000 to support the Montana Microfabrication Facility (MMF) in the Electrical and Computer Engineering department for two years beginning in March 2005. The gift will help the department acquire microelectronics characterization equipment for teaching and research. The Micron Foundation is providing financial support to the characterization activities to further enhance the skill sets and fundamental knowledge base of MSU engineering students entering the semiconductor industry. The MMF project is directed by Dr. David Dickensheets in EE.

“MSU has a solid history of sending talented engineers and technicians to Micron,” according to Dan Spangler, University Relations Manager for Micron Technology Foundation, Inc. “For undergraduate engineering students, having the ability to physically characterize circuits and devices as an integral part of their curriculum provides them a distinct advantage in terms of enhancing their fundamental understanding of the industry.”

MSU is one of Micron’s “Key Schools” in engineering. The company provides generous scholarships to CS and ECE. Six students from each department receive Micron scholarships every year. The company also provides gifts-in-kind of equipment and computer memory, hosts students and faculty members for site visits, supports summer projects for faculty members, employs many students as interns, and hires many of the College’s top students.

Long Receives 2005 MSU Honorary Doctorate Degree

Contractor Joel Long, whose vision transformed Billings, was awarded an honorary doctorate in Engineering during the university’s 109th commencement ceremonies on May 7.

Long, retired principal of JTL Group, earned a bachelor’s degree in physics in 1965 and a master’s degree in civil engineering in 1967. After serving in the Army Corps of Engineers, Long returned to Billings and his family’s company, United Industry. In the ‘90s Long formed the JTL Group, a large aggregate mining, asphalt, ready-mix concrete production and sales, road construction, paving and general contracting company operating in Montana and Wyoming. He later sold JTL to MDU Resources, assuring that his employees and management teams would continue to run the company.

Long’s vision of the future has transformed Billings and the state. He was a key to the expansion and development of the Billings Central Business District and downtown Billings, including the development of the Transwestern Plaza and the First Interstate Bank Building. His ability to see parks and shopping areas where there were once only gravel pits resulted in the development of Billings’ Marketplace and Riverfront Park, a conservation center and the Amend Park Soccer Fields. He also donated a gravel-mine in Missoula that became a pond, trail and Bitterroot River access.

Long has served as president of the Montana Contractor’s Assoc. where he helped create the Contractors’ Health Care and Retirement Trust. A past director of the First Interstate Bank Holding Company, he was also a past president and director of the Billings Family YMCA and twice served terms on the Montana Board of Investments. Named in 1992 as one of MSU’s “Centennial Alumni,” Long currently serves on MSU’s Advanced Technology Institute Board of Directors.

“Designing our Community” Native American Program Celebrates Successful Year

As the Designing Our Community (DOC) program, funded by the William and Flora Hewlett Foundation, starts its second year, it continues to recruit and retain American Indian students.

• The number of American Indian students who enrolled in the COE for the first time doubled from 10 to 20 after the program’s first year. American Indian students made up 1.8 percent (35 students) of the college population in the COE prior to the DOC program and currently make up 2.5 percent (51 students). Almost half of the new students transferred from tribal colleges because of the partnerships established through the program.

• DOC partners with K-12 schools on or near American Indian reservations to provide academic prep for engineering careers. The program coordinates outreach to tribal colleges and K-12 schools with COE faculty, students and corporate partners to encourage more American Indian students to enter engineering and computer science fields.

• The DOC Montana Apprenticeship Program has provided 15 American Indian high school students a research experience in engineering as well as academic prep for college. Students gain a greater appreciation of what engineers do and for preparing to attend college.
In Memory of
William Fraser ’41 EE

COE alumnus and friend William R. Fraser left a legacy of excellence in professional engineering when he passed away. Fraser worked for GE for 40 years prior to his retirement, but he stayed connected to MSU and to his friends from MSU during the years that passed.

Several years ago, Bill decided to show his appreciation to his alma mater; he felt strongly that his education made his successful career possible, so he created a scholarship to support young MSU COE students — to give them the opportunity to pursue professional and rewarding engineering careers. After his death in March, the Fraser family sent along this photo of Bill and his granddaughter celebrating the holidays. As his son Bruce told us, “Dad never forgot Montana and was always proud of MSU.”

William R. Fraser and his granddaughter, Katherine, with Bill’s new MSU “hoodie.”