

CREATE
INTEGRATE
ADVANCE

*Donald M. Blacketter, Ph.D.
Professor and Dean
College of Engineering*



University of Idaho
College of Engineering

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Dear Idaho Engineering and Computer Science Alumni and Friends,

The University of Idaho has received a \$1.2 million leadership gift from the **Micron Technology Foundation** to be used in the areas of science, technology, engineering and math (STEM). This gift over four years will be used to research and identify barriers for some Idaho students pursuing careers in the areas of science, technology, engineering and math (STEM.) It will also create a University-wide Leadership Team that will help to establish Idaho as national leader in STEM research and initiatives.

The College of Engineering currently provides leadership in several collaborative STEM-focused programs, including the annual **Engineering Design EXPO**, **Women in Engineering Day (WIE)**, the partnership with Boise State and Idaho State universities in the **Experimental Program to Stimulate Competitive Research (EPSCoR)** and the **Junior Engineering, Math and Science (JEMS)** summer program. These programs are designed to motivate young people to enter science and engineering majors in college so they can ultimately participate in the scientific and technical work force.

Speaking of JEMS, the July 2010 **Idaho Junior Engineering, Math and Science (JEMS)** summer program was another great success thanks to **JEMS Director and Chairman, Department of Civil Engineering, Richard Nielsen**, faculty and staff members and a grant from the Federal Highway Administration. This year was one of the highest enrollments that we have seen in several years with 50 students coming from as far as Puerto Rico, Hawaii and Louisiana. Teams of students developed designs for the "Personal Urban Vehicle" (PUV) powered by ultra capacitors donated by **Ivus Energy Innovations**. The goal was to allow individuals to go where they want, when they want, using a variety of alternate energy sources. Students learned about using novel but existing technologies in their quest to design the best PUV.

The students attended three classes every day learning how to design and race their own small scale vehicles. The students began with an Engineering Electricity and Motors class taught by **Dr. Bob Rinker**. In this class the students received an overview of information that they would need to successfully build their vehicles, including in-depth instruction on circuits. They also attended a SolidWorks computer modeling class taught by Ph.D. student **Jennifer Hasenoehrl** and an Engineering Mechanics course taught by **Dr. Don Elger**.

The JEMS students were invited to tour **Schweitzer Engineering Laboratories** in Pullman, to join a creek restoration project with **Palouse Clearwater Environmental Institute (PECI)** and to take a tour of the Lower Granite Dam. The students also mingled with professors here at the College and experienced firsthand just how much our university has to offer.

After two weeks of hard work, the students participated in a vehicle competition that was judged on several criteria including: speed, efficiency, hill climb, style, and overall best vehicle. To conclude the week the students gave a technical presentation to a panel of judges from the University of Idaho and Ivus Energy Innovations followed by an award ceremony.


Virtual technology is bolstering the **Traffic Signal Systems** education in the College of Engineering. "The industry has been struggling with how to train students to have one eye on traffic and one eye on the traffic controller," says **Michael Kyte, professor of civil engineering** in the College of Engineering. "Traffic engineers need to see – to visualize – complex processes to understand the myriad components and design a system more effectively."

Dr. Kyte is **principal investigator on MOST**, a project to develop curriculum materials and a simulation environment for traffic signal timing, which is funded by the **Federal Highway Administration** and administered by the **National Institute for Advanced Transportation Technology**. MOST enables engineering students to directly observe how the signal timing parameters that they select affect the quality of traffic operations at a signalized intersection. While the simulation is helpful, it was missing a key component: more direct visualization of the processes that go on in the traffic controller itself. "We can't just take our students to an intersection and allow them to change traffic signals for practice," says Dr. Kyte. "We needed something that allows us to get as close as we can to the real world environment." Dr. Kyte raised the issue with John Anderson, assistant professor of virtual technology and design (VTD) in the College of Art and Architecture. Anderson's junior-level design class agreed to create an enhanced simulation environment that would work with Kyte's existing simulation program, but create scalable complexity. The VTD students worked with graduate-level engineering students to emphasize the use of visual environments to help solve real world problems. The students created interactive technologies aimed at education.

"At first, I wondered why the program developed by the Virtual Technology and Design team had to be so graphical," says **civil engineering graduate student Christopher DeLorto**. "Now, I'm starting to see that more graphical makes sense – it allows me to see how the system works as a whole. This is a useful industry tool that will help people visualize traffic signal systems – not just read about them."

Kyte is pleased with the progress this year. "They developed a tool that takes some of the data from the initial simulation tool and adds in a "cool" and informative look at the timing process. It allows engineers to make connections between traffic and the timing process," he notes. This month, the engineering team and the VTD will present the simulation to the **Traffic Signal Systems Committee** from the **Transportation Research Board**, a part of the **National Academy of Engineering**.

Next month we will complete our yearly assessment and revision of the College's strategic plan. This will guide us as we formulate plans to hire new faculty, develop new programs and explore new areas of research. I especially welcome our new engineering students both transfers and incoming first year students to our engineering programs, -and visiting parents, as school begins on August 23. Please stop by and say "hello."

Sincerely, 

Donald M. Blacketter
Dean, College of Engineering

P.O. BOX 441011 MOSCOW, ID 83844-1011 PH: 208-885-6470 FAX: 208-885-6645

Biological and Agricultural Engineering, Chemical Engineering, Civil Engineering, Computer Science, Electrical and Computer Engineering, Materials Science Engineering and Mechanical Engineering. Additional graduate degrees: Nuclear Engineering, Geological Engineering, Environmental Engineering and Engineering Management