We Build Them Better
Welcome

Welcome to the premier issue of Sparteering Currents, a new magazine that will be published each spring to showcase our students — Spartan Engineers.

How do we build a Spartan Engineer?

In the Michigan State University College of Engineering, we start building a Spartan Engineer the moment he or she arrives on campus. Our freshmen begin their academic careers with “cornerstone” classes, where they are engaged in the design process the first week of class. Throughout a student’s years of study, a rigorous academic environment is combined with experiences outside the classroom — like undergraduate research, study abroad, internships, and co-ops — tailored to meet each individual’s goals and needs. At the end of his or her course of study, a Spartan Engineer enrolls in a senior capstone design course, which provides a team-based, industry-driven design challenge that requires the application of cumulative technical and experiential skills to real-world engineering problems. Finally, in accordance with MSU’s land-grant philosophy, our graduates take what they’ve learned and apply that knowledge in the real world to benefit the community, the state, the nation, and the world.

We teach our students how to think, and we teach them how to learn. We also train our engineers to be “Renaissance engineers” — that is, engineers who have depth in a specific area but also have the ability to connect with professionals across disciplines. We are exploring the idea of “interleaving” engineers into an environment with students in business, pre-medicine, pre-law, the social sciences, and the humanities. This would raise our engineering students’ awareness of different perspectives and enable them to pick up the “soft skills” necessary to communicate and work effectively with people outside of the field of engineering. We want our engineers to be able to look at a problem from a 50,000-foot level, yet have the ability to zoom in to study it. But this type of learning requires an immersive environment. And that is the goal of our new Residential Experience for Spartan Engineering (to learn more, read the article on pages 2–5).

If we want to attract the best and brightest students in the country to the field of engineering, we cannot afford to overlook 50 percent of our population — women. The diminishing number of women entering engineering and science careers has become a critical national concern. In response, the college has launched a Women in Engineering program to recruit and retain women, and to make sure that the College of Engineering provides a nurturing environment for women (read about this new program on pages 14–15).

Utilizing all of these methods for imparting knowledge ensures that our graduates will adapt to the rapid changes inherent in today’s technology and business practices and remain competitive in this global economy. In short, Spartan Engineers are “good to go” and “built to last.”

We hope this issue of Sparteering Currents will be a useful resource. Let us know what you think; we value the feedback of our partners in engineering education.

With warmest regards,

[Signature]
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Residential Experience Helps Build 21st-Century Engineering Workforce

With no previous engineering experience, students in ECE 100, Introduction to Engineering Design, had two weeks to form teams, modify a 12-ounce pop can, and compete with classmates to see which team’s pop can would roll down an incline the fastest. The winning team’s pop can rolled down the track in 3.6 seconds.
The Residential Experience is a combination of new academic classes, called Cornerstone Engineering, and a designated residence hall that will offer living quarters for freshmen and be a hub for freshman engineering classes and activities. “This new option will immerse students in an integrated and intensive academic environment so they will be better prepared to adapt to constantly changing engineering workforce needs,” says MSU President Lou Anna K. Simon.

The College of Engineering has had freshmen living in a residence hall for a number of years. Under a program called ROSES (Residential Option for Science and Engineering Students), about 150 freshman engineering students live in Bailey Hall. “This is a good living and learning experience for freshmen, but it has not had an engineering academic component. Students are in common sections of math, chemistry, and writing, but not engineering,” says Tom Wolff, associate dean for undergraduate studies in MSU’s College of Engineering.

A residence hall within walking distance of the Engineering Building will be designated by late spring for the Residential Experience. After renovations to the building, the Residential Experience for Spartan Engineering is expected to be in place by fall 2009. Living in the residence hall will be optional, but strongly recommended, for freshmen. The academic classes, which will be taught in classrooms and labs in the residence hall, will be required for all freshmen. The residence hall will also feature areas for tutoring and offices for advisers and faculty. Student organization offices will also be located within the residential setting. “All freshmen will end up in the residence hall whether they live there or not. That’s the incentive to live in the residence hall,” says Wolff.

Carmellia Davis-King, a specialist-adviser for undergraduate studies in MSU’s College of Engineering, works closely with students currently involved in the ROSES program and sees great potential for the Residential Experience. “The goal is to make a large campus like MSU feel like a small-campus experience,” says Davis-King. She believes the Residential Experience will make students more aware of the help and activities that are available to them and will make them strong enough to survive their college years. She is a mentor to the students but really pushes the academic side. Students need to have a specific grade point average and complete core courses in order to be officially eligible for admission to the College of Engineering. Generally this
is done by the time students become sophomores. "The students like being with other students who are taking the same classes. It is easy to ask for help or ask what happened in class when other students from the same class are just across the hall," says Davis-King. "This Residential Experience provides an opportunity for student participants to live and breathe engineering."

But living and breathing engineering is not enough. The college’s overall goal is to produce “Renaissance engineers” — engineers who possess in-depth knowledge in a specific area, yet have the ability to connect more broadly with professionals across disciplines. To accomplish this, the residence hall designated for the new residential program will not be “engineers only,” nor will it be segregated by floors. A large number of engineering students will share the facility with students from other disciplines including business, pre-law, pre-medicine, and the humanities. "Our vision," Wolff says, "is that this model will raise our students’ awareness of different perspectives — initially through informal interactions and later, perhaps, more formally in joint curricular programs."

The other part of the Residential Experience is the Cornerstone Engineering program. In the fall of 2007, a pilot class of Engineering 100 (Introduction to Engineering Design) was offered to 48 freshmen. The pilot is also being offered spring semester. There will be about 400 students enrolled when it is a required class for freshmen in the fall 2008 semester. Until the residence hall is ready, the classes will be taught in the Engineering Building. Engineering 100 has two parts — a lecture that gives an overview of how engineers design products and processes, and a lab that offers hands-on projects geared toward team building. This course gives students a chance to learn about the broad scope of engineering before focusing on a major.

On the first day of class, students are divided into teams and given a project, which has to be completed in two weeks. In the pilot class this past fall, students were challenged to get a 12-ounce beverage can to roll down an incline the fastest in a class competition. "This develops team skills and lets students do trial and error without a lot of engineering knowledge. They have to be organized right away,” says Timothy Hinds, academic specialist in the Department of Mechanical Engineering and the lead instructor for Engineering 100.

The students then work again in the same teams on another project, which has to be completed in four weeks. This past semester the project focused on energy conversion. Each team had to take a AA battery and convert its stored energy to another kind of potential energy.

The third project in the course — which the teams had eight weeks to complete — is an open-ended design project. The students research products, conceptualize a product, and build a prototype, all within a budget. “Individuals in the team learn a lot about how to write a technical docu-

ment, and how to prepare and deliver a presentation, but the biggest goal is to learn how to work in an engineering team,” says Hinds. "Students in the pilot class this fall had a tremendous experience, and by the end of the semester, some great work was being done that you might not expect from freshmen.” For this project, the teams had to create a new product that their roommates might use. One team developed a type of dumbwaiter that could raise a television set up to a loft bed. Another team developed a backpack clothes hamper. Dirty clothing would go in at the top in separate compartments. At the laundromat, the compartments could be unzipped at the bottom and emptied into the washing machine.

The other class in the Cornerstone Engineering program is Engineering 102 (Introduction to Engineering Modeling). The pilot class is being held for the first time this semester (spring 2008). The prerequisite is Engineering 100. In Engineering 102, students learn how to identify and solve engineering problems. Labs focus on how to use computer tools to solve problems. "We teach students to recognize the problem, and then in the lab we show them how to develop a computer model to solve the problem,” says Hinds.

Students have had a positive response to both classes. "It’s the first time they are seeing engineering and it gives them an opportunity to determine if this is what they really want to do. In the past the first opportunity to
work in a team was generally as a senior. Students need to develop these team-building skills at the freshman level to use throughout the rest of their education and in their careers,” says Hinds. “We want our graduates to come out of the College of Engineering at MSU ready to go into employment. Employers want graduates who are ready to work. Companies do not train graduates anymore on how to be engineers.” He also points out that many traditional entry-level jobs for graduates no longer exist or have been outsourced overseas.

The Cornerstone Engineering classes will be taught in the residence hall when it is available. “Senior-level engineering students are peer mentors in the Cornerstone classes, so freshmen have an opportunity to interact with upperclassmen, which has not been the case in the past,” says Wolff. Because the residence hall will be within walking distance of the Engineering Building, faculty members will be encouraged to visit and interact with students. Some faculty will have offices in the hall.

The primary reason behind the development of new academic courses for freshmen and the expansion of the Residential Experience is a recent decline in the number of students interested in science and engineering. “In the old model, we first sent students to take calculus and physics. This doesn’t engage young people,” says Wolff. “In a class like Engineering 100, students get excited. They can see right away what engineering is all about.” He points out that most engineering schools are doing something similar in academic coursework for freshmen. “What sets us apart is the Residential Experience.”

The Residential Experience for Spartan Engineering has been in the planning stages since January 2006. Representatives from all departments and majors in the college have been involved in the planning and implementation. In the Cornerstone classes, students see faculty members from each major during the course. Faculty members teach modules of the class and are involved in panel discussions. “We want to keep all departments involved. Everyone has ownership, so it is a win-win situation for the college and all the departments,” says Hinds.

Engineering’s residential program joins other living and learning options at MSU including Lyman Briggs College for natural sciences, James Madison College for public affairs, and the Residential College in the Arts and Humanities. In 2007, MSU’s residential colleges were named by U.S. News & World Report as “stellar examples” of programs “linked to student success.”

Wolff sees the engineering jobs of the future centering on integration (pulling the pieces together) and innovation. “The U.S. workforce needs engineers who can make sense out of all the pieces and come up with the next big thing — the products of the future. The skills needed for integration and innovation are traditional math and physics knowledge, plus teamwork and written and oral communication skills,” says Wolff. “With the Residential Experience for Spartan Engineering, MSU and the College of Engineering are responding to a national call to put all of this into the curriculum the day students start college. It works.”

Jane L. DePriest is a writer and editor who lives in East Lansing, Michigan, with her engineer husband, Leland.
The Center for Spartan Engineering opened in 2007 to support student success. Since its inception, The Center has become a hub of activity, offering a comprehensive portfolio of student services.

Whether it’s a young person learning about an engineering career through a K–12 activity, a Spartan Engineer seeking out-of-classroom opportunities, or an alum seeking career networking, The Center is their resource of choice.

Services for students are readily accessible with one stop at The Center. “Students know that if they are seeking information on a program, looking to make contact with industry, wanting information regarding an event, needing to identify a source or connection, or requesting support in other areas, they merely need to come into The Center,” says Garth Motschenbacher, College of Engineering director of employer relations. “This one-stop resource is not only for students, but for employers, faculty/staff, and alumni.”

One of the unique characteristics of this premier facility is the invaluable Career Peer team. This knowledgeable, experienced cadre of students is representative of every class level and engineering major. The Career Peers are dedicated, trained students providing helpful assistance in many matters.
The Center for Spartan Engineering is the center of student life for the college. K–12 outreach, recruitment, career advisement, career exploration, employer connections, alumni networking, faculty links — The Center has it all."

GARTH MOTSCHENBACHER, DIRECTOR OF EMPLOYER RELATIONS

They provide information regarding co-op, internship, and undergraduate research opportunities; serve as liaisons between employers and current and prospective students; write the Spartan Engineering News; and support electronic communications for the college.

The Career Peer team is just one of the powerful resources available to Spartan Engineers. “Helping students tailor their educational experience to achieve their future career goals is one of the core values of The Center,” states Bernadette Friedrich, College of Engineering director of student advancement. “In particular, we assist them with out-of-classroom opportunities such as co-ops, internships, alternative spring break experiences, and other formal and informal connections with employers.”

Engineering Career Expo is one of these opportunities. Held during National Engineers Week in February, the event gives students a chance to meet with employers from the manufacturing and technology sectors. It’s an ideal venue for exploring career options while networking with potential future employers. Other Center-sponsored events include career and professional development seminars held each semester, regularly scheduled workshops to sharpen interview skills and job search strategies, “five-minute résumé critiques” that provide quick and easily accessible résumé advice, and many experiential education opportunities.

According to Friedrich, students gain invaluable information when they participate in out-of-classroom experiences like “alternative spring break.” Instead of taking a break, Spartan engineering students in their freshman and sophomore years apply for the opportunity to visit multiple companies during the week. This year, students will travel to meet engineers and other company representatives from corporations such as GE, Norfolk Southern, and Alcoa. A commitment to robust career development resources and opportunities creates a forward-looking educational environment for Spartan engineering students.

This is what The Center is all about — facilitating connections between students, faculty and staff, employers, and alumni. Hence the name “The Center for Spartan Engineering,” says Motschenbacher.

To learn more about The Center and its activities, listen to the podcast at http://spartanpodcast.com/?p=390.

Janet Kranz is a writer and marketing professional. She is an alumna of Michigan State University.
John Thon, program coordinator for the College of Engineering K-12 Outreach initiatives, works with seventh-grader Caleb VanZee (seated) and eighth-grader Corey Hungerford during the college’s Design Day on December 6, 2007. More than 125 middle-school students from across Michigan attended.
K–12 Programs Inspire Future Engineers

Vivianne Robinson couldn’t believe what she was seeing.

There was her 9-year-old son, Justin, not just participating, but passionate — riveted to the LEGO® invention he and the other kids had built. They were a team competing at a regional FIRST LEGO League (FLL) competition at Saginaw Valley State University, and Justin had been designated the team leader. FLL is the result of a partnership between the LEGO Group and the nonprofit organization FIRST (For Inspiration and Recognition of Science and Technology); competitors use LEGO MINDSTORMS Robotics Invention System kits. Justin was charged with making sure the team’s computer-programmed, remote-controlled robot negotiated its way through an obstacle course.

“He was so serious and so focused,” recalls Robinson of the competition four years ago. “I had not always thought of my child as being focused. So when he told me he was selected leader, I was a little nervous.”

Robinson, who lives in Holt and is director of human resources and training for University Development at MSU, soon learned what her son and his teammates already knew: that the LEGO competition was so much fun, no one had time to be nervous.

The team didn’t win, and it didn’t matter. But this isn’t where the story ends. Justin’s involvement with FLL through MSU’s College of Engineering has changed his life. Since that day four years ago, Justin, now 13, has graduated from FLL to Wireless Integrated MicroSystems (WIMS) for Teens, also one of the MSU College of Engineering programs.

As Justin learned when he attended WIMS for Teens last year, the summer residential program provides teens a fuller exposure to engineering through hands-on projects and close interaction with engineering faculty and students. Now attending Holt Junior High School, Justin also stayed in a dorm.

He can’t wait to go back.

All of this “has really got him interested in engineering,” Robinson says. Not only that, Justin must maintain a B-plus average in math and science to qualify for the program. “Last year, he was struggling in those areas. I let the teachers know this is something he wanted to do, and they spoke to him.”

Justin’s experience is a perfect example of what a variety of professionals affiliated with the College of Engineering hope to accomplish with its recently reinvigorated K–12 Outreach initiative. This amazingly wide-ranging, sophisticated network of programs is designed to entice young people into the adventure known as engineering. And, as in Justin’s case, the programs help

Greg Jamison competed with his team, the Masterminds, during the FIRST LEGO League regional tournament hosted by MSU on November 10, 2007. The competition is for young people ages 9 through 13. Jamison and his teammates took turns wearing the LEGO costume throughout the day.
students work hard to make sure they qualify for the field of study. At least 3,000 students in all attend one or more of the 15 MSU programs offered throughout the year.

“Our job is to make sure kids perceive math, science, and engineering as fun and exciting,” says Drew Kim, assistant to the dean, who oversees the k–12 Outreach program. “That’s why everything we do is hands-on. We rarely do a lecture for these age groups. We recognize in the College of Engineering that we need to do something drastic, something outside the box — not just the traditional in-class teaching of math or science.”

The stakes, all agree, could not be higher. Nationally, interest and enrollment in engineering has dropped in recent years. Kids perceive engineering as either too hard, too boring, or both. And they harbor inaccurate, narrow views of engineers as people who build bridges or, even worse, operate trains.

“Frankly, compared to the rest of the world, we’re not doing very well,” Kim says of the future of the nation’s engineering muscle. An effort such as the k–12 Outreach “is not a luxury anymore.”

In addition, the more rote, basic engineering jobs have gone overseas. “Here, the engineering jobs are second tier. So our graduating students have to walk out as design-oriented people — innovators. That means we have to get these kids at a younger age up to the teens, so when we get them here, they’re really ready to roll.”

Satish Udpa, dean of MSU’s College of Engineering, agrees. He has made the program a priority. “Our k–12 outreach programs are vitally important for producing the seed corn necessary for training the next generation of science and technology leaders. We need these leaders to be able to address the challenges of tomorrow — be it in the areas of energy, health, environment, or security.”

The k–12 programs’ wide reach involves elementary school kids and LEGO products; high schoolers programming robotic fish propelled by a polymer plastic; teacher training and curriculum development; and even grandparents. One of the most popular programs, Grandparents University, has garnered national exposure. Grandparents and grandchildren live in the dorms and participate together in a variety of hands-on activities.

Mary Maxwell Tomas, a retired circuit court judge and former MSU student, attended with her grandson in 2007. Afterward, she was contacted by author Sally Wendkos Olds, who is working on a book tentatively titled 100 Fun Things to Do With Your Grandkids. Olds had heard about MSU’s Grandparents University and wanted to interview past participants. In an e-mail to Olds, Tomas raved about the program’s treasure hunt activity.

“Each child was given his or her own portable GPS, and they used it to run all over campus, with winded grandparents bringing up the rear,” reported Tomas. “They were following clues left in plastic containers hidden in bushes to locate a treasure.

“I could not have imagined a more entertaining and educational experience for both of us. Needless to say, we’re planning to attend again.”

John Thon, Holt Junior High School technology teacher and program coordinator for MSU’s College of Engineering
κ–12 Outreach initiatives, has been assisting with Grandparents University — and Design Day, another program involving high schoolers and graduating seniors in the College of Engineering — for years. “To see the kids and the interaction with the grandparents is great,” says Thon, who helps grandparents design and build robots.

Grandparents University, he says, “eases the gap in technology between generations. It gives grandparents the opportunity to prove they’re still viable learners, and really puts a whole focus on learning as being a real lifelong pursuit.”

The overriding scope of the κ–12 Outreach initiative presents what Kim describes as a dynamic, evolving, and changing field of study. “You can’t look at engineering without biological consideration,” he says, “or without nanotechnology consideration. This was not in the equation three, four, five years ago. When I started in 1999, nanotechnology was barely a spoken language. Microsystems was a big thing. Now, everything has a nano influence.”

He adds, “the most important thing I tell students is that we’re not necessarily teaching you these things so you know in two years how to work this — because it will be obsolete. We’re teaching you how to learn.”

The key word in all of this is “building.” It’s one word most people associate with engineering. And that is what the κ–12 Outreach program is doing, on two levels.

While young people assemble LEGO robots; while high schoolers use computers to program wireless thermometers on printed circuit boards; while MSU seniors present their capstone projects on, for example, a portable audio-visual book reader; while students get a real sense of what studying engineering in college is like at the High School Engineering Institute, the College of Engineering is building something, too — the future.

For a complete list of κ–12 programs offered through the College of Engineering, visit the Future Engineers Web site at www.egr.msu.edu/future-engineer/programs.

Sheryl James is a freelance journalist from Brighton, Michigan.
What began as a fragile neighborhood’s struggle to preserve green space has become an ambitious collaboration, led by Michigan State University, to transform lives with technology. The resulting Information Technology Empowerment Center (ITEC-Lansing) will have a heavy focus on youth programs to equip Lansing (Mich.) residents with skills needed to succeed in today’s global economy.

ITEC-Lansing is a collaborative effort between community, industry, and education. “This unique partnership will create incredible educational opportunities for our children and spark new job creation in a fast-growing sector of our economy,” says Lansing Mayor Virg Bernero. “What was once a thriving center for educating our children will once again play a key role in preparing young people for success in the emerging global economy.”

ITEC-Lansing will be housed in the former Holmes Street School in Lansing, which is also the future site of the new headquarters for Spartan Internet Consulting Corporation. A “groundbreaking” ceremony was held at the school in January. The ITEC Center will officially open in late summer after renovations to the building are completed.

The technology center will offer hands-on activities designed to teach science, technology, engineering, and mathematics (STEM) skills. “ITEC provides a unique ‘proving ground’ for new ideas in IT teaching and learning,” says Kirk S. Riley, executive director of ITEC. “We are seeking to involve teachers at all levels — MSU faculty, Lansing School District teachers, Lansing Community College faculty, local IT professionals, and MSU students — all in the search for, and implementation of, new ways to engage students with technology. We will have succeeded when every student in the capital region seeking to enter science and engineering fields has the opportunity to do so.”

“We wanted to find a new purpose for this building that would make it a tremendous asset to our neighbor-
hood,” says Adam Pitcher, president of the Holmes Street School Community Neighborhood Association. He is also a systems analyst with the Department of Computer Science and Engineering (CSE) in the College of Engineering at MSU. “With a great technology company like Spartan Internet moving into the building, and the creation of the new learning center, we have hit a home run,” says Pitcher. “It certainly would not have happened without the great partnership between MSU, the community, the city, and the corporations who came together to get it done.”

David Hollister, president and CEO of the Prima Civitas Foundation, a regional community and economic development collaborative, worked with CSE faculty and staff to assemble a team of colleagues from MSU, Spartan Internet Consulting Corporation, Dewpoint, Inc., the Lansing School District, and local nonprofit organizations. Their vision: to empower Lansing with technology.

Computing and information technology (IT) jobs are among the fastest growing, highest paying jobs in America. Despite the wealth of IT career opportunities available in mid-Michigan, local businesses are struggling to fill these positions. ITEC-Lansing will address this problem by providing residents free access to technology and by teaching technology skills that apply to everyday life.

“I believe in this project,” says CSE Professor George Stockman. “When you inspire kids and adults to explore science and technology, you provide them with opportunities they may not have had otherwise. This also benefits MSU enrollment and gives companies a pool of trained technology professionals.”

The key, Stockman explains, is to engage children with “cool” technology. ITEC-Lansing will provide activities that encourage them to explore technology as a community. For example, children might participate in a group programming activity where they create a story using 3-D graphics.

The team is eager to partner with more businesses and organizations to promote technology in the Lansing area. “We’re thrilled to be part of the effort to revitalize mid-Michigan and promote a strong economy,” says Teresa Isela VanderSloot, CSE academic adviser. “There are multiple opportunities for different types of collaboration.”

Stockman, Pitcher, and VanderSloot are all on the ITEC-Lansing Board of Directors. Other faculty involved include CSE Professor Laura Dillon, and Linda Jackson, psychology and CSE adjunct professor.

ITEC-Lansing is unique, VanderSloot says. “It’s a win-win situation. This is a truly collaborative effort. It’s about giving back and making a difference.”

Learn more at www.iteclansing.org.

ITEC-LANSING PARTNERS

From left to right: Adam Pitcher, systems analyst in the College of Engineering’s Department of Computer Science and Engineering (CSE) and president of the Holmes Street School Community Neighborhood Association; Virg Bernero, Lansing mayor; T. C. Wallace Jr., superintendent of Lansing Schools; David Hollister, president and CEO of Prima Civitas Foundation; and Teresa Isela VanderSloot, academic adviser in the College of Engineering’s CSE department and president of the ITEC-Lansing Board of Directors. Hollister worked with CSE faculty and staff to assemble the diverse ITEC team. MSU is a founding partner and key supporter of Prima Civitas, which was established in 2006 to diversify mid-Michigan’s economy and promote job growth.
Just a few years ago, MSU’s College of Engineering enjoyed enrollment numbers that included 22 percent women. Today, that number has dropped; fall 2007 enrollment statistics show that 16 percent of the undergraduate students in MSU’s College of Engineering are women. This trend is consistent with the national average of 15 to 18 percent women enrolled in engineering programs.

In response to these disturbing numbers, last fall the college launched a new Women in Engineering (WIE) program.

“Women are very underrepresented in the field of engineering. And the numbers are dropping,” says Judy Cordes, coordinator of the new program in the College of Engineering. “If we don’t recruit women into engineering, we won’t have enough engineers to fill the need in the future.”

Getting more women into engineering is not only a need of the college, it’s a need across the United States in the corporate world and in academia.

Fewer women across the nation are choosing careers in engineering today. At the K–12 level, girls usually don’t consider engineering as a career choice simply because they aren’t familiar with what an engineer really does.

In some engineering disciplines — like chemical engineering and the biomedical area — women are better represented. “But if you look at the classical disciplines of engineering, we have done a lousy job of communicating to women that it’s a good profession,” says Satish Udpa, dean of
the College of Engineering.

According to a 2005 survey report from the Extraordinary Women Engineers Project, a national initiative to encourage girls to consider a career in engineering, high school girls said they are looking for a career that is enjoyable and will make a difference. At the same time, they are seeking a good working environment, good income, and flexibility. An engineering career could provide all that, yet they don’t have an understanding of what engineering is and they don’t see the benefits and rewards of being an engineer because they aren’t typically exposed to engineering in high school.

“Most women are interested in a career or profession where they know they’re going to help people, help the environment, or help society. And they need to be able to see how engineering does that,” says Cordes.

Prior to the launch of Women in Engineering, the only programs for women in the college were limited to organizations like the Society of Women Engineers (SWE) and Women In Computing.

“But our students need more than a SWE student chapter,” Cordes admits.

The college was recently part of a three-year longitudinal study in which 10,000 women participated; a large percentage of those women said that even if they may not ultimately use a program like WIE, the availability of such a program would influence where they choose to go to school.

The mission of WIE is to encourage women of all backgrounds to pursue careers in engineering, and to provide opportunities for academic, personal, and professional growth. The intent of WIE is to reach pre-college students, women who have been admitted to the college, and currently enrolled women.

“It’s about getting women into engineering majors — hopefully at MSU, retaining them through graduation, and getting them working in the field of engineering or into graduate school,” says Cordes.

The program will provide resources and services to help students succeed in academic and professional pursuits, facilitate the development of leadership and career-enhancing skills, offer mentoring and networking opportunities, and provide an overall positive environment for women in the college.

In May 2007, the college conducted an online survey of undergraduate women currently enrolled and found that 96.5 percent of the women said they are comfortable studying here. So that’s a good start. But Cordes says the work doesn’t stop there.

In the first two years, WIE will focus on recruitment and retention. Cordes outlined some possible activities. High school juniors and seniors will be invited to campus for activities designed to teach them about engineering and get them excited about career opportunities. Women admitted to the university as engineering majors will be assigned a currently enrolled woman student as an e-mail buddy to help them connect with the college and feel comfortable, or Michigan residents may be invited to attend a reception in their region of the state to enable them to meet other admitted students. For currently enrolled students, freshmen would be able to participate in a special lunch/seminar aimed at them, for example, or seniors may attend a special session to address graduate school or career-related issues.

While WIE targets women, Cordes points out that the program is open to everyone — men and women. “That’s something we want to make very clear. Everyone is welcome to take advantage of our programs and participate in our activities.”

Corporate support, grant funding, and alumni involvement will all contribute to the success of the program.

“It’s important to reiterate why we need a program like this,” Cordes sums up. “The diminishing number of women choosing engineering as a career is not unique to Michigan State; this is a critical national issue.”

For more information, visit the Web site at www.egr.msu.edu/wie.
The National Science Foundation has awarded a $450,000 grant to a team led by MSU’s College of Engineering to develop undergraduate science and engineering programs that better align the computing education received by undergraduate engineering students with the needs of engineering and technology companies in Michigan.

The team is made up of faculty from MSU, Lansing Community College, Western Michigan University, the Corporation for a Skilled Workforce, and key leaders in the Mid-Michigan Innovation Team. The team will work collaboratively with Michigan
companies to develop a process that will prepare future two-year and four-year graduates to move seamlessly into the workforce.

The goal of this two-year grant is (1) to help students move into the workforce as agile thinkers who can use software and computational and strategic thinking skills to solve problems and (2) to develop a collaborative process that brings higher education and industry together to understand each other’s needs in computing education, and then to identify creative strategies to transform that education.

“Instead of having a disconnect between what undergraduates learn and what industry needs them to know, this project will work to bridge that gap,” says Tom Wolff, associate dean of undergraduate studies at MSU’s College of Engineering.

“It is unusual for higher education and industry to have the opportunity to work in a two-way process like this one,” Wolff adds.

“Having a high-ability workforce that can use computing methodologies to solve today’s challenges is critical to the economic development of Michigan,” says Jon Sticklen, MSU associate professor of computer science and engineering and a member of the team that received the grant. “In the rapidly changing business environment, educators need to stay ahead of changes in the workplace; this grant will help us be ahead of the curve on those needs. It brings the academic faculty and industry leaders of our area to the same table to develop a process that reflects industry needs in engineering curriculum,” adds Sticklen.

“This opportunity to mesh our curriculum goals with the computing needs of industry will aid faculty in preparing students who will be skillful, confident, and adaptable in their problem-solving abilities,” says Louise Paquette, professor of math and science at Lansing Community College.

The overall benefit to mid-Michigan is the economic development this project will spur with the development of diverse, agile engineers and scientists who can provide mid-Michigan with a ready workforce of scientists and engineers.

“We hope to be better poised to attract and retain technology-based firms, including high-tech entrepreneurial ventures, that seek to leverage our state’s rich engineering design and research assets,” said Jeannine La Prad, president of the Corporation for a Skilled Workforce and team member.

In November, the National Science Foundation’s Directorate for Computer and Information Science and Engineering (CISE) completed the process of awarding the grants for its CISE Pathways to Revitalized Undergraduate Computing Education (CPATH) program, an initiative that aims to transform undergraduate computing education on a national scale. More than 25 institutions across the country received grants totaling $6 million.

In addition to Tom Wolff and Jon Sticklen, the MSU co-principal investigators for this grant are Mark Urban-Lurain, Director of Instructional Technology Research and Development, Division of Science and Mathematics Education, College of Natural Science; Daina Briedis, associate professor of chemical engineering and materials science, College of Engineering; and Neeraj Buch, associate professor of civil and environmental engineering. College of Engineering.
The Worm Team. From left to right, back row: Diane Graham (Woodcreek Magnet School engineering teacher), Jillian Joliat (MSU engineering student), Sandra Raymer (Woodcreek Magnet School fifth-grade teacher), Craig Somerton (MSU associate chair and associate professor of mechanical engineering), James Meyerle (Urban Options educational manager), and Matt Langenderfer, Brad Wackerle, and Caitlen Douthitt (MSU engineering students). Woodcreek students, front row, from left to right: Raina Gilbert, Xiyana Reed, Brendan Carter, Isaac Caterino, Austin Merrian, Yosvany Pupo-Rivera.
The Motorola Foundation awarded two Innovation Generation Grants to the college in support of K–12 outreach programs. The grants were established in early 2007 to fund education programs that spark a love of science, technology, engineering, and math in today’s youth.

Two programs in the College of Engineering are supported by the grants: The Youth in Energy and Environment Humanitarian Project received $45,000. This program involves 3rd- to 6th-graders in a design project for the Department of Mechanical Engineering’s capstone course oriented toward energy and the environment. During fall semester 2007, MSU students worked with 5th- and 6th-graders at Lansing’s Woodcreek Magnet School to develop a solar-heated worm bin. For several years, the school had used a worm-based compost approach for disposing of lunch waste. But in winter, the worms go into hibernation and composting ceases. A solar heating system heats the compost pile and keeps the worms active. The Motorola grant provides funding for equipment and supplies, and enabled the class to travel to the MSU campus at the end of the semester to attend the College of Engineering’s Design Day. (See related story in sidebar on page 21.)

Wireless Integrated MicroSystems for Teens (WIMS for Teens) received
$50,000. This two-week summer residential program for 7th- to 9th-graders is designed as a catalyst to further develop students who are already motivated and well prepared to choose careers in science, math, and engineering fields, and specifically in Wireless Integrated MicroSystems. Microsystems are very small information-gathering nodes that gather data from the environment, interpret it, and wirelessly communicate that information in local or global information networks. Microsystems are among the hottest areas in microelectronics today, blending low-power embedded computing with sensing and wireless interfaces to tackle important problems in the health care, energy, and defense fields. The WIMS for Teens course is offered through the NSF-funded Engineering Research Center for Wireless Integrated Micro-Systems (WIMS ERC), a partnership between the University of Michigan, Michigan State University, and Michigan Technological University. More than 1,000 students — many of them girls and minorities — have enrolled in the 40-plus short courses offered since the center was established in September 2000.

“The Motorola Innovation Generation Grants could not have come at a better time,” says Drew Kim, assistant to the dean for recruitment and k–12 outreach in MSU’s College of Engineering. “The Center for Wireless Integrated MicroSystems is actively seeking ways to sustain its current programs. This Motorola grant allows us to double the current capacity and expand our WIMS for Teens program from one week to two weeks. We know that the more time students spend on campus gaining experiential engineering education, the more likely they will be to pursue a career in the math, science, and engineering fields. This grant also allows us to employ more engineering students to mentor these young people and be good role models for them.”

Kensall D. Wise, director of the WIMS ERC and professor of electrical engineering and computer science at the University of Michigan, points out that the center’s NSF funding will expire in 2010. “That’s why it’s critically important that companies like Motorola step up and help keep these programs running.”

According to the U.S. Bureau of Labor Statistics, jobs requiring science, engineering, or technical training will
increase 24 percent to 6.3 million between 2004 and 2014, creating greater demand for critical thinkers fluent in technology.

“It’s a struggle to continue to be technologically competitive in the world today,” says Wise. “All too few of our high school students are going into science and engineering fields. But science and engineering competencies are the key to global competitiveness. So it’s urgent that we communicate excitement about engineering and science to our middle school and high school students in order to maintain our quality of life in the United States.

“This is a battle we can’t afford to lose,” Wise adds.

“Studies have indicated that we can make the most impact at the middle school level if we can partner with corporations like Motorola, collaborate with the science, math, and technology teachers in our schools, and provide hands-on interactive activities to teach math, science, and engineering,” says Kim.

“Future citizens of the world must be aware of the energy and environmental issues that will impact our lives,” adds Craig Somerton, associate professor and associate chair of the Department of Mechanical Engineering at MSU. “The greater the technical awareness of our future citizens, the greater the opportunities will be to solve critical problems.” Somerton’s Youth in Energy and Environment Humanitarian Project will cultivate this technical awareness.

“For a number of years, the thought was that you really build a child’s interest in engineering during middle school,” says Somerton. “But I’ve seen literature now indicating you may need to do it even earlier.”

Eileen Sweeney, director of the Motorola Foundation, says, “Motorola’s partnership with MSU’s College of Engineering will cultivate the next generation of skilled scientists America will need and ultimately help improve our country’s future workforce. All of us at Motorola are advocates for education and applaud the work that MSU is doing to ignite an interest in science, math, and engineering at an early age, particularly for girls and the underserved.”

Since 2000, Motorola Foundation has contributed more than $35 million in grants to a variety of programs that draw students closer to science, technology, engineering, and math.

Last year in the United States, more than 31 million pounds of food waste went into landfills.

For the past several years, Lansing’s Woodcreek Magnet School has used a worm-based compost approach for disposing of lunch waste. But each winter, some of the worms died due to the cold. After studying a unit on solar energy, one of the students came up with the idea of using solar power to heat the worm bin to keep the worms alive and active throughout the winter months.

Enter “The Worm Team.”

Urban Options, an East Lansing community agency that provides energy information, received a grant from the state of Michigan that enabled them to build the solar technology for the worm bin project. With funding provided by a Motorola Foundation Innovation Generation Grant in support of an MSU program called The Youth in Energy and Environment Humanitarian Project, a team of MSU engineering students were called in to work with the Woodcreek students to design the solar-heating apparatus.

“It was exciting to watch the students interact with the MSU engineering team,” says James Meyerle ("The Worm Man"), educational manager for Urban Options. “It was an amazing process of learning, to see the ‘aha!’”

It’s one thing for a teacher to get up in front of a class and “tell” students about renewable resources, says Diane Graham, the engineering teacher at Woodcreek Magnet School, but when the students are able to work with college students on a project like this, the hands-on experience is invaluable.

“This solar worm bin did not happen this year, and it did not just happen overnight; this has been a long process for Woodcreek,” says Synthia Taylor, school principal. “What a perfect example of how the community, our students, our schools, our administration, and our teachers can get together and do some really truly remarkable things.”

A ribbon cutting was held on December 11, 2007, to officially launch the solar-heated worm-based composting project. Lansing Mayor Virg Bernero was one of the distinguished guests on hand for the event. He presented the city’s first-ever Lansing Area GO GREEN! Initiative certificate to Woodcreek Magnet School, recognizing them as a Leader in Environmental Innovation. “You will change the world. You will help make it greener,” Bernero told the group.

From September through December 2007, nearly 400 pounds of food scraps were fed to the worms at Woodcreek.
Five Faculty Honored at MSU Awards Convocation

Five College of Engineering faculty members were recognized at the annual university-wide Awards Convocation February 12 at the Pasant Theatre, Wharton Center: Bruce Dale, Steven Shaw, Ning Xi, Carl Boehlert, and Ramakrishna Mukkamala. They were among 30 members of the campus community honored at the ceremony.

Distinguished Faculty Awards

■ Bruce Dale, professor of chemical engineering and associate director of MSU’s Office of Bio-based Technologies, is an internationally recognized leader in the application of biotechnology principles to produce fuels, chemicals, and other industrial products from renewable plant resources. His pioneering research on the ammonia freeze-explosion process, a leading pretreatment method for lignocellulose, is now being commercialized by a major ethanol producer. As a teacher and mentor, he is sensitive to the human element involved in the application of engineering science and encourages this sensitivity in his students. Dale met with President Bush at the White House in Feb. 2007 as part of a group of experts on the subject of alternative fuels for transportation, then testified in April before the U.S. Senate. He was selected as the 2007 Sterling B. Hendricks Memorial Lecturer by the Agricultural Research Service (ARS), the USDA’s primary research agency, in recognition of his outstanding contributions to the chemical science of agriculture.

■ Steven W. Shaw, professor of mechanical engineering, is recognized internationally for his research in nonlinear dynamics. His eclectic suite of contributions ranges from the extremely theoretical to the pragmatic. His research has made fundamental and original contributions to the understanding of systems undergoing chaotic dynamics and nonlinear vibrations. His seminal works on dynamic vibration absorbers have been translated into contemporary practice in the automobile industry; this environmentally sensitive design protocol could be responsible...
for fuel savings of more than 20 million barrels of oil each year. He is a fellow in the American Society of Mechanical Engineers and received the Society of Automotive Engineers Arch T. Colwell Merit Award (1997). He has delivered several keynote and invited lectures at international conferences, including the 2001 JSME Minisymposium on “Nonlinear Dynamics and Chaos in Mechanical Systems” in Tokyo. He is known for his mentorship of undergraduate and graduate students.

Ning Xi is the John D. Ryder Professor in the Department of Electrical and Computer Engineering and director of the Robotics and Automation Laboratory at MSU. His pioneering work on Internet-based telerobotics has laid the foundation for integrating robotics with information technology. He was named an IEEE fellow in 2007 for his contributions to the field of nanorobotic manipulation and assembly. He received the SPIE Nano Engineering Award (2007) and the Best Paper Award of IEEE Transactions on Automation Science and Engineering (2007). His major research contributions include the development of a nanorobotic manipulation and assembly system that enables a human to visualize and manipulate nano-scale objects in real-time. He is a consummate educator, providing students with an education that extends beyond the curriculum. He has mentored 10 doctoral students who are enjoying successful careers in academia and industry.

**Teacher-Scholar Awards**

- **Carl Boehlert**, associate professor of chemical engineering and materials science, has an international reputation for his work on titanium-based alloys for high-temperature aerospace materials and biomedical implants. Honors include an NSF CAREER Award (2002); a Department of Energy Presidential Early Career Award for Science and Engineering (PECASE) (2002); and the American Institute of Mining, Metallurgical, and Petroleum Engineers “Rossiter W. Raymond Memorial Award” (2003). He is regarded by students as an enthusiastic, approachable, and dedicated teacher who creates a positive learning environment. He relates coursework to real-life situations and involves undergraduates in research projects.

- **Ramakrishna Mukkamala**, assistant professor of electrical and computer engineering, is internationally recognized for his recent innovations in cardiovascular monitoring by signal processing. He received an NSF CAREER Award in March 2007 for his project: “Integrated Research and Education in Cardiovascular Signal Processing for Automated and Less Invasive Monitoring of Central Hemodynamics.” Passionate about teaching, he emphasizes the understanding of major concepts, rather than rote memorization, and provides students with a means to apply theory through real-world computer assignments. Students remark that his highly interactive lectures “provoke critical thought” and “develop the problem solvers and inventors of tomorrow.”

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**U.S. Army Honors Associate Dean Wolff**

**Thomas F. Wolff**, associate dean for undergraduate studies in the College of Engineering, was recognized by the U.S. Army for his work on a report on the performance of levees in Hurricanes Katrina and Rita. He was a member of the Internal Technical Review Team responsible for the nine-volume Interagency Performance Evaluation Team (IPET) report, authored by more than 150 experts affiliated with government agencies, consulting firms, and universities. Wolff received the U.S. Army “Commander’s Award for Public Service” by Major General Don T. Riley, Director of Civil Works, U.S. Army Corps of Engineers. This award is the fourth highest honor that the Army can bestow upon a civilian.
NSF CAREER Awards

■ Tongtong Li, assistant professor of electrical and computer engineering, received an NSF CAREER Award for her project, “On Highly Efficient and Reliable Wireless Networks” through advanced multilayer methodologies. She breaks new ground in developing highly efficient, inherently reliable access control mechanisms and airlink interfaces. By exploiting cryptographic techniques and inherent ambiguity in signal detection over multiple access channels, her design guarantees strong information confidentiality and integrity over wireless networks. By integrating these technological advances into the undergraduate/graduate curricula, she expects to train a highly skilled and diverse workforce in the area of wireless communications and networking.

■ Selin Aviyente, assistant professor of electrical and computer engineering, received an NSF CAREER Award for her project, “Integrated Research and Education in Functional Brain Networks.” To understand the brain as an integrated system, it is crucial to identify dynamic functional networks underlying observed neural activity and quantify these interactions across the brain. This framework is applied to the study of the brain related to psychopathologies including schizophrenia and impulsive control problems. Several educational programs tightly integrated with this research include outreach activities for K–12 female students and developing an undergraduate signal processing course with a focus on neuroscience applications.

ASEE Awards

■ Les Leone, assistant dean for undergraduate studies, received the American Society for Engineering Education’s 2007 Clement J. Freund Award for exerting a profound influence on the betterment of the cooperative education movement. Past honors include: ASEE’s Alvah K. Borman Award for meritorious contributions to engineering cooperative education; two Best Session awards at ASEE’s CIEC conference; the Michigan Council for Cooperative Education’s Don Hunt Service Award for outstanding leadership in Michigan cooperative education; and MSU’s Distinguished Academic Staff Award. He is the instructor of an introductory course that he developed and co-author of the best-selling freshman textbook, Engineering Your Future.

■ Craig Gunn, academic specialist for mechanical engineering, received the Alvah K. Borman Award for meritious contributions to engineering cooperative education; two Best Session awards at ASEE’s CIEC conference; the Michigan Council for Cooperative Education’s Don Hunt Service Award for outstanding leadership in Michigan cooperative education; and MSU’s Distinguished Academic Staff Award. He is the instructor of an introductory course that he developed and co-author of the best-selling freshman textbook, Engineering Your Future.

Fellow Awards

■ Daina Briedis, associate professor of chemical engineering and materials science, was elected a fellow of ABET, Inc., the organization responsible for the accreditation of educational programs in applied science, computing, engineering, and technology. She received the 1985 MSU Teacher-Scholar Award and the State of Michigan’s 1990 Teaching Excellence Award, and was elected Outstanding Teacher four times by her students. She coordinates quality improvement efforts in MSU’s chemical engineering program. Recently Briedis has been an American Institute of Chemical Engineers (AIChE) Representative Director on the ABET Board of Conference for Industry and Education Collaboration for his efforts in promoting cooperative education in engineering. A full-time academic specialist, he created and maintains a communication program for the Department of Mechanical Engineering. He co-authored a textbook, Engineering Your Future, first published in 1999, which has been declared a best seller. He has served as an editor for the newsletters of three separate state, regional, and national cooperative education organizations and published over 60 papers on engineering communication.
Directors. She has published a number of articles on accreditation, curriculum redesign, assessment, and quality improvement and has conducted multiple workshops on assessment.

■ Eldon Case, professor of chemical engineering and materials science, was named a fellow of ASM International, a professional materials society with more than 37,000 members, in recognition of his contributions in the area of microcracking and fatigue behavior of structural ceramics and bioceramics. Case is also a Fellow of the American Ceramic Society and is associate editor of the International Journal of Applied Ceramic Technology. He received the MSU Teacher-Scholar Award in 1989 and has won the College of Engineering’s Withrow Teaching Excellence Award four times (1993, 1995, 1998, and 2006).

■ Venkatesh Kodur, professor of civil and environmental engineering, was elected a 2007 fellow of the American Concrete Institute (ACI). As a member of the 2001 ASCE/FEMA “Building Performance Assessment Team” established to study the World Trade Center collapse, he helped generate an extensive report for U.S. congressional committees. He has published over 175 technical papers on fire resistance of structural members and contributed significantly to professional organizations including: ASCE, ACI/TMS, and the SFPE Standards Committee. He is associate editor of the ASCE Journal of Structural Engineering, has delivered invited keynote presentations at numerous international conferences, and won the NATO Award for Collaborative Research.

■ Shu-Guang Li, professor of civil and environmental engineering, was elected a 2007 fellow of the American Society of Civil Engineers (ASCE). His creative integration of scientific hydrology, applied mathematics, computational innovations, new data sources, and information technologies has significantly advanced the ability of the hydrological community to model complex groundwater systems and expanded the utility of modeling as a tool for research. His “Interactive Ground Water (IGW)” software — an internationally acclaimed computational steering environment for unified deterministic and stochastic modeling — was selected for the American Society of Engineering Education’s NSF Showcase in 2002. He received the 2002 Premier Award from the NSF’s National Engineering Education Delivery System Organization. He is the author of a high impact, high-resolution visualization library for stochastic subsurface hydrology. He is also an associate editor for three journals, including the ASCE Journal of Hydrologic Engineering, and was recognized as the “Associate Editor’s Choice” by NSF’s National Science Digital Library. He is also a fellow of the Geological Society of America.

■ Lalita Udpa, professor of electrical and computer engineering, was selected as a 2008 fellow of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) for her contributions to forward and inverse electromagnetic nondestructive evaluation (NDE) methodologies. She is also a fellow of the American Society for Nondestructive Testing (ASNT). Her group’s modules, integrated with commercial systems, have been employed by Honeywell for engine disk inspection in commercial aircraft; by the Electric Power Research Institute for analyzing eddy current signals from steam generator tubes in nuclear power plants; and by the Navy for analysis of signals from the inspection of submarine hull welds. Boeing uses her three-dimensional computational models based on finite element analysis for optimizing the design of GMR sensors and systems for detecting small defects embedded in multilayer structures. Her research team received the Federal Aviation Administration’s “Better Way” award in 2005 for their “Turbo Magneto-Optic Imaging for Inspection of Alodine Fasteners.”

Compiled by Lynn Anderson
Design Day
A portable audio-visual book reader for individuals with disabilities, vaccine cooling technology for use in remote regions, and an automotive warning system that would alert drivers to obstacles in the road, icy conditions, or heavy traffic were among the innovations presented during the College of Engineering Design Day in December 2007.

Held at the end of fall and spring semesters, Design Day showcases the accomplishments of the next generation of engineering designers, innovators, and entrepreneurs.

On the first day of the two-day event, College of Engineering freshmen presented their cornerstone projects through prototypes and poster presentations. Also, middle school students from around Michigan participated in hands-on learning activities as part of the Dart Foundation Day of Innovation & Creativity for students in 7th--12th grades, which has become a regular part of Design Day.

On the second day, teams of MSU engineering students presented projects requiring the integration of both engineering theory and practice. The headliners of this event were graduating seniors from the Department of Computer Science and Engineering, the Department of Electrical and Computer Engineering, and the Department of Mechanical Engineering. Projects were on display during the event and individual teams delivered 30-minute presentations and demonstrations. These capstone design projects were the result of collaboration with more than 24 industrial sponsors on 33 projects. Sponsors included Auto-Owners Insurance, Chrysler, Consumers Energy, Ford, General Motors, IBM, Lear Corp., Motorola, NASA, Shell Oil Co., Sircon, TechSmith, and Whirlpool Corp.

High school students had a chance to interact with MSU students and faculty by judging innovative machines created by engineering juniors, as well as participating in design activities that allowed them to explore engineering principles.

For more details, view the most recent Design Day program booklet at www.egr.msu.edu/egr/publications/today/articles/20071206.DesignDay.pdf

MSU Formula Racing Team at Auto Show
The MSU Formula Racing Team showcased its award-winning racecars at the 2008 North American International Auto Show (NAIAS) at Cobo Hall in Detroit in January.
The team displayed racecar 41 (2006) and racecar 9 (2007). Both cars placed in the top 10 at Formula SAE and Formula SAE West competitions.

Formula SAE is a collegiate competition series sanctioned by the Society of Automotive Engineers. It hosts more than 300 teams in nine competitions around the world annually. Students are challenged to design, manufacture, and market a small open-wheel racecar for a specific target market.

“MSU’s approach to the competition is similar to the philosophies of many original equipment manufacturers when building concept and production vehicles,” says Adam Zemke, operations consultant and manager for the MSU team. “The MSU cars are excellent showpieces of how collegiate education can be applied directly to the multitude of vehicles at NAIAS.”

The MSU team also presented its Go Clean E85 development campaign during the show. Beginning with the 2009 MSU Formula SAE car, the team intends for all future MSU racecars to be powered by E85 ethanol-blended fuel.

“The team plans to highlight the multitude of performance benefits that come with practicing environmental responsibility,” Zemke says. “The powertrain system is currently in research and development to support this change without negatively impacting vehicle performance.”

The team is now busy building car #51 and will participate in three competitions this year. Formula SAE VIR, the newest of the FSAE-series competitions in the United States, will host 50 teams at Virginia International Raceway April 23–26, 2008. Formula SAE will be held at Michigan International Speedway from May 14–18, 2008. FSAE West, limited to 80 teams, will be held from June 25–28, 2008 at California Speedway.

The MSU Formula Racing Team is a student-run organization. To learn more about the organization or its initiatives, visit the Web at www.msuformularacing.com.

Baja Team Gears Up for 2008 Season

The 2007 season was one of the best in history for the MSU Baja Race Team. For the first time, the team competed with two cars in all three Society of Automotive Engineering (SAE)–sanctioned events, one of which requires the cars to be amphibious. The first race of 2007 was hosted by the University of Central Florida and was held in Rock Ridge, Florida. Out of 75 registered teams, MSU placed 9th overall. The second race was hosted by the South Dakota School of Mines and Technology in Rapid City, South Dakota. Even after a quick repair during the endurance race, the team managed to place 21st out of 100 registered teams. The final SAE-sanctioned race of the year was the Baja World Challenge, with 125 teams competing from around the world. Rochester Institute of Technology hosted the event in Rochester, New York, where the MSU team landed a 4th place overall finish. The team
also traveled to Marysville, Ohio, in September to compete in the Dayton SAE Invitational where they placed 2nd among the 25 competing teams.

The MSU Baja team is always looking to try new ideas and be leaders in innovation in the SAE Baja competitions. In this spirit, the team is designing the 2008 car with a new approach. The vehicle’s chassis was modified slightly, which makes it stronger, while allowing room to run the team’s first-ever four-wheel drive system. Incorporated into the new car will also be a first-ever hydrostatic transmission and completely redesigned braking system. The team is spending many long weekends and nights preparing for the 2008 season, but recently took a weekend off to travel to Michigan Technological University in Houghton, Michigan, with three cars for the Winter Baja invitational.

The MSU Baja Team’s 2008 competition dates include May 1–3 at Tennessee Tech University; May 29–31 at Caterpillar’s Edwards Demonstration Center, Edwards, Illinois; and June 11–14 at Ecole de Technologie Superieure, Montreal, Quebec, Canada.

Keep up with MSU Baja news and competition results by visiting the Web site at www.egr.msu.edu/baja.

Team Will Put Solar Car to the Test

Summers are a time for engineering students to test new skills, and 12 students from the MSU College of Engineering will have an opportunity to try something really exceptional. They will drive 2,400 miles across the United States and Canada in a car that they built — a car that runs without a single drop of gas. The car is named “Brasidius,” after a famous Spartan general. Brasidius, with the help of MSU’s Solar Car Team, is on track to join 26 other solar cars and student teams in the 2008 North American Solar Challenge this summer.

The Challenge is a nine-day solar car endurance race that begins July 13 in Dallas, Texas, and finishes in Calgary, Alberta. During the race, each UFO-like car will be driven in ordinary traffic at highway speeds. It will be propelled solely by renewable solar energy collected from its eight square meters of solar panels.

There have been many advances in solar racing — commonly called “raycing” — since its beginnings about 20 years ago. Emerging from a hodgepodge of hobbyists and environmental enthusiasts, it has grown into a high-tech competition driving the cutting edge of solar technology and automobile efficiency. MSU’s solar team is relatively new and will be up against teams with decades of experience. However, the 12-member team believes it will be an exciting competition and a good test of their vehicle.

If the team is successful in the North American Solar Challenge, they would like to take Brasidius to the World Solar Challenge in Australia. No matter what the outcome, the team will use data from the race to work on “Brasidius II.” Helping coordinate all of these activities is Norbert Mueller, assistant professor in the Department of Mechanical Engineering, who serves as the team adviser.

To find out more about the solar car and to get the latest news about the car and events, visit the team’s Web site at www.egr.msu.edu/solar.
Alum Spearheads Alliance to Improve Health Care in Urban Communities

College of Engineering alumnus John J. Webb (BS ’79 mechanical engineering), Aetna’s senior vice president for government/public sector and business alliances, has spearheaded a partnership with Magic Johnson Enterprises (MJE) to improve health care and reduce the number of uninsured, particularly among the employees of entrepreneurial and urban business owners.

“Over a two-year period, I led a team that worked to identify the best partner for Aetna in our quest to impact health care at the street level,” says Webb. “Aetna has a great message, yet we needed a special way to deliver it. Through our research, we began to see that our company and MJE had complementary strengths, yet similar values. Ultimately, we found that Magic’s business endeavors made him the ideal messenger for the diverse communities that we serve.”

“This relationship will combine Aetna’s strengths as an experienced and innovative health care company with Magic Johnson Enterprises’ knowledge of diverse communities in key urban areas,” said Ronald A. Williams, Aetna chairman and CEO, during an event held at the Magic Johnson Theater in Harlem to announce the alliance. “We want to improve racial and ethnic equality in health care.”

“Our hope is that through this alliance we can engage people and businesses at the community level to take charge of their health care,” says Earvin “Magic” Johnson, chairman and CEO of Magic Johnson Enterprises. The goal of this multiyear partnership is to empower individuals to ask questions, seek answers, and create a demand for high-quality health care that respects their cultural preferences.

“`To solve the dilemma of health care in America,” says Webb, “We need to apply creativity and non-traditional means. The demographics and challenges are evolving. Therefore, it takes our best problem-solving skills matched with technology and an understanding of the human element to address the needs as we move forward.”

U.S. Representative Charles B. Rangel, chairman of the House Ways and Means Committee, said of the partnership, “Taking concrete steps to provide affordable health care coverage is key to moving our country forward and reducing the number of uninsured, many of whom are disproportionately represented in low-income urban communities.”

Aetna is one of the nation’s leading diversified health care benefits companies, serving approximately 36.4 million people with information and resources to help them make better informed decisions about their health care. Visit their Web site at www.aetna.com.

Magic Johnson Enterprises, formed in 1987, serves as a catalyst for community and economic empowerment by making available high-quality entertainment products and services that answer the demands of ethnically diverse urban communities. Learn more at www.magicjohnsonenterprises.com/.

For updates on how Aetna and Magic Johnson Enterprises are working together to address the pressing health issues of urban areas, visit www.communityvitality.com.
“Hot” Jobs for Engineering Grads

Microsoft has hot jobs to offer engineering graduates. And they have come up with a unique way to recruit students.

Over the years, Microsoft has come to campuses for some intense interviews and recruiting, but they want students to know that interviewing with them is a great thing and that there’s another side to Microsoft. They wanted to do something that demonstrated that flair, so they invented the Job-cuzzi. Mock job interviews are conducted in the Job-cuzzi by Fred, the mock interviewer. He asks incredibly difficult questions, like “What is your name?” and “Do you like chocolate?” He also entices people walking by, with a: “Don’t let the future scare you. Soak in it.”

The Job-cuzzi is part of Microsoft’s new recruiting campaign “to entice the most loveable of geniuses to come interview” with them. To learn more about the campaign, visit their new minisite at hey-genius.com.