Postcards from Russia
Engineering Students Study Abroad in Volgograd
Where in the world do you find our faculty, staff, and alums? Everywhere.

The College of Engineering has connections all over the world, including collaborations and partnerships with international corporations and universities. Our researchers work in Pakistan, Egypt, China, Japan, Russia, Mexico, Portugal, Germany, and many other places. Successful alums are all around the globe. Our students are involved in international competitions. They study abroad in programs in England, Germany, China, Singapore, and Thailand—and with one of the nation’s largest study abroad programs, in Volograd, Russia. We have a new program in Australia starting this fall. And in the future, our students may have a chance to study Arctic technology through the University Centre on Svalbard (UNIS), located on a Norwegian island near the North Pole.

At the end of April, I had the opportunity of a lifetime—I participated in a NASA-sponsored expedition to the North Pole. FRIGID 2003 was a collaboration between schools/universities and NASA scientists. The group included about 20 scientists, engineers, college students, and schoolteachers from several universities and schools, including Bay Mills Community College in Brimley, Michigan, and Radford University in Virginia. We were measuring sea ice and snow depth and studying aerosols—liquid or solid materials suspended in the atmosphere. The calibration information that we provided will enable NASA scientists to now monitor snow and ice depth from airplanes. In other words, the pilots won’t get as cold as we did!

While we were there, the temperatures ranged from a “warm” –15°F to a cold –40°F! The live Webcast from the North Pole, which had been scheduled for April 21, was not completely transmitted due to technical problems; the extreme temperatures played havoc with our equipment. But a live Webcast on April 24 allowed us to connect with our colleagues and friends back in the United States. Both Webcasts have been archived in their entirety; to view them, to see photos, or for more information about FRIGID 2003, go to http://spioffice.gsfc.nasa.gov/frigid2003/

One goal of the trip was to encourage more students to choose careers in engineering, technology, math, and science. Schoolteachers, especially those who participated in this experience, play an incredibly important role in providing our nation with a science-literate public.

K–12 science and technology literacy should be a high priority for all of us in the engineering profession. It is up to my colleagues and me to nurture the next generation of scientists and engineers. In the United States, we’ve been one of the central countries for innovation and creativity for most of the last 150 years. This is the underpinning of a strong economy. If we’re going to sustain it, we must have a population of people who really understand basic principles of science and math.

At the close of my Arctic trip, I met with the dean and faculty of UNIS to explore potential opportunities for our students to participate in a study abroad experience in the Arctic. If such a program becomes a reality, the College of Engineering will truly have connections “to the ends of the earth.”

MSU is a global university, and we are a global college, committed to providing our students with real-world, international experiences. As a result, the College of Engineering continues to produce international engineers—engineers who are good to go . . . anywhere in the world.

Jamie Fouke
College of Engineering faculty are involved in teaching and research not only in East Lansing, not only in the United States, but around the globe. Increasingly, faculty are reaching out and connecting with international colleagues, institutes, and industries. They are involved in research collaborations and projects in China, Japan, Russia, Mexico, Portugal, Pakistan, Germany, and numerous other places. They are receiving international honors and special recognition for their work. Following is just a sampling—not an all-inclusive list—of the diverse activities in which the College of Engineering is involved.

Agricultural Engineering/Biosystems Engineering

Ajit Srivastava, Renfu Lu—Presenters at Conferences in China

Ajit Srivastava, chairperson of the Department of Agricultural Engineering, was the keynote speaker in November 2002 in China at the Seventh International Agricultural Engineering Conference, sponsored by the Asian Association for Agricultural Engineering.

Renfu Lu, adjunct professor in the Department of Agricultural Engineering and an Agricultural Research Service engineer with the U.S. Department of Agriculture, also chaired a general session and presented a paper.

Srivastava also presented a paper at the China Agricultural Engineering Development Strategic Planning Forum at Zheijiang University. This forum was attended by deans and department heads of 15 major agricultural universities in China.

As a result of the trip, a memorandum of intent has been signed for future collaboration between MSU and two universities—Zheijiang University and Southern Yangtze University.

Chemical Engineering & Materials Science

Lawrence T. Drzal Elected to European Academy of Sciences

Lawrence T. Drzal, University Distinguished Professor of chemical engineering and materials science, was recently elected to the European Academy of Sciences. Members are chosen on the basis of distinguished and unique contributions to science and technology, and the promotion of international scientific and technological collaboration. Drzal is recognized for his lasting contributions to materials science and fundamental developments in the field of sur-
face functionality of polymers and fibers.

The Academy, located in Brussels, Belgium, has about 500 members worldwide. Academy membership is considered one of the highest honors attributed to a researcher or engineer.

CIVIL & ENVIRONMENTAL ENGINEERING

Bill Taylor Takes Lead in Development of National University of Sciences and Technology in Pakistan

Bill Taylor, a professor in the Department of Civil & Environmental Engineering, has played a significant role in the development of the National University of Sciences & Technology (NUST), now recognized as the top technical university in Pakistan.

Since 1986, Taylor and more than 20 faculty from several departments within the College of Engineering have traveled to Pakistan to provide technical training, to assist in the design and development of laboratories, and to provide advice on the design of the entrance exam, course syllabi, library holdings, and computer networks. With Taylor’s help, the national government in Pakistan created NUST to meet their needs for professional scientists and engineers. NUST brought together three existing engineering colleges and added additional colleges in management science, information technology, and environmental engineering. Many of today’s NUST faculty have received their master’s or doctorate degrees from MSU. In 1990, a split M.S. degree program was initiated, and recently a split Ph.D. program began. Students are able to meet some of their requirements at NUST, and then join MSU to complete their degrees. To date, more than 100 students from NUST have earned their degrees under this program, and 10 more students are expected to arrive at MSU this August.

For his efforts as the lead faculty member, and for his technical contributions to the engineering program at NUST, Taylor received the Sitara-I-Imtiaz Award from the president of Pakistan in 1999, in recognition of academic distinction.

In addition, in 1994, Taylor and Tom Voice, also a professor in the Department of Civil & Environmental Engineering, began development of the Institute of Environmental Science & Engineering, a new institution within NUST. This unique program—both a research institute and a degree-granting division of NUST—was inaugurated in 1997.

Tom Voice Provides Training in Environmental Health Issues

Tom Voice, professor of civil and environmental engineering, recently assumed the directorship of the program Training and Research in Environmental Health—The Balkans (TREHB). The project, funded by the Fogarty International Center of the National Institutes of Health, began in 1996 and is coordinated through the Institute for International Health (IIH) at MSU. Dave Long, professor of geological sciences, is co-director, and 54 MSU faculty and affiliates have been involved to date.

IIH, established in January 1987, is a focal point at MSU for facilitating faculty and student research and academic interests in international health projects here and overseas. The IIH works through several colleges on campus, including the College of Human Medicine, the College of Osteopathic
Medicine, the College of Social Science, and the College of Veterinary Medicine.

TREHB’s goal is to provide training and develop research capabilities in the Balkan countries, with a current focus on Bulgaria, Serbia, and Montenegro (of the former Yugoslavia), and Romania. Activities include short courses, scholar exchange programs, graduate fellowships for Balkan students, and collaborative research. The program targets junior and mid-career professionals in the areas of environmental science and engineering, the medical and health sciences, and disciplines related to environmental health policy.

“This is an opportunity for us to collaborate with the next generation of decision makers as these countries undergo radical changes in their approach to environmental health. We are all learning from each other, and are finding many opportunities for innovating science and policy,” says Voice, project director since January 2003.

Syed Hashsham Involved in Collaborative Projects in Egypt and Belgium

Syed Hashsham, assistant professor in the Department of Civil and Environmental Engineering and MSU’s Center for Microbial Ecology, was awarded a three-year collaborative NSF grant from the Office of International Science and Engineering. Hashsham is working with Essam Zaki, a molecular biologist at Mubarak City for Scientific Research and Technology Applications—a large-scale research and development complex in Borg Al-Arab, Egypt.

The project focuses on studying the differences between the microbial diversity in heavily exploited soil such as the Nile Delta versus a more pristine environment.

In other collaborations, Hashsham is working with Willy Verstraete, head of the Department of Biochemical and Microbial Technology, Faculty of Agricultural and Applied Biological Sciences, Ghent University, Belgium. Hashsham’s interest is development of environmental engineering applications of DNA chips. He is working with Verstraete to develop DNA chips to monitor the most useful and most problematic microorganisms in the wastewater industry.

Hashsham also collaborates with visiting scholars from the Netherlands and Japan. The Department of Civil and Environmental Engineering sponsored Marjolijn Tijdens, a visitor from the Netherlands, while she completed a project in Hashsham’s lab. She has now joined the Department of Microbial Ecology at The Netherlands Institute of Ecology (NIOO-KNAW). The NIOO-KNAW is the largest research institute of the Royal Netherlands Academy of Arts and Sciences (KNAW).

Yoshinobu Matsumura, a faculty member in the Department of Biotechnology, Faculty of Engineering, Kansai University, Japan, is also working with Hashsham and James Tiedje, University Distinguished Professor of crop and soil sciences at MSU, director of the Center for Microbial Ecology, and newly elected member of the National Academy of Sciences. They are working to develop, first, a database of antibiotic-resistant genes and then a DNA chip to detect those genes in the environment.

Wayne Dyksen

CSE Chairperson Adviser to a Sheikh

Wayne Dyksen, chairperson of the Department of Computer Science and Engineering, serves on the advisory board for the College of Information Technology of the United Arab Emirates University. Founded in 2000, the college offers seven innovative degree programs in information technology including computer science, information systems, software engineering, network engineering, and information security. A new 330,000-square-foot facility under construction will be both the physical and symbolic focal point for an entire new campus.

The advisory board reports directly to H. E. Sheikh Nahayan Mabarak Al Nahayan, Minister of Higher Education and Scientific Research and Chancellor of the United Arab Emirates University. Other board members are from the University of Michigan, George Mason University, the University of Colorado, the New Jersey Institute of Technology, and the University of South Alabama.
John Weng Participates in Oxford’s Physical Sciences Workshop

John Weng, professor of computer science and engineering, was invited by the United Kingdom’s Foresight Program to participate in the Physical Sciences Workshop of the Cognitive Systems Project held at Oxford this past spring. The goal of the program: “to produce challenging visions of the future on which government, business, and academia should be inspired to act in their strategic planning.” Other U.S. invitees included Terrence Sejnowski (Salk Institute for Biological Studies), Tom Mitchell (Carnegie Mellon University), Rodney Brooks and Alex (Sandy) Pentland (Massachusetts Institute of Technology), and Michael Jordan (University of California at Berkeley).

Anil K. Jain Collaborates with Instituto Superior Tecnico, Lisbon, Portugal

Anil K. Jain, University Distinguished Professor in the Department of Computer Science and Engineering, is collaborating with a research group at Instituto Superior Tecnico (the school of engineering of the Technical University of Lisbon, Portugal). The researchers are Ana Fred, Mario Figueiredo, and Jose Leitao.

Jain and this Communication Theory and Pattern Recognition group are working in the fields of pattern recognition and image analysis. Their collaboration has resulted in some significant publications, namely four journal papers (all in the IEEE Transactions), ten conference papers, and a special issue of the journal Pattern Recognition.

From 1996–97, Jain and two of the researchers started a NATO collaborative research grant on medical image analysis. Jain then served as a consultant on a research project devoted to the analysis of sleep electroencephalographic signals, which was funded by the Portuguese Foundation for Science and Technology.

Jain and the group of researchers also collaborated in the organization of two international workshops in 2001: “Energy Minimization Methods in Computer Vision and Pattern Recognition,” held in France; and “Pattern Recognition in Information Systems,” held in Portugal.

Erik Goodman Continues Multifaceted International Work

Erik Goodman, a professor in the Department of Electrical and Computer Engineering, as well as a professor of mechanical engineering, is involved in a multitude of international projects.

Goodman’s area of expertise is evolutionary computing, an area in which he has worked for more than 30 years, with a particular emphasis on genetic algorithms and genetic programming. Currently, he is chair of the executive board of the International Society for Genetic and Evolutionary Computation, the largest professional society devoted to the study of evolutionary computation. “Evolutionary algorithms take their inspiration from the natural process of evolution, but are commonly used for ‘evolving’ solutions to difficult problems in such areas as engineering design, scheduling, VLSI...
placement, and routing,” Goodman says.

Since 1993, Goodman has been director of the Chinese/American Consortium for Genetic Algorithm Research. He is responsible for forming research collaborations with three universities in China and the Chinese Academy of Sciences. He developed and provided first releases of GALOPPS, a genetic algorithms toolkit, to faculty and students in China. Further collaborations with additional Chinese universities are underway, and include lecture visits, introduction of new software, and joint research.

He was named advisory professor at East China Normal University (Shanghai), on January 1, 2002. In December 2002, he was appointed advisory professor at Shanghai Tongji University, and lectured at Nanjing University, one of China’s oldest and finest universities. He has given formal lectures and informal seminars at each university, and advised faculty and graduate students on several projects sponsored by the National Natural Science Foundation of China, one of which is researching improved methods for detecting cardiac irregularities using microwave devices and genetic algorithms.

Goodman is also co-director of the Genetic Algorithms Research and Applications Group (GARAGe) at MSU. Early in 1993, the GARAGe established a sister center, the AI/CAD center at Moscow State Technical University (Bauman). From 1993–98, he co-founded and directed the Russian/American Joint Education/Research Consortium for Intelligent CAD/CAM/CAE and Genetic Algorithms (ICAD/GA)—a consortium of four Russian universities working with MSU’s GARAGe to engage in collaborative research in theory of genetic algorithms and application of genetic algorithms to problems in intelligent design and manufacturing. Four collaborative projects with Russian investigators have received low-level funding for research initiation from U.S. industry, administered through the International Science Foundation.

In 2000, Goodman began collaborations with Oliver Chikumbo (Bureau of Rural Services, Australian Government) on using genetic algorithms for forest stand management. That work is ongoing.

MECHANICAL ENGINEERING

NSF Program Continues in Mexico

Under the National Science Foundation Partnership for Innovation, five College of Engineering professors are working with the University of Texas Pan American and the Instituto Tecnologico de Estudios Superiores de Monterrey (ITESM)—commonly known as Monterrey Tech—in Monterrey, Mexico.

Their joint project, entitled Rapid Product Development in International Production, is entering its third year. Engineering professors involved are John Lloyd, University Distinguished Professor of mechanical engineering; Patrick Kwon, assistant professor of mechanical engineering; Farhang Pourboghrat, assistant professor of mechanical engineering; Erik Goodman, a professor in the Department of Electrical and Computer Engineering, as well as a professor of mechanical engineering; and Moon-Jung Chung, professor of computer science and engineering.

Program goals are to provide a talent pool to assist in technology transfer from academia to industry; advance knowledge in rapid product design, development, and maintenance; further develop the virtual design team concept for the Maquiladora Environment where products are designed in the upper Midwest and manufactured in Mexico; promote economic development in the Lower Rio Grande Valley region of Texas; increase
the number of minority students completing degrees in engineering, and provide a more global perspective in the engineering classroom.

The partnership now consists of the three academic institutions, one economic development organization, and five industry partners. Students from all three academic institutions are working together on virtual design teams on industry projects presented to them from Automation Tooling Systems, Alpine Electronics, Bissell, and TRW. Student internships are being promoted as well.

**John Lloyd Lectures to Russian Academy of Sciences**

John Lloyd, University Distinguished Professor of mechanical engineering, recently delivered a lecture entitled “Boling Heat Transfer on Structured Thin Films in the Presence of Electric Fields” to the Russian Academy of Sciences. The lecture was based on a research project funded under the Civilian Research and Development Foundation. The work is being done by Lloyd in cooperation with Academicians S. P. Malyshenko and A. I. Leontiev of the Russian Academy of Sciences. Under the grant, a student from the Russian Academy will visit MSU in October 2003 to carry out part of his Ph.D. thesis research.

Lloyd has also been elected a Corresponding Member of the European Academy of Sciences. Located in Brussels, Belgium, the Academy has about 500 members worldwide. Its major objective is to establish efficient collaboration among scientists, researchers, educators, engineers, and public authorities internationally. The organization promotes interaction between basic and applied research and eases transfer of knowledge to end-users. It contributes toward the development of international policies in science and technology and facilitates the creation of a critical mass needed for solving the most important scientific problems.

**Engineering Program Adds Industry Research Experience to Study Abroad**

MSU’s Department of Mechanical Engineering is teaming up with ZF Industries, a German-based automotive supplier, to offer engineering students the opportunity to study, conduct research, and work in Germany as part of a new program—ZF Scholars. Rheinisch-Westfalische Technische Hochschule Aachen (RWTH), the premier technical university in Germany, will host the students.

This new program is one facet of the 16-week study abroad program in Aachen, Germany, which has been ongoing since 1983. Each January through April, anywhere from 9 to 23 students participate in the study abroad program. While in Aachen, they earn five credits of independent study (ME 490) for conducting research alongside German researchers; three credits for ME 410, a heat transfer course; and four credits for a German language course.

Students in the study abroad program are expected to have completed at least German 101 prior to going abroad in spring 2004; the new ZF Scholars program will provide tuition support for German language coursework at MSU.

Nine students were enrolled in the 2003 Aachen program. John Foss, professor of mechanical engineering and the director of the program, anticipates ten students participating in 2004.

Of these ten students expected to sign up for the Aachen study abroad program, two will be selected for the ZF Scholars program, which includes:

- a summer research position at the ZF facility in Northville, Michigan, summer 2003
- ZF tuition support for German language instruction at MSU, fall 2003
- ZF participation in a one-credit preparatory course at MSU, fall 2003
- placement in the RWTH program, spring 2004
- summer work with ZF in one of their German or North American facilities, summer 2004

The students and the participating industries benefit from such a program, says Foss. Students get research and work experience abroad, while German companies gain a pool of trained potential employees from which to choose—individuals who are already familiar with their language, their country, and their firms.

Foss hopes that the pioneering scholarship support provided by ZF industries will stimulate similar contributions from other U.S. or German companies who share ZF’s strong interests in developing U.S. engineering graduates with cultural and language experiences. He can be contacted at foss@egr.msu.edu, or (517) 355-3337.

—Laura Luptowski Seeley
Diamonds are a girl’s best friend,” sang Carol Channing in a 1949 Broadway musical. The College of Engineering has joined forces with a new “friend,” Fraunhofer Gesellschaft, a major research organization based in Germany, to establish the Fraunhofer Center for Coatings and Laser Applications (CCL) at Michigan State University. The new center consists of two divisions: Coating Technology located at the East Lansing MSU campus and Laser Application located in Plymouth, Michigan.

The alliance was formalized in December 2002, with Fraunhofer giving MSU an $8.3 million award to establish the new center. “Part of the reason Fraunhofer has U.S. centers is for the exchange of ideas, people, and technologies,” says Jes Asmussen, holder of the Richard M. Hong Endowed Chair in Electrical Engineering at MSU and director of the new CCL. “So we collaborate with our German ‘parent’ institution in Dresden, Germany, through joint projects, student exchanges, and having scientists from their lab come over and work in ours.”

Fraunhofer and MSU will work together to develop technologies in three areas: carbon-based thin films, functional coatings, and laser processing. Research fields include: laser-beam welding and cutting, plasma-assisted deposition of thick and thin films, the generation of freestanding diamond, and surface treatments.

The initial emphasis of the MSU CCL is on hard, optically transparent, and chemically inert coatings, especially diamond and diamond-like coatings. These coatings are used on cutting surfaces and surfaces that need protection against heavy wear or corrosion, in fuel cell and optical applications, and in bioengineered coatings and surface treatments. The center can provide coating services for customers or build machines for customers to use on-site at their own locations.

The Fraunhofer Society, founded in 1949, is Europe’s largest and most renowned organization in applied and technical research, with more than 12,500 employees (the majority being scientists and engineers) working on customer solutions in 59 institutes, and more than $1.1 billion in revenues. Its subsidiary, Fraunhofer USA, incorporated in 1994, is a nonprofit company with headquarters in Plymouth, Michigan; its six centers throughout the United States perform contract research for government and industry customers, with 95 full-time employees and $10 million in revenues. The organization was named in honor of Joseph von Fraunhofer (1787–1826), the successful Munich researcher, inventor, and entrepreneur.

The Fraunhofer tradition is to partner each research institute with a major research university and to align the institute closely with local industries. All Fraunhofer centers work actively toward transferring basic research to industry. The U.S. government provides generous funding for basic research, and U.S. industries put a lot of money into final production of a mature project. But in the United States there is typically minimal support for the intermediate steps by which new technology is transferred from research to mature industrial production. The Fraunhofer philosophy fills this gap. Fraunhofer supports all steps in the process equally and tends to include industry in the planning from the beginning, searching out their needs and adjusting research toward meeting those needs.

“It’s not enough just to do research at
“Fraunhofer,” says Asmussen. “Fraunhofer faculty and staff have to be entrepreneurial, raising financial support for research and development projects and pushing toward technology transfer. It provides a service to the state and society as a whole.”

Like all Fraunhofer centers, the MSU CCL receives base funding from the Fraunhofer Society. The CCL is expected to attract about 30 percent of its support from government entities and 40 percent from industry. The center has already begun interacting with some Michigan industries and has received some funding from the State of Michigan.

The CCL staff, the staff in Dresden, and MSU faculty will collaborate to determine the technology areas with the greatest commercial potential, develop funding from public and private sources, develop commercialization strategies for promising technologies with an emphasis on the State of Michigan, and create a strong industry network to support the commercialization goals of the CCL. The long-term intent is to stimulate the growth of MSU research activities and Michigan-based industry in the CCL’s areas of technical expertise.

The CCL is seeking to involve MSU faculty and students from the Colleges of Engineering, Natural Science, and Human Medicine in research and entrepreneurial activities and hopes to develop strong relationships with 10 to 20 MSU faculty members over the next two years.

“It’s an interdisciplinary research operation,” says Asmussen, “and that’s important, because that’s where most of the advances in technology are made these days—bringiing together groups of scientists, engineers, and industries, combining many different disciplines to solve particular problems.”

COATINGS . . .

- Protect cutting edges
- Protect surfaces from wear and corrosion
- Reduce friction
- Control interactions with electromagnetic energy
- Make surfaces compatible for bioengineering applications
- Add decorative elements

Products and Services Available or Under Development at the CCL

- Creation and application of coatings—carbon based (from graphite to diamond) and ceramic, with thicknesses ranging from a few nanometers to tens of microns—including multilayer coatings, with each layer being a different material
- Freestanding high-powered laser lenses, for which diamond is the superior material
- Diamond optical components
- Diamond foils for ion accelerator applications
- Nondestructive film testing (to ensure the integrity or determine the properties of coatings)
- High-speed laser cutting, including intricate patterns using robotic control
- Laser welding
- Laser cladding
- Laser hybrid welding
- Laser beam hardening of materials
- Laser micromachining
- Laser surface cleaning, e.g. statues
The successful partnership between MSU and the automotive industry is vital to forwarding MSU’s legacy of innovation and accomplishment. Research by MSU faculty drives innovations in engineering, management, and related disciplines. MSU students engage in coursework designed to equip them with practical skills and knowledge of emerging industry trends. The automotive industry provides funding, access to technology, and insight into the latest developments. The Campaign for MSU will enhance the benefits of this collaboration to all parties by elevating existing programs and establishing new ones that anticipate the needs of the industry and those individuals who will guide its future.

To celebrate this new century of partnership, approximately 650 alumni and friends from DaimlerChrysler, Ford Motor Company, General Motors Corporation, and top tier suppliers were invited to an event on April 29 in Pontiac, Michigan. Nick Scheele, president and COO of Ford Motor Company, spoke about bringing together the people in the automotive industry who are key to The Campaign for MSU and to its mission of advancing knowledge and transforming lives. Dieter Zetsche, president and CEO of the Chrysler Group of DaimlerChrysler, appeared via video and talked about the importance of university-industry partnerships to students, as he was personally the beneficiary of such a partnership while pursuing his Ph.D. Rick Wagoner, president and CEO of General Motors Corporation, also appeared via video and spoke about GM’s need to attract the best and brightest young people to work in the industry, and how the partnership with MSU enhances this recruitment.

MSU administrators and guests who spoke included Board of Trustees member Dolores Cook; Interim President and Provost Lou Anna K. Simon; College of Engineering Dean Janie Fouke; College of Engineering student Maia Broadway; Eli Broad College of Business Dean Robert Duncan; alumnus Spencer White; and Coaches Joanne P. McCallie, John L. Smith, and Tom Izzo. Industry representatives also included Lynn C. Myers of General Motors Corporation and national co-chair for The Campaign for MSU; Jon Pepper of Ford Motor Company; Sue Unger of DaimlerChrysler; and Dave Cosper of Ford Motor Company.

The MSU Jazz Band and Sparty ended the program with the MSU Fight Song. Guests from the Big Three mingled with each other, the coaches, and the administrators after the event.

An earlier version of this article appeared in the summer 2003 Developments, an MSU publication for donor society members.
ME Alum Places Third in MSU Photo Competition

Donald Roberts, BSME ’62, won third place in the alumni division of MSU’s Global Focus 2002 fourth annual international photography competition.

Roberts says about his photo: “My wife and I were in London on a theater tour. Walking around Leicester Square, which is in the theater district, I took this picture of one of the many businesses.”

Corporate Matching Gift Programs Enhance Your Commitment to MSU!

The major automotive companies represented at the partnership event—DaimlerChrysler, Ford, and General Motors—recognize the importance of private support for higher education by matching their employees’ gifts, often dollar-for-dollar and sometimes more.

Corporate matching gift programs double or even triple thousands of MSU alumni gifts to Michigan State University. If you work at one of the 1,000-plus U.S. companies that have matching gift programs, you can dramatically increase the impact your gift makes at MSU. The entire gift—your contribution and your employer’s match—is credited to you and counts toward membership in one of MSU’s donor recognition societies.

If you would like to see if your company has a matching gift program, please contact the College of Engineering’s Development Office at (517) 355-8339 or e-mail egrdevel@egr.msu.edu.

MAIA BROADWAY: “Because of the assistance I received from the DaimlerChrysler Women’s Merit Engineering Scholarship, I have achieved my goal and will be graduating with a degree in electrical engineering. I encourage each of you, as MSU alumni, to financially support the program of your choice, ensuring that future Spartans have the same opportunity to receive the world-class MSU education that we all share.”

DEAN JANIE FOUKE: “MSU is ranked first in the country among all public institutions for the quality of the capstone experience. In the College of Engineering, this capstone experience is usually called senior design and we are especially proud of it and the hands-on nature of our curriculum. Employers are quick to tell me that our students are ‘good to go,’ ready to work on the first day of the job, a trait especially important to the automotive industry.”
GOLD Club Breakfast 2003 Reunites “Graduates of Lasting Distinction”

The fifth annual College of Engineering GOLD Club Reunion Breakfast took place June 6 at the Kellogg Center. It brought together about 43 engineering alums who graduated 50 or more years ago, along with their guests and a number of engineering faculty and staff. The beautiful spring morning brought both nostalgia and a look at the future.

On display were a robot dog created by the robotics and automation laboratory in the Department of Electrical and Computer Engineering and the Formula SAE car (built by mechanical engineering students) that recently won third place in an SAE international competition.

The event was hosted by Michael McDonald (ME ’87), chair of the Alumni Board of Directors for the college. After Dean Janie Fouke gave an update on the College of Engineering, the alums had an opportunity to stand up and share their special memories of MSU.

1. Jorma Sarto (ME ’42) holds up a plaque recognizing the 49 patents issued to him during his 42 years at Chrysler Corporation. During the “Remembrances” portion of the program, he said that one of his wildest undergrad experiences was as a junior, when he “engineered” a date to The Dells for a dance. [The Dells, a dance hall at Lake Lansing, featured some of the most popular names in jazz and big band music.] He’s still with her (his wife, Frances) after 60 years. He also recalled the time another student fell asleep in class; Professor Cade wrote on the blackboard for the other students: “Everyone quietly leave the room.” [Later during the GOLD Club breakfast, Granville Sharpe (ME ’41) identified himself to Sarto as the student who had fallen asleep. He attributes his sleepiness to the late hours he worked in the blueprint room.]

2. Mel Dean (Civil Engineering ’43) During “Remembrances,” Dean said that for a class project, he and a partner wrote a paper on the possibility of building a bridge to connect upper and lower Michigan. The concluding sentence of the paper was: “The authors find this to not be economically feasible for the State of Michigan.”

3. Granville Sharpe (ME ’41) worked in Professor L. N. Field’s blueprint room on the fourth floor of Olds Hall. It was like an early Kinko’s—providing duplication services for campus departments. He often worked until 2:00 or 3:00 a.m. Aggie McCann got him the job, which helped him stay in school. He also recalls Dean Dirks announcing to entering freshmen: “If any of you don’t know how to wash and iron a shirt, come to my house on Saturday, and Mrs. Dirks and I will teach you how.” [Janie Fouke, the current dean, responded: “I’d like you all to know this is not a service of the Dean’s office today!”]

4. George Landon (ME ’53) gives the victorious 2003 Formula SAE car the once-over.
International Alumni Clubs

Michigan State University (MSU) has tens of thousands of international alumni living in countries around the world, and many of these alumni have banded together to organize alumni clubs. The MSU Alumni Association (MSUAA) keeps in regular contact with international alumni club officers and encourages the formation of additional clubs.

Information about international alumni clubs and contacts is available on the Web at http://www.msualum.com/clubs/international/ or from Patrick Scheetz, MSUAA assistant director, at scheetz@msu.edu.

—from MSU International, a publication of MSU’s Office of International Studies & Programs

Former civil and environmental engineering graduate students and their families met for a reunion in Korea. 1. Doseung Lee (MS ‘98, Ph.D. ’01); 2. Nak-Moon Sung (MS ‘98, Ph.D. ’00); 3. Hyung Bae Kim (MS ’96, Ph.D. ’99); 4. Kyung-Hyuk Lee (Ph.D. ’01); 5. Hyesoon Kim-Yang (MS ’00, Ph.D. ’02); 6. Chang-Ho An (MS ’00); 7. Hyesoon’s husband.
Joseph M. Colucci, a 1958 graduate of the MSU mechanical engineering program and a member of the National Academy of Engineering, was honored with the Claud R. Erickson Distinguished Alumnus Award on May 4 at the College of Engineering’s spring commencement ceremony.

Each year, the college selects an engineering alumnus to receive the Claud Erickson Award for attaining the highest level of professional accomplishment, for providing distinguished and meritorious service to the College of Engineering and the engineering profession, and for engaging in voluntary service at the local, state, national, and international levels.

“In receiving this award, I have to tell you that it is the culmination of a career that has prospered not only from what I may have accomplished, but also from the actions, support, and contributions of many others,” Colucci said.

Colucci is recognized around the world for his work in improving commercial fuels for better vehicle performance and reduced emissions. In 2002 he was elected to the National Academy of Engineering (NAE). Membership in the Academy is among the highest professional distinctions accorded to an engineer. The 2,138 members of the NAE promote the technological welfare of the United States by making themselves available to provide leadership and guidance to the government regarding the application of engineering resources to social, economic, and security problems.

Colucci, who was born in Brooklyn, had an interest in automobiles from an early age. He attended MSU as an undergraduate, then earned a master’s in mechanical engineering at the California Institute of Technology.

As a young engineer, Colucci was part of a team that developed the catalytic converter and unleaded gasoline at General Motors Research Laboratories. This accomplishment led to a global reduction in vehicle emissions. Then in 1989, Colucci proposed a way to further reduce emissions by making gasoline “cleaner” through changes in its chemical composition and physical properties.

His reformulated gasoline was compatible with all existing and new vehicles, so when his idea was put into practice, the nation’s air quality improved in a fairly short time, with no need to wait for the development of alternative fuels or alternative vehicles. The concept of reformulating gasoline has spread to countries around the globe. Diesel fuel is now being reformulated as well, in order to reduce emissions from diesel vehicles.

After 36 years with General Motors, Colucci retired in 1995, having served 20 years as department head for fuels and lubricants, and 3 years as executive director of materials research.

Receiving awards is not new to Colucci. Hart Publications named him Executive of the Year in 1991 for leadership in the development of reformulated gasoline and again in 1995 for leadership in improving automotive fuel quality and reducing vehicle emissions. In 1992 he was elected a Fellow of the Society of Automotive Engineers (SAE), and in 2001, the SAE awarded him the Edward N. Cole Award for automotive engineering innovation.

Currently the president of Automotive Fuels Consulting in Clarkston, Michigan, Colucci works with such clients as General Motors Research and Development Center, Exxon Company USA, Mobil, Chevron, Shell Oil Company, and the National Renewable Energy Center. He is a consistent donor to the MSU College of Engineering and the Department of Mechanical Engineering, and is a valued member of the dean’s campaign consultants group, which provides leadership and guidance to the college on matters relating to the capital campaign. He has also served on the college’s Alumni Board of Directors and Research Advisory Board.

A resident of Clarkston, Michigan, since 1985, Colucci is committed to his family, which includes his wife, Sue, three adult children, and eight grandchildren.

—Lynn Anderson
Awards Convocation 2003

Our College of Engineering faculty were honored at MSU’s 2003 Awards Convocation, held February 11 in the Pasant Theatre at the Wharton Center for the Performing Arts.

Receiving Distinguished Faculty Awards were Roger C. Haut, professor of mechanical engineering; and K. N. Subramanian, professor of chemical engineering and materials science. These awards are based on a comprehensive and sustained record of scholarly excellence in research and/or creative activities, instruction, and outreach.

Charles B. Owen, assistant professor of computer science and engineering, received a Teacher-Scholar Award. These awards recognize faculty who early in their careers have earned the respect of students and colleagues for their devotion to and skill in teaching, and who have shown scholarly promise.

Edward J. Rothwell, professor of electrical and computer engineering, was the recipient of an MSU Alumni Club of Mid-Michigan Quality in Undergraduate Teaching Award in recognition of outstanding undergraduate teaching.

Faculty and Staff Honored at 13th Annual Awards Luncheon

The College of Engineering honored faculty and staff members for excellence in teaching and service at the 13th annual Engineering Awards Luncheon held April 3, 2003, at the University Club. The John D. and Dortha J. Withrow Endowed Teacher/Scholar/Service Award Program recognizes faculty of the College of Engineering who have demonstrated excellence in instructional and scholarly activities and rendered distinguished service to the university and the student body. The Gloria Stragier Award recognizes non-academic staff members for dedicated and creative service.
Evangelyn (Vangie) Alocilja, assistant professor in biosystems engineering, was named the 2003 recipient of the American Society for Engineering Education (ASEE) Award for Excellence in Teaching Materials and Methods in Biological and Agricultural Engineering. Qualifications and eligibility requirements were based upon the quality and effectiveness of instructional materials and methods. It should be noted that the ASEE’s four-person awards committee was unanimous in their decision. The award was presented at the annual ASEE Conference, June 23–25, 2003, in Nashville, Tennessee.

Eldon D. Case, professor of chemical engineering and materials science, was elevated to the grade of Fellow of the American Ceramic Society by action of the board of directors on April 29, 2003, during the banquet for the Annual Meeting & Exposition of the American Ceramic Society at the Gaylord Opryland Hotel, Nashville, Tennessee. Fellows are named by reason of outstanding contributions to the ceramic arts or sciences, through broad and productive scholarship in ceramic science and technology, by conspicuous achievement in the ceramics industry, or by outstanding service to the Society.

Lawrence Drzal, University Distinguished Professor in the Department of Chemical Engineering and Materials Science and director of the Composite Materials and Structures Center (CMSC), was named a Robert Patrick Fellow at the February 2003 Adhesion Society Conference in recognition of his conspicuous contributions to the adhesion science community. Drzal is known for his pioneering work detailing the principles of adhesion science and technology as applied to composite materials. His work has produced more than 230 publications—which, fittingly, include a chapter in Robert Patrick’s celebrated series Treatise on Adhesion and Adhesives. He has received numerous awards for his research activities, including the Adhesion Society Award for Excellence in Adhesion Science Research Sponsored by 3M (1994). He is a founding member of the Adhesion Society, served as president from 1998–2000, and chaired the Adhesion Society annual meetings in 1980, 1987, and 1997.

Shu-Guang Li, associate professor of civil and environmental engineering, was recognized for making an outstanding contribution to high-quality non-commercial courseware designed to enhance engineering education. His software, titled “Interactive Groundwater,” was named Premier Courseware of 2002 by the National Engineering Education Delivery System (NEEDS), John Wiley & Sons, AutoDesk, MathWorks, and Microsoft Research. Li was honored during a luncheon at the November 2002 ASEE/ISEE Frontiers in Education Conference in Boston, Massachusetts. NEEDS disseminated 2,000 CDs of the software to engineering schools nationwide and at major conferences. Funded by the National Science Foundation’s combined research and curriculum development program, the software makes it possible to bring cutting-edge research and complex problem solving into the classroom in a substantial way and on a routine basis. To learn more about this project or to sample the software, visit http://www.egr.msu.edu/~lishug/research/igw/

Neeraj Buch and Karim Chatti, associate and assistant professors, respectively, of civil and environmental engineering, received first place in the curriculum category in the Inter-
national Contest on LTTP Data Analysis. This contest is co-sponsored by the American Society of Civil Engineers (ASCE) and the Federal Highway Administration. The competition encourages students and professors from around the world to utilize the LTTP (Long-Term Pavement Performance) database. The winning paper was titled “The Use of the LTTP Database in the Pavement Engineering Curriculum at Michigan State University.” They were recognized at the ASCE National Meeting in November 2002.

Rigoberto Burgueño, assistant professor of civil and environmental engineering, and research assistant Jun Wu received one of two prizes awarded for “outstanding paper by a young author” given by the International Association for Bridge and Structural Engineering (IABSE) at its September 2002 symposium in Melbourne, Australia. Their winning paper was titled “Development of an FRP Membrane Bridge System.” The paper describes the development of a new concept that explores the use of optimized membrane and shell shapes for the efficient use of FRP composites in new bridges.

Mei Zhuang Receives Fulbright Scholarship

Mei Zhuang, associate professor of mechanical engineering, has been named a Fulbright Senior Scholar. She will leave for Germany in September to spend 10 months as a visiting professor at TU Berlin (the Technische Universität Berlin).

While there, she will conduct a combined research and lecturing project. The research component of the project is to develop computational aeroacoustics (CAA) tools for noise prediction systems of turbofan engines. The lecturing component consists of developing and teaching a graduate level course (in English) on CAA methodology and application.

Zhuang received her B.S. from the Beijing Institute of Aeronautics and Astronautics, and her M.S. and Ph.D. degrees in aeronautics from the California Institute of Technology. She joined MSU’s Department of Mechanical Engineering in 1993 as an assistant professor.

Her research areas include fluid mechanics (shear layer stability and control), acoustics (aerodynamic sound generation and transmission, duct acoustics), computational fluid dynamics, and computational aeroacoustics.

Zhuang is one of approximately 800 U.S. faculty and professionals who will travel abroad to some 140 countries for the 2003-2004 academic year through the Fulbright Scholar Program. Established in 1946 under legislation introduced by the late Senator J. William Fulbright of Arkansas, the program’s purpose is to increase mutual understanding between the people of the United States and the people of other countries.

The Fulbright Program, America’s flagship international educational exchange activity, is sponsored by the U.S. Department of State, Bureau of Educational and Cultural Affairs; it is managed by the Council for International Exchange of Scholars.

Recipients of Fulbright Scholar awards are selected based on academic or professional achievement and demonstration of extraordinary leadership potential in their fields.

—Laura Luptowski Seeley
My study abroad in Russia is an experience that I will never forget," says Cassondra Collins, civil and environmental engineering senior, who participated in the Volgograd program in summer 2002.

An increasing number of students are realizing that exposure to an international culture is not only a great personal growth experience, it’s a wise career move. More and more employers are impressed with—if not seeking out—students who have these types of experiences.

Typically, nearly 100 engineering students participate each year in study abroad. The College of Engineering offers programs in Russia, Germany, England, Australia, China, Singapore, and Thailand. The Volgograd program is the largest and most popular.

Why the popularity of the Russian program?

Study abroad opportunities for engineering students at MSU have traditionally been limited to specific majors and to programs that accommodate a relatively small number of students. In the past two years, the study abroad program in Volgograd, Russia, which was originally dedicated to transportation and civil engineering, has undergone a revolutionary transformation in which these historical barriers of limited majors and enrollments have been overcome. This summer, 49 students from diverse engineering majors participated in the program, taking courses in engineering, statistics, and the humanities.

One of the most important aspects of any successful study abroad program is high-quality academic content. In this area, the Russian engineering program is very successful. In fact, all 42 students in 2002 gave the overall program a perfect 4.0 rating; the student evaluations on academic instruction were nearly perfect as well.

In addition, “It has history, politics, arts, culture . . . and it’s inexpensive,” says Tom Maleck, associate professor of civil and environmental engineering and co-director of the Volgograd program. “Our students stay in a Russian hotel for about $15.00 per day.”

The seven-week program, which runs from
early May through the end of June, offers students the opportunity to take courses critical to their engineering degrees while traveling to and through Russia by air, train, and boat. Students begin their program studies at MSU, completing a two-week period of coursework prior to departure for Russia. Then it’s off to St. Petersburg (the “Venice” of Russia) for two days and nights of sightseeing and cultural acclimation before their studies begin.

The majority of the academic program takes place at the Volgograd State Architectural and Engineering Academy in the city of Volgograd (formerly Stalingrad) on the Volga River. Students receive instruction from MSU faculty and hear guest lectures from resident experts within the Academy. They earn six to eight credits.

A variety of technical courses are offered, including a number of civil engineering courses (including traffic safety and structural design), rigid-body dynamics, engineering statistics (new in 2003), and building and construction management (also new in 2003). Perhaps most popular is Russian Language and Culture, which begins state-side in March to prepare students in the basics of Russian text, language, and culture; it prepares students for more efficient cultural assimilation into Russian life. Once in Russia, students continue the course, one that is a testament to the unique collaboration between the technical and cultural aspects of the program. Under the direction of David Prestel, chairperson of MSU’s Department of Linguistics and Germanic, Slavic, Asian and African Languages, and an expert in eastern European literature, student exposure to, and education in, the rich cultural texture of Russia has been effectively combined with the parallel goal of engineering education.

A crucial ingredient for successful delivery of high-quality instruction in this program is the Program Growth

The Russian study abroad program in engineering has undergone striking positive growth since its creation in the Department of Civil and Environmental Engineering (CEE). It has grown from a department-level program to a college-level program and beyond.

1998 18 students taking courses through one engineering department (CEE)
1999 7 students taking courses through one engineering department (CEE)
2000 14 students taking courses through one engineering department (CEE)
2001 24 students taking courses through one engineering department (CEE)
2002 42 students from two universities (MSU & Michigan Technological University) taking courses through two MSU colleges: CEE and mechanical engineering (ME) courses through the College of Engineering; and a course in Russian language and culture offered by the Department of Linguistics and Germanic, Slavic, Asian and African Languages
2003 49 MSU students taking courses through three MSU colleges: CEE, ME, and Building and Construction Management courses through the College of Engineering; engineering statistics through the Department of Statistics & Probability; and Russian language and culture courses offered by the Department of Linguistics and Germanic, Slavic, Asian and African Languages

CASSONDRA COLLINS, SENIOR, CIVIL ENGINEERING

“My study abroad in Russia is an experience that I will never forget. Through this trip, I was able to appreciate all the things we have in the United States. Living in a country that does not have all the privileges that we have in the United States made me very thankful for all the things that I have. It was a country alive with culture that has not yet been overrun by flashy lights and billboards. Volgograd, for example, was like living in a monument. Everything down to the street names had its own story to tell. The natives are vibrant people who prove that bright lights and glamour do not define happiness.”
is the combination of effective teaching, small class sizes, and unusually liberal access to faculty. All classes are taught by MSU or Academy instructors, in English, with classes usually meeting in the early morning hours when it is cooler. Typical class sizes range from 8 to 20—a fraction of the size of comparable courses offered on the MSU campus—thereby providing students with a one-on-one educational experience usually found only at expensive private colleges.

The students stay in modern Russian hotels with 24-hour security, side-by-side with faculty members and Russian guides. Consequently, students have significant contact with faculty at all times, both inside and outside of the classroom. Some professors hold office hours in the quiet hotel lounges while others are open to having students simply drop by their hotel rooms for questions—often until midnight or 1:00 A.M. This unique opportunity for students and faculty to work together on technical problems and cultural challenges has a positive effect on student morale, education, and the overall experience.

For those times when students are off on their own, the program employs a number of bilingual Russian students to assist MSU students as they interact with the Academy, explore the cities, shop, go to restaurants, and experience the various nightlife opportunities. Student safety and security is a primary concern.

“We’re heavy on security,” says Maleck. He reinforces to students that they are not allowed to go out alone. They must always be in groups, and with a native-speaking Russian. In fact, Maleck is so strict that students call him “The General.” However, all of the faculty actively promote the security and welfare of the students.

The Academy itself features full-time security guards, tightly controlling access to and from the facility.

Despite events such as September 11, or the recent conflict in Iraq, the program has continued to show positive growth.

“The number of students has about doubled each year between 1999 and 2002—from 7, to 14, to 24. Last year there were 42,” says

DEAN KANITZ, GRADUATE STUDENT, CIVIL ENGINEERING

“Growing up in a small Michigan town, there was little cultural exposure available. Television and personal accounts were the only means by which to view other cultures. . . . When hearing of the program, I viewed it as the chance of a lifetime . . . Russia was a great experience [that allowed me to cultivate] many new international relationships and develop a more global view of our world. Seeing things through the eyes of people our age in another part of the world made me realize that the way we live our lives here is very soft and cushy compared to others in this ever-shrinking world. . . . Looking back on the experience I have found that I would like to go back and visit the people that I met and talk with them more . . . not only about their lives but about their culture. . . . Without the Russian experience last summer, I feel as though I would have missed out on the experience of a lifetime.”
The study abroad program in Volgograd, Russia, is an excellent program! In order to go to Russia, I waited a semester to graduate so that I could take two classes with the program. I am very glad I waited because the trip was an invaluable experience. I benefited from going—in more ways than one. The classes that I took were easier than they would have been on campus since we had our professors living on the same floor of the hotel; it was like 24-hour office hours! I also learned a lot about Russian culture and some of the language. Volgograd has a lot of culture and is a very interesting city because of its history. The Russian students were very friendly and enjoyed interacting with Americans as it allowed them to ‘practice their English.’ I would advise students going in the future to interact with as many Russian students as they can—it will be well worth it. In going to Russia, I gained a lot of new friendships and I have a deeper appreciation of America. The trip made me realize how fortunate I am to be born in America because of the opportunities we have.”

Maleck. The program can accommodate a maximum of 75 students.

For the summer 2003 program, Maleck says, 150 students had expressed interest as of November 12, 2002—the day before the “official” recruitment event began. Usually about 50–60 percent of those who show interest in the program actually go. Forty-nine students completed the summer 2003 program.

Though this is the biggest study abroad program offered by MSU, Maleck says, “We’ve been told we have fewer problems than any group on campus.”

The program is a success all the way around.

“I still get letters today from students who went five years ago,” says Maleck. “They tell me it changed their lives.”

For more information about the Volgograd, Russia, program contact:

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—Laura Luptowski Seeley

Darren E. Mason, Natalia Ignatova, Thomas Maleck, and David Prestel contributed to this article.
Sydney or Melbourne, Australia

- Academic year program (July–June)
- Fall semester program (July–November)
- Spring semester program (February–June)

This multidisciplinary program is open to engineering, business, and natural science students. Participating students may enroll in classes at the University of New South Wales in Sydney or Monash University in Melbourne, and they can choose to study for one semester or a full academic year. Engineering students take classes in math, science, engineering, social science, and the arts and humanities. While in Australia, students have the opportunity to travel and see the many wonders of Australia from the outback to the Great Barrier Reef.

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Surrey, England

- Academic year program
- 36 weeks (Sept.–June)

This multidisciplinary program is open to all engineering majors. Since 1973, the University of Surrey has been part of MSU’s undergraduate exchange program. One of Britain’s newer universities, it is located on the outskirts of Guildford, 30 miles south of London. MSU students follow regular courses with British students and have the opportunity to explore London’s historical sites as well as Guildford’s castle and famous cobblestone High Street.

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Aachen, Germany

- Spring semester program
- 16 weeks (January–April)

This is an exceptional opportunity for mechanical engineering students at MSU and other U.S. universities to study and conduct research at one of Europe’s premier technical universities—The Rheinisch-Westfälische Technische Hochschule (RWTH).

It is expected that all participants will have completed German 101 prior to this semester and, at the time of the trip, will be taking German 102 or higher. The typical student will be enrolled in a heat transfer course, taught by assistants of the Heat Transfer Institute at the RWTH, using the MSU syl-
Students will also work in the research labs of the RWTH on an independent study project. They earn 12 credits during the 16-week program.

Students often take the opportunity to travel in Europe on planned three-day weekends.

A full academic year program is also available.

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**Kaiserslautern, Germany**

- Summer semester program
- 12 weeks (April–June)

Since 1992, MSU students majoring in electrical engineering, computer engineering, and computer science have had the opportunity to study at the University of Kaiserslautern.

Students generally enroll in about 12 credits, choosing from several engineering courses taught in English; they are required to take a course in German language and culture, taught in German. Some of the students also pursue overseas internship opportunities for the July–August months following the study period.

**A second option has been designed for students and scholars in chemical and mechanical engineering. This program requires German language proficiency.**

The university is located in the Rhineland-Pfalz region, allowing easy access to much of Europe.

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**Thailand, Singapore, and China**

- Summer semester program
- 3 weeks (mid-May–early June)

This multi-location program is open to MSU students in natural and physical science, with a preference for engineering and agriculture and natural resources majors who have completed at least two semesters of university-level coursework.

Students enroll in a minimum of six credits while studying in Thailand, Singapore, and China. The program includes stops at the Asian Institute of Technology in Bangkok and the National University of Singapore; interaction with government and private sector agencies that deal with water resource management and environmental issues; and visits to a marine research center, landfill sites, and a wetland natural reserve.

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“Go State – Fast!”

by Laura Luptowski Seeley

MSU’s Formula SAE team knows how to design and build fast cars. They do it right, and they do it cost effectively.

So it’s no surprise that the team placed third overall in the Formula SAE international competition held May 14–18, 2003, at the Pontiac Silverdome in Pontiac, Michigan.

Gary Cloud, team advisor and professor of mechanical engineering, says he is very pleased with the results. “My hopes were high,” he says. “We have an outstanding team this year. Their skill set is amazing—all the way from technical skills on one side to business skills on the other.”

More than 125 teams from across the United States and around the world, including Australia, Korea, Venezuela, and Finland, competed in seven categories.

The Australian team from the University of Wollongong placed first overall; the University of Missouri–Columbia finished second.

Technical inspections took place on Wednesday, May 14. Design and cost judging, along with presentations, were held on Thursday. The MSU team won the cost event by the widest margin since 1997, and placed ninth in design and twelfth in presentation.

On Friday, skid pad and acceleration events ran from 8:00 A.M. to noon. The MSU team was able to get in a couple of runs on dry pavement before the rain began. But even a morning downpour couldn’t slow down car 107—not for long. A quick change to rain tires and the team was back on the track, placing third and sixth, respectively, in those two events.

The autocross competition, in which MSU finished fourth, was held Friday afternoon. Endurance and fuel economy was run on Saturday; the team placed second in that event.

On Sunday, May 18, the MSU team also won a triathlon event that was sponsored by Road & Track magazine, following the Formula competition. They were among the top five Formula SAE teams invited to compete. (An article about the Road & Track trophy is scheduled to appear in the September issue of Road & Track. An article about the Formula SAE event will also be featured on their Web site—www.roadandtrack.com).

During the Formula competition, various innovative designs could be seen. There were cars with square noses, tiny cars with streamlined noses, even cars with “wings.” The MSU car, however, didn’t appear to be a whole lot different from last year’s car—at least not on the outside.

There are SAE Formula rules, says Cloud. “You come up with a good race car design according to those rules.”

The team makes incremental design improvements from year to year, phasing in...
Megan Dennis, a chemical engineering senior, was awarded a Goldwater Scholarship by the trustees of the Barry M. Goldwater Scholarship and Excellence in Education Foundation, Washington, D.C.

“I am extremely honored to get this award,” Dennis says. “It reinforces my commitment to research.” Her goal is to work as a microbiologist carrying out research in biomedical engineering.

Congress established the scholarship in 1986 to pay tribute to retired U.S. Senator Goldwater of Arizona and to encourage outstanding students to pursue careers in mathematics, the natural sciences, and engineering. The scholarship provides up to $7,500 for tuition, fees, books, and room and board for one year. Up to 300 Goldwater Scholars are named each year, nominated by faculty members from colleges and universities nationwide.

Each student nominee submits a 600-word essay discussing a significant issue in his or her field of study. Dennis’s essay, “Pharmacogenetics and Personalized Medicine,” proposes research to refine a DNA microarray chip that can scan a DNA sample from a patient and determine if that patient is a carrier of a recessive gene that is often present in people who suffer side effects from various medicines. Such information can help a physician decide which medicines to prescribe for a patient.

Dennis has worked in the research lab of James Tiedje, director of MSU’s Center for Microbial Ecology and newly elected member of the National Academy of Engineering, since the summer after she graduated from high school. She has gained valuable research experience in this setting. During the summer of 2003, she is conducting independent research in a microbiology and immunology lab at Stanford University under the supervision of David A. Relman, M.D.

Mark Worden, professor of chemical engineering and Dennis’s Honors College advisor, says, “Megan’s excellent interpersonal and leadership skills bode well for success in collaborative research in the interdisciplinary field she has selected. She is a first-rate scholar with great potential for a career at the interface of molecular biology and engineering.” Worden is the faculty advisor for the MSU chapter of ISPE, the professional society for life science professionals, of which Dennis is next year’s president.

For complete results of the 2003 competition, go to http://www.sae.org/students/formula.htm. For details about the Formula SAE since the 1980s. Last year, the team placed 38th overall.

This year, the team worked long, hard hours to get the car finished by February, allowing for three months of testing prior to competition. And that hard work and good planning obviously paid off. Jeff Schmitz, team steward and ’97 graduate of MSU’s mechanical engineering program, says this is the best the MSU team has ever done—overall and in most of the categories.

“I knew we had a great car and an outstanding team,” Cloud says. “If I were starting an engineering firm today, I would hire this Formula team to staff it.”

ENGINEERS of the FUTURE
by Laura Luptowski Seeley

With this feature, we invite you to come alongside six engineering students as they learn and grow at MSU. In each issue, for the next several issues, we will give you updates on each of these students as they progress through their programs. The students were first featured in Currents Magazine, Volume 2, Number 2, Winter 2003. This is the second installment.

Bryan Cotton
FRESHMAN (DOLTON, ILLINOIS)
COMPUTER SCIENCE & ENGINEERING; MUSIC—JAZZ STUDIES

What were your highlights and challenges from spring semester 2003?

One of the challenges of spring semester 2003 was my ATL class (195H); I really had trouble with the second book—about racial formation in the United States. It was written at a very high level and I was having trouble understanding it. Thanks to my professor, Dr. Ramona Fernandez, I was able to understand the text well enough to write my essay.

A definite highlight of this past semester was getting the chance to meet Wynton Marsalis and the Lincoln Center Jazz Orchestra. The band came for the last day of Jazz Spectacular. We had a clinic that day with Mr. Marsalis, and we were allowed to go backstage before the show. It is an experience I will never forget.

Tell us a little more about your involvement in music.

I would say that I became interested in music seriously when I was a freshman in high school. In 5th grade the band director came to my class and gave us a test. Based on our scores, the band director determined what instrument we should play. I was told that I should play the trombone. I “held” the trombone from 5th to 8th grade. I started “playing” when I was in 9th grade. From 5th to 8th grade, I played in the band, but I wasn’t interested in the musical aspect; I just wanted to play the trombone. When I got to high school, that’s when I began to understand that I was not just playing the trombone, but I was making music. The expression of “holding” the instrument vs. “playing” the instrument is an expression my high school band director, Mr. Eanes, used. It means that we learned technique, scales, and other valuable tools that lead to the mastering of our respective instruments.

Are there any “gigs” on your calendar?

No, I have no gigs planned for the summer, just plenty of practicing.

Who has been your favorite or most influential MSU professor?

There is someone at MSU that has been influential to me, but he is not a professor. He is Joshua Gillespie, the director for South Complex (which includes Holden Hall). I have known him only a short time, but he has already left an indelible mark on my life. Every time I speak with him, I walk away knowing a little more and thinking a little harder. The things he imparts to students are life lessons—things that will benefit them for the rest of their lives.

What is the most significant accomplishment in your life so far?

I would say that I am most proud of the fact that I have made it to college and made it through my first year.

Do you have any study abroad interest or experience?

I really never thought about studying abroad, but I wouldn’t completely dismiss the idea.

What are your summer plans?

This summer I have an internship in Illinois with W. W. Grainger, a business-to-business parts distribution company.

Ebony Harper
SOPHOMORE (DETROIT, MICHIGAN)
ELECTRICAL ENGINEERING; MATHEMATICS

What were your highlights and challenges from spring semester 2003?

The highlight of spring semester 2003 was finding the career path that I believe is right for me; I would like to continue my education
in mathematics and engineering, then go on to graduate school for a degree in industrial mathematics, as well as a Ph.D.

Tell us a little about the MSU Gospel Chorale. Why is singing an important part of your life?

MSU Gospel Chorale is not only a choir for people to sing praises to the Lord, it is also a ministry. While ministering in song to others you are also ministering to yourself. Being in MSU Gospel Chorale is important to me—not because of the singing, but because of the fellowship among Christian youth.

Who has been your favorite or most influential MSU professor?

There are several MSU professors in the math department I have learned a lot from; they are wonderful professors. But the first one who actually affected my life was Dr. Richard Hill, who oversees the Emerging Scholars Program. I met him during orientation, when I set up math classes for freshman year. He stuck out in my mind . . . because he was confident that I could handle Math 133. I came in with AP (advanced placement) credit but I had passed the exam with the minimum score. He was the first white male to have faith in me on a college level and that meant a lot to me—a young black female from Detroit—because there are so many stereotypes about Detroit students.

What are you most proud of?

I am most proud of having two wonderful parents that stand by me whenever something is going wrong, or when school is getting difficult; they always encourage me to do my best. And no matter what happens I know they will always love me.

Do you have any study abroad interest or experience?

I am still planning to study abroad, but I decided to wait until things settle down overseas. I am thinking about going to Australia or possibly Japan as well as Germany.

Jacob Kirshman

SOPHOMORE (LINDEN, MICHIGAN)
MECHANICAL ENGINEERING

Could you describe your co-op experience at DENSO, Battle Creek, Michigan?

During spring semester 2003, I was in the cooperative education program. While working for DENSO Manufacturing Michigan, Inc. (DMMI) in Battle Creek, Michigan, in the molding department, I learned many things. I learned about injection molding and how to fix parts if they have defects. I learned how to use CADKEY 19 and read blueprints. I designed small tools/jigs and performed capability studies on products. I also worked on many other jobs throughout the molding department to help improve the quality of the material, products, and machines. I really enjoyed my time at DENSO and I am looking forward to returning next fall to learn even more.

During my first year and a half of college, I have taken mostly university and college requirements. I have not been able to take more in-depth engineering classes. Therefore, I feel like I did not know too much about engineering going into my co-op. But while working at DENSO I learned a lot about what engineers do. This summer I am taking more specific engineering classes, which I think will help me understand my job even more.

I would definitely recommend that students do a co-op while in college. There are many things that you do not get in the classroom that you do get when you are actually on the job. This has been one of the best decisions that I have made to help meet my college and career goals.

What is it like adjusting to “being a student” again?

It was weird going back to school this semester. It was nice not having classes for a semester. But it is kind of like after summer in high school—you just have to get back in the groove and it seems like you never left.

Who has been your favorite or most influential MSU professor?

What is it like adjusting to “being a student” again?
The professor who I have learned the most useful information from is Robert A. Chalou. He was the professor for ME 180 last fall. In his class, I learned a very powerful tool—Unigraphics. This computer-aided design program is used at DENSO.

What is the most significant accomplishment in your life so far?

My most significant accomplishment so far has been when I hired into DENSO Manufacturing Michigan, Inc. (DMMI) as part of the co-op program. Working at DENSO has been a great opportunity, and the knowledge that I gained there will be useful toward my education and career. I am the first rotational co-op at DMMI and I am looking forward to helping them learn about and improve the program.

Do you have any study abroad interest or experience?

From the time I first started college at MSU until I accepted my job in the cooperative education program I had considered studying abroad. I think that it would be an excellent opportunity. While I am doing my co-op, however, I really cannot participate in the study abroad program. But when I am done with my co-op, you might see me heading over to Germany for a semester.

**Greg Kehrier**

**JUNIOR (BAY CITY, MICHIGAN)**

**CHEMICAL ENGINEERING & MATERIALS SCIENCE**

What were your highlights and challenges from spring semester 2003?

My highlight was definitely finding an internship for the summer. As for challenges, my classes were really hard. Unit ops lab took so much time, and between writing all the reports for that class and keeping up with my other classes it was really tough.

Tell us about your band . . .

I play lead guitar and lead vocals in my band called Wartorn. I left my other band about a month ago because I didn’t have enough time to stay in both of them. There are two other members in Wartorn—Sean Sethi and Dave Ruiz. Sean, our drummer, is a sophomore finance major at MSU, and he’s also my roommate. Dave, our rhythm guitarist, is a sophomore at U of M. No other engineering students are in the band, but we are still looking for a bass player, so maybe our next member will be an engineer! Of course that’s not a requirement! We play metal, of the fast and very melodic sort. We are a pretty new band—we’ve been together with our current member line-up only since October—so we’re just starting to pick up gigs. We practice once a week on Saturdays, and Sean and I work on writing songs in the dorm during the week. We’re not really planning to make a lot of money; Wartorn is together because we all love writing and playing music. If we wanted to make money we wouldn’t play metal, instead we would play flavor-of-the-month music. But we don’t want to do that.

Do you have any plans for the summer?

I accepted an internship at Pharmacia in Kalamazoo for the summer. I am very excited to be working there.

I had met with a Pharmacia representative during the co-op exchange last fall at MSU. My adviser, Cynthia Sarver, encouraged me to get online and send them my résumé and a cover letter. Early this spring, Pharmacia called and encouraged me to apply for a position they had open. After a phone interview, I was hired for an internship position, which runs from May 5 through mid-August. While there, I will be working on shutdown and start-up procedures, when they change from producing one chemical to another.

During this past year, the pharmaceutical industry has started to sound more interesting to me than polymers. So I might decide not to complete the polymer option that I was originally planning on, depending on how my internship goes.

Who has been your favorite or most influential MSU professor?

My favorite professors in the College of Engineering so far have been Dr. Bruce Dale and Dr. Mark Worden. Pretty much all of my professors have been good, but in my opinion the two of them have stood out as the best teachers.

What is the most significant accomplishment in your life so far?

I’d say being in the Spartan Marching Band [he plays the mellophone] and being a chemical engineering major and finding time for both is my most significant accomplishment. I make sure that I don’t waste a moment of my time in the SMB, because I look at it as an opportunity that I’m pretty lucky to have.

Do you have any study abroad interest or experience?
I considered study abroad, but... fitting that in with everything else I’m already doing isn’t something I want to take on. With marching band going on in the fall, I try not to take too many classes in fall semester, which tightens up my class schedule the rest of the year.

Tracy Kamikawa
SENIOR (HONOLULU, HAWAII)
BIOSYSTEMS ENGINEERING

Tell us a bit about your study abroad experience in Dublin, Ireland...

Spring semester 2003 was absolutely amazing. The faculty and students at University College Dublin (UCD) were incredibly supportive and welcoming, which helped in the transition to the completely different style of learning practiced there. UCD, like many other European institutions, bases grades entirely on end-of-term evaluation rather than the continuous assessments made in the States. This means that there is nearly no graded work throughout the semester, and that the final exams count for 100 percent of the grades. This relief of day-to-day pressure is great for planning weekend trips or nights out on the town, but can be overwhelming once the end of term finally arrives and there is a whole semester’s worth of material to learn. Classes are also more heavily based on lecture notes, with textbooks and other references only “recommended.” This disparity between college in Dublin and back at MSU was the greatest challenge for me, as I had to modify the study habits that I had previously established.

In social terms, Ireland was great. My Irish classmates included me in their plans and I met a lot of other transfer students from across the States, and from France, Spain, Italy, Belgium, and Sweden. We were able to relate easily as we were all eager to experience new cultures, try new things, and go to new places. One of the best aspects of studying abroad anywhere in Europe is the close proximity to other countries and the easy rail accessibility.

I went to other areas of Ireland on several weekend trips as well as a three-week-long spring break during which we traveled to nine different countries. I can honestly say that those three weeks were the best of my life, and will not be soon surpassed—if ever. The sheer number of exotic and famed places that we visited was overwhelming, and the excitement of having no restraints besides the packs on our backs was completely liberating. We began with a general itinerary and made plans along the way, taking trains and buses to our destinations and exploring each stop as we got there. It was almost exhilarating not knowing whether we’d have a place to sleep each night. Sitting in the Milan train station for eight hours overnight just didn’t seem so bad. It was Milan. We were having the time of our lives. Nothing could get us down. I realized I was capable of a lot more than I had previously given myself credit for. This trip was so important for me in building my self-confidence and independence. I feel like I can go anywhere and do anything. I
have never been a world traveler. Until now. So many options have availed themselves due to this entire study abroad experience and I would recommend it to anyone ready and willing to have the time of their lives, making great new friends along the way.

Who has been your favorite or most influential MSU professor?

It may sound trite, but all of my professors have been amazing, especially within biosystems engineering. The department is so small that there is enough one-on-one interaction and attention with all the faculty and staff to make it feel almost like a family. I feel comfortable with all of my professors and am confident that they always have my best interests in mind, encouraging me within the class structure as well as taking time outside of class to advance my instruction with independent studies and research.

My mentor since freshman year has been Dr. Evangelyn (Vangie) Alocilja. She made the effort to contact me even before I set foot in Michigan, offering me a professorial assistantship that I am still involved in and that has been a great asset to my development as an engineer. She was one of the major factors in my decision not only to major in biosystems engineering but even to attend MSU, as I think she epitomizes everything that MSU stands for. From that first visit to campus, I was overwhelmed by the friendliness of the people and their eagerness to help, and also attracted by the opportunities that MSU and the Honors College offered. Vangie only confirmed all of these assets with her own kindness and offers of a paid research position. She was one of the major factors in my decision not only to major in biosystems engineering but even to attend MSU, as I think she epitomizes everything that MSU stands for. From that first visit to campus, I was overwhelmed by the friendliness of the people and their eagerness to help, and also attracted by the opportunities that MSU and the Honors College offered. Vangie only confirmed all of these assets with her own kindness and offers of a paid research position. Since then, her idealism and enthusiasm for the field has been contagious and I always look forward to further inspiration from her. She makes us all want to make a difference not only through our research but as individuals in our personal and spiritual communities.

I also must acknowledge Mrs. Elaine Johnson-Hahn, my adviser, without whose help I would not have had the opportunity to study abroad in Ireland. She always has a close eye on the progress of my program and has consistently been a great resource in terms of job and scholarship opportunities. She always has suggestions about improving my course of study to enhance my offerings to future employers, and is unfailingly optimistic and kind.

What is the most significant accomplishment in your life so far?

It may be that the novelty has not yet worn off, but I feel that my greatest accomplishment has been this study abroad experience in Dublin. I have gained so much personally as well as intellectually, having the opportunity to learn in a completely new environment under a different format and to stretch myself in terms of throwing myself into foreign and unfamiliar situations. I am proud that I could adjust to another culture completely on my own, while enjoying myself at the same time, and am certain that this is only the first of many chapters of my future exploits. The world has been opened up to me and I can’t wait to explore it.

Nicole Danielson
GRADUATE STUDENT (RIVER FALLS, WISCONSIN)
ENVIRONMENTAL ENGINEERING

What were your highlights and challenges from spring semester 2003?

My biggest challenge came at the end of the semester. I had two classes that had term projects due, just as I was trying to finish up grading and at the same time prepare for the fall course that I will TA. As always, the last two weeks of the semester were pretty stressful. I tend to over-commit sometimes, so it is a big challenge for me to say no to some other projects/issues that have come my way.

On a more exciting note, one of the highlights of this semester came at the Society of Women Engineers (SWE) Regional Conference in Ann Arbor. I was elected as the Region H student representative for the upcoming year. I’m pretty excited to stay involved in SWE, even though the types of things I will be doing are a lot different.

Another highlight is people commenting that they saw last semester’s article in Currents—pretty cool!

Could you talk about the importance of your organization/association involvement?

It is important to get involved, to be able to talk/work with people who share common interests and goals. They usually have good advice and/or solutions to your problems because they probably have already experienced them. I have made so many contacts at school, in industry, and just in general through student organizations (mostly SWE). I could go on and on about the great friends I have made, and the cool places I was able to go for conferences (Denver, Washington, D.C., and next year Birmingham). Organizations are also a good transitioning tool from
your undergraduate to the next level—either a job or graduate school. Through SWE I have become more confident in my abilities, especially my speaking and leadership skills.

**Do you have any plans for the summer?**

This summer I plan to stay at MSU to work on my master's research project. I was just placed/asked to join a research project—a surface and groundwater modeling project for a constructed wetland site in Lansing. The project is still in the early stages, so I'm not quite sure what all it will entail.

**Who has been your favorite or most influential MSU professor?**

I’m not sure if I have a favorite professor, but I do have a few professors who have been influential in a number of ways. My current adviser, Dr. Roger Wallace, has been really helpful in my adjustment from undergraduate to graduate school. My two favorite teachers at MSU are Dr. Richard Lyles, because he is so engaging in and outside of class, and Dr. Mackenzie Davis—just because he cares so much about his students.

**What is the most significant accomplishment in your life so far?**

Receiving my B.S. in civil engineering is definitely my most significant accomplishment so far. I remember sitting in those design classes wondering when it would be over, and hoping it would be worth it. It was! I’m also proud of being a part of SWE and holding leadership roles in that organization.

**Do you have any study abroad interest or experience?**

I did not study abroad as an undergrad, although I wish I had. I was thinking about going to Russia this summer with the CEE Russia program, but it just didn’t work out. Traveling abroad is certainly in my future plans. I’m not sure where yet, but pretty much everywhere is on my radar screen right now. I want to experience as many different places as possible.

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**In Memoriam**

- **Morris R. Graham**, BSEE ’27, of Lansing, MI, died February 26, 2003. He had been employed by Consumers Power Co., REO Motors Car Co., and by Oldsmobile Division, from which he retired in 1967 after 27 years of service. He is survived by his wife, Ruth; sons Robert, Douglas, and Theodore; daughters Barbara and Linda; seven grandchildren; and two great-grandchildren.

- **Ruben Hernandez**, MSChE ’84, MS Env. Eng. ’86, PhDChE ’89, of East Lansing, MI, died June 15, 2002. He was born in Spain and spent much of his youth in Uruguay, earning a BS from the University of Uruguay in 1975. After earning his graduate degrees at MSU in 1989, he was hired as a faculty member in the MSU School of Packaging. He made his career there, becoming a full professor just two weeks prior to his death. He developed a strong research program in materials science applications to packaging and in mass transport and played a major role in developing the school’s overseas study program in Spain. He is survived by his two children, Natalia and Daniel.

- **Rodney S. Perry**, BSChE ’47, of Horse Shoe, NC, passed away March 7, 2003. He was a development engineer for Eastman Kodak for 36 years and an Army veteran of World War II. He is survived by his wife of 58 years, Florence Reidenbach Perry, and by a son and two daughters, six grandchildren, and a great-grandson.

- **Carl Eric Pfeiffer**, BSME ’52, of Houston, TX, passed away July 10, 2002. He is survived by his wife, Janet McDattie Pfeiffer, and by a son, three daughters, and six grandchildren. He started his career as an expediter for Michigan Seamless Tube. After holding various positions within Quanex Corporation, he ultimately became CEO. Under his leadership, Quanex was named a Fortune 500 company. After retirement in 1992, he continued to serve on the board of directors and was named Chairman Emeritus. Pfeiffer was active with the Houston Livestock Show and Rodeo as an honorary lifetime director. His favorite pastimes included being with his family, fishing, goose hunting, and woodworking.

- **Kenneth Trigger**, BSME ’33, MSME ’35, of Urbana, IL, died July 25, 2001. He joined the faculty at the University of Illinois at Urbana-Champaign in 1938, became a full professor in 1945, and made his career there. An internationally renowned authority on the fundamentals of metal cutting, Trigger and his colleague, B.T. Chao, conducted pioneering research on temperature effects in metal cutting. They were jointly named by the American Society of Mechanical Engineers as recipients of the Blackall Machine Tool and Gage Award in 1957 and the William T. Ennor Manufacturing Technology Award in 1982. Trigger also received the Frederick W. Taylor Research Medal from the Society of Manufacturing Engineers in 1959. He is survived by his wife Florence and three sons.

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**Class Notes**

**1940s**

- **Thor G. Bank**, BSEE ’41, reports that his latest invention, Soff Jaws™ cushioned bench vise pads, hit the marketplace in 2002 (www.foredom.com/pdf_files/PL/SoffJaws.pdf). He says, “Retired MSU engineers have at least one more design in their slide rules!”

- **George W. K. King** (formerly Koronski), BSEE ’48, is retired in Newtown, PA. He enjoyed the “horse” issue of Currents (Vol. 1, No. 2, Fall 2001/Winter 2002), because he owned five horses while his children were growing up. One horse, 33 years old, still lives with him on his tree farm, where his son grows 10,000 evergreen trees. King “keeps his hand in” as a part-time consulting engineer in traffic safety and international patent licensing. He is also secretary of the American Institute of Biomedical Climatology, which studies environmental impacts on human health. He advising all retirees: “Do not lie down; somebody will be along to cover you up.”

**1950s**

**Kenneth R. Holmes**, BSEE ’59, recently retired from the University of Illinois at Urbana-Champaign, where he was associate professor of veterinary biosciences and bio-engineering. He earned his M.S. (’66) and Ph.D. (’72) in physiology at MSU. He currently plays the banjo in a bluegrass band. He and Linda, his wife of 40 years, live in Urbana, IL. They have four children and four grandchildren. kennethholmes@msn.com
Masaru Kawaguchi, BSCE '51, worked as a transportation engineer for the State of California Department of Transportation. He has been retired for 12 years and is enjoying a life of leisure in San Francisco.

Henry G. K. Tyrrell (Lt. Col. AUS – Ret.), BSME '50, retired for 29 years, moved in May 2001 with his wife Frances to a retirement community in Catonsville, MD, to be near their four children and their families. Tyrrell claims this is his last address before Arlington National Cemetery. Their four grandchildren are all in college. He states, "I graduated at age 37 (being an ex-GI) with a wife and four children (3 born in Sparrow Hospital). We made it, thanks to Fisher Body, where I worked two or three nights a week, and thanks to much consideration from faculty, and especially Miss Agnes McCann!"

Gayle Eaton, BS Metallurgical Engineering '62, of Ada, MI, is an engineering manager for Soroc Products, a supplier of automotive vacuum formed (thermoformed) plastic products whose primary customer is Toyota Motor Manufacturing, North America. geaton@sorocproducts.com

Robert Fredericks, BS '67, MS '68, PhD '71 Elect. Eng., has retired after 30 years from Telcordia Technologies (formerly Bellcore, a spinoff of Bell Laboratories). He is now a faculty member at Monmouth University in the Software and Electrical Engineering Department. He and his wife, Cheryl (Grube), MSU BS '67, live in Holmdel, NJ. Fredericks received the Claud Erickson Distinguished Alumni Award from the MSU College of Engineering in 1995.

Payton D. Fuller, BSME '66, retired from Ford Motor Company, where he had been a manager in engineering, in 2001. He lives in Coconut Creek, FL, and began teaching at Nova Southeastern University in August 2002. He teaches math in Ft. Lauderdale, Jamaica, and the Bahamas. pfuller1@aol.com

Dennis Nyquist, PhD/EE '66, retired July 1, 2002, after serving on the faculty of the Department of Electrical Engineering at MSU continuously since 1967. During his tenure he received the MSU Teacher-Scholar Award (1969), the Withrow Senior Research Award (1996), the MSU Distinguished Faculty Award (1997), and was named a fellow of the IEEE (1997).

Rajendra Prakash, BSME '62, of Roorkee, India, writes: "It is 40 years since I graduated from MSU. My colleagues and friends here wonder how my name is still on the mailing list of MSU alumni. Thanks for this. Though it is difficult to recognize faces in the 2002 issue, I can recollect Aggie McCann receiving people and smiling at the entry of Dean Ryder’s office. A noble lady. I am leading a peaceful life with my wife, after retiring as vice-chancellor of a university. We visit our two children residing in suburbs of Delhi every 2–3 months."

1970s

Donald Bruggers, BSChE '74, MSChE '76, lives in San Ramon, CA, and works as a geotechnical engineer/principal with ENEG Inc.

Daniel G. Fredendall, PE., BSCE '77, was honored as Outstanding Civil Engineer of the Year by the southeastern Michigan branch of the American Society of Civil Engineers (ASCE) at a banquet in Detroit on May 3, 2003. Selection is based on contributions toward the advancement of the civil engineering profession and active participation in professional societies and community service. Fredendall serves as executive vice president and board chairman for Orchard, Hiltz & McClintock Consulting Engineers, Inc., in Livonia, MI.

Gerald W. Nyquist, Ph.D. Engineering Mechanics '70, of Lexington, MI, joined his brother Dennis in retirement in 2002. He has been a biomechanical engineering consultant for the past 25 years. He worked for Wayne State University and General Motors prior to becoming a consultant.

Roy C. Saper, BCSEE '73, was recognized by the Lansing Regional Chamber of Commerce as its 2003 Outstanding Small Business Person. After a successful career as an economist with the State of Michigan, Saper created 20th Century Fine Arts in 1978 to provide high-quality unique and limited-edition works of art to collectors; he also did custom framing. He opened Saper Galleries in East Lansing in 1986, in an innovative building he designed himself. The gallery has hosted more than 24 major art exhibitions and garnered a client base of 7,500. He was the first in the art field to use computers, even creating a program to show clients the exact cost of every component of their framing orders years before that was standard practice. He has won three international DECOR magazine awards for gallery design and creative management, advertising, and promotion. He has also received the East Lansing Crystal Award and the Business Arts Award from the Arts Council of Greater Lansing.

John Schubert, MSME '73, retired at the end of 2001 after five years on the management board of Krupp Uhde, a ThyssenKrupp engineering and construction company; two years on the Siemens ATD board; and one year as chairman of the board of Transrapid International, which builds the Transrapid Maglev train in Shanghai. He is currently a self-employed consultant in Germany and France. Although he retains his German citizenship, he and his wife, Jeanine, who is French, recently bought a home in St. Malo, France. They have two adult daughters: Natacha and Gabrielle, in Berlin, Germany. John is the MSU Alumni Association contact in France. john.schubertillt-online.de

Mark E. Steele, BS Eng. Arts '78, enjoyed the article about engineering arts in Currents Vol. 2, No. 1 (Summer 2002). He is director of engineering for the DaimlerChrysler Business Unit (DCBU) at Collins and Aikman in Troy, MI. He reports to the V.P. of Engineering, but still has dotted-line responsibility to the VP/GM of the DCBU, since he works with that platform. Mark.Steele@collairk.com

Ronald W. Wangerow, BSME '72, is intellectual property counsel for Freudenberg-NOK, headquartered in Plymouth, MI. Freudenberg-NOK, an automotive supplier, is a general partnership between Freudenberg & Co. in Germany and NOK Corp. in Japan.

Ronald Ziegelbaur, BSME '78, worked for 3M until 1992, at which time he took a position with the Evangelical Covenant Church’s World Missions. Since then, he has worked mostly in Zaire, maintaining pickup trucks and water supply equipment. In August 2002, he relocated to the Central African Republic, where the mission is assisting nomadic tribes to learn farming methods, because weather conditions caused the loss of their cattle herds. He and his wife, Janet, and three children (ages 3, 5, and 7) returned temporarily to Grand Rapids in March 2003 due to political unrest in central Africa.

1980s

Casey L. Burley, BSME '80, MSME '83, was the leader of NASA Langley Research Center's TiltRotor Aeracoustics Code system development team, which devised a way to predict rotor noise levels in rotorcraft and to optimize low-noise rotor design. Burley was involved with the initial research, found partners for the project, and served as a coordinator among all the partners. In June 2002, Burley accepted the American Helicopter Society’s (AHS) prestigious Howard Hughes Award on behalf of Langley at the AHS international forum in Montreal for “outstanding improvement in fundamental helicopter technology.”

Philip L. Fioravante, BS Mfg. Eng. ’84, spent 11 years with General Motors and 9 years with LDM Technologies. He is currently the vice president for sales, marketing, and product development at ACSYS Technologies, Inc., in Southfield, MI. ACSYS automotive product portfolio includes metallic and plastic products in exterior ornamentation, body structure, and powertrain/chassis.

Paul Kraushaar, BSChE '82, went to Moscow, Russia, in June 2002 to spend the summer serving with the Mission Aviation Fellowship, an interdenominational Christian organization that provides air transportation and, more recently, computer technology and distance education to remote areas, in support of more than 300 Christian and humanitarian organizations worldwide. When Ned returns to Russia to work there full time, he will take along Alex, his friendly Weimaraner dog.

Douglas L. Mailbach, BSCE ’84, was elected the 2003 chairman of the board for the Associated General Contractors (AGC), Greater Detroit Chapter. He is vice-pres...
ident at the Barton Malow Company, AGC-Detroit represents general contractors, service providers, and suppliers throughout southeast Michigan.

- **David A. McLaughry**, BSME ’82, MSME ’85, of Clarkson, MI, has been elected a principal of Harness, Dickey, & Pierce PLLC, a national intellectual property law firm. He prepares and prosecutes utility and design patent applications in the United States and abroad, drafts intellectual property agreements and legal opinions, and counsels clients in the valuation and enforcement of various intellectual property rights. He earned his law degree at Wayne State University Law School.

- **Jeff Sowers**, BSCEE ’88, was promoted to the position of director at TBE’s Lansing, MI, office. He launched and oversees the firm’s business operations in Michigan and Ohio and has assisted in the start-up of TBE’s subsurface utility engineering services in Ontario, Canada. TBE Group, headquartered in Florida, is a national consulting, design, and engineering firm.

- **Nikiforos Stamatiadis**, MSCE ‘86, PhDCE ‘90, an associate professor of civil engineering at the University of Kentucky, received a 2002 Great Teacher Award from the UK Alumni Association. He was described as “driving to make students become critical thinkers, to think as engineers, to utilize knowledge of principles rather than simply apply equations or learn to use software.” His research projects include crash rates and traffic maneuvers of older drivers, the impact of geometric design exceptions on crash rates, and traffic signal timing issues. He is currently participating in a research project sponsored by the European Community dealing with issues of the elderly and handicapped in Europe.

- **Robert Sweeney**, BSCEE ’86, was appointed executive secretary of the Mackinac Bridge Authority, where he heads a 100-member staff. He previously worked at the Transportation Service Center in Cadillac, Michigan. His father, Aaron Sweeney, was once master of the auto ferry Vacationland, the last of the ferries built to shuttle vehicles across the Straits.

- **Robert M. Tykal**, BSME ’84, and his wife Patty (Geary, BS Eng, Arts ’83) now reside in Mt. Pleasant, SC, with their three daughters. Robert is the president and CEO at MTU Drive Shafts, LLC, a newly formed company in North Charleston, SC, involved in the sale, design, and manufacture of drive shafts for the automotive and commercial vehicle markets. The company is a wholly owned subsidiary of Daimler-Chrysler North America Holding Corporation. He previously worked for Detroit Diesel for 18 years, most recently as vice president and general manager of off-highway operations.

**1990s**

- **Lee S. Bourque**, BSCE ’88, a Navy Lieutenant j.g., is assigned to Naval Mobile Construction Battalion Seven, home based in Gulfport, Mississippi. He recently spent a six-month deployment in Rota, Spain. His battalion provides responsive military construction support to Navy, Marine Corps, and other forces in military operations. They construct base facilities and are armed to conduct defensive operations and to convoy through unsecured areas.

- **Lizette Chevalier**, MSCE ’90, PhDCEE ’94, has been named chairperson of the Department of Civil Engineering at Southern Illinois University, Carbondale, IL. She is the first woman to hold this position. Chevalier joined the faculty in 1995 as an assistant professor and was promoted to associate professor in 1999.

- **Craig E. Dashner**, BSCE ’93, a senior project manager in structural engineering with Orchard, Hiltz & McClement, Inc., in Livonia, MI, was one of eight engineers appointed in 2002 to a national committee charged with the creation of a Structural Engineers Emergency Response Plan (SEERP) for the National Council of Structural Engineers Associations. He is responsible for a chapter titled “Transportation Structure Assessment.” The first draft of the document is completed. Dashner also volunteers as a structures specialist with the Michigan Urban Search and Rescue organization. “Instead of just designing bridges and going home at the end of the day,” he says, “I am getting involved in emergency preparedness/search and rescue. In signing on, you make the commitment to ‘do what has to be done,’ even if it means leaving your life behind for seven days and putting your own life in danger. If ever I am involved in a situation where a life is saved, it is all worth it.” dashner@ehom-eng.com

- **Duane Dinkel**, MSChE ’91, of Simpsonville, SC, manages an engineering and R&D group at Alcoa Fujikura, the fiber optic division of Alcoa. Prior to joining Alcoa in 1999, he worked in R&D for 3M.

- **Howard Eland**, BSCE ’92, is the senior technical architect for Affilias in Honsham, PA, which is the registry for the .info global top level domain, with over 900,000 domain names registered in their system throughout the world. In January 2002 he led the design team in Australia in re-engineering the registry for most of the .au domains, which went live July 1, 2002. Affilias has also partnered with the Internet Society to bid for the .org domain. Howard and his wife, Suzanne, and daughters Dana and Dana enjoy life with their pets (dogs, cats, rabbits, and two ducks). hland@affilias.info

- **Ed Eshelman**, BSME ’93, MSME ’95, engineering supervisor for the Commercial Vehicle Systems business group based in Troy, MI, was named ArvinMeritor’s 2002 Engineer of the Year for his development of innovative vehicle simulation solutions for vehicle suspensions. A patent-holder with additional patents pending, he joined ArvinMeritor in 1997. ArvinMeritor, Inc., is a global supplier of integrated systems, modules, and components to the motor vehicle industry.

- **Dan Hubbard**, BSME ’91, is a senior project engineer for the Delphi Corporation in Saginaw, MI. He had a one-year tour of duty as a captain with the U.S. Army Reserve Command, Engineering Branch, in Atlanta, GA, in 2002, having been mobilized to fight the war on terrorism.

- **Rhett B. Lawing**, BS Eng, Arts ’91, a Marine Corps major, received his second Navy and Marine Corps Commendation Medal for three years of faithful service at Marine Fighter Attack Training Squadron 101, San Diego. He gave instruction on air-to-air combat, air-to-ground combat, and the transition phase. His efforts were instrumental in his squadron’s completing more than 40,000 flight hours and the production of 140 replacement aircrew.

- **Sarah Smedley**, BSCE ’98, joined the Phoenix office of Stanley Consultants, Inc., in May 2002 as a Civil Engineer-in-Training in the Infrastructure Department. The company provides engineering, environmental, and construction services worldwide.

- **Ryan Snook**, BSCE ’96, MSCE ’98, a project engineer with G2 Consulting Group in Troy, MI, earned his professional engineering (PE) license in Michigan in 2003. He has been with G2, a firm providing geotechnical, environmental, and construction engineering services across the U.S., for five years and lives in Lake Orion.

- **Joel M. Sterk**, BSE ’95, earned an MBA from the University of Chicago in 2001. During a 2001 business trip to China, he posed for a picture of himself at the Great Wall wearing Spartan green. After six years with Motorola in product development, management, and marketing positions, he made a major career change. He is now a management consultant for Pittiglio Rabin Todd & McGrath in Rosemont, IL.
Responses to “Looking Back”

From William M. Vogtmann, BSChE ’79

Were these students making core memory for a computer lab? Though I am not old enough to recognize the production process or the people involved, the first process control computer I used in industry, in 1980, had a whopping 1K of magnetic core memory.

From Dennis Gassman, BSEE ’64, MSEE ’66

This issue has excellent photographs of young ladies (they had to have very good vision) stringing core memory planes to be used in MSU’s MISTIC in the late ’50s. I’m sure that Dr. Richard Reid and Julian Kateley could spin interesting tales of trying to make the first 4K-word “core stack” operational in the MISTIC system.

From Julian Kateley, Professor Emeritus, Computer Science; Associate Director Emeritus, Computer Lab

I don’t know who these people are but I know what they are making.

The MISTIC [Michigan State Integral Computer], named by Dean Ryder, had a 40-bit word and a 1,024-word Williams Tube memory, which I helped to build. Even for these times (mid- to late 1950s), this was a relatively small number of words. Worse yet, the Williams Tube memory was not very reliable. Professor Richard J. Reid spent an hour or so every morning running what was called a “read-around” test and adjusting the 40 pots (potentiometers) on the side of the MISTIC to get the best possible performance from the Williams Tube memory for the day’s production.

So the decision was made to replace the Williams Tube memory with a magnetic core memory. Professor Reid was in charge of the project with me helping him. The magnetic cores were donated by IBM. The cores were strung with three wires on a phenolic frame, clearly visible in the pictures. In the lower picture [at right] we see the cores held in an epoxy jig by vacuum while the wires are strung through the cores. This epoxy jig was given to us by a guy at Remington Rand in Minneapolis. These frames were assembled 4 to a plane and stacked 40 planes high. The memory provided 4,096 words of 40 bits each.

All of the electronics for this memory used transistors. The memory never worked very well and before we could improve its performance, the decision was made to replace MISTIC with the CDC 3600.

The CDC 3600 was installed on the second floor of the Computer Center. [The CDC 3600 was installed in June 1963 on the second floor of the Computer Center, not the third floor, as previously indicated in the last issue of Currents Magazine.] I knew Beth Unger [see Currents Magazine, Vol. 2, No. 2, Winter 2003, pp. 32–33] quite well at the time. She suggested to me that the Computer Laboratory needed a User Services section. I brought her idea to Wayne Von Tersch, he immediately approved, and we set up the first (that I knew of) User Services.

From Peter Van Atta, BSEE ’64

The project on the back cover is the lacing of ferrite core memory for some digital computer—I would guess the MISTIC.

The article on pages 32–33 [Winter 2003] reminded me of my era’s experience writing and debugging our first FORTRAN programs using both the MISTIC and the CDC 3600. We had three choices for input media.

One was paper teletypewriter tape as used in the MISTIC. This was sometimes a problem for touch typists since the TT code and the input code (ASCII?) were not the same, so the keycaps on the machines were shuffled and it was no longer a QWERTY-looking keyboard. Then, if one had an error or wanted to change the program in any way, you needed to reperf the tape and insert or add new strokes in a new tape.

The Flexowriter was a better tape producer. At least it had a standard keyboard. The best choice, most in demand and with the fewest available machines, was the card punch. Then you could reorder, insert, etc., at will.

The advantages were apparent to me when my first program to find the “second perfect number” found something less than the correct answer. The problem was solved by moving only one card so that the test for the sum of all factors equaling the original number was placed after “all” factors had been found rather than just after the latest factor was added to a running sum.
From Leo Voelkle, BSEE ’63

I am not exactly sure who these women are, but I think they could be MSU students working in the electrical engineering lab at MSU. This activity could have occurred in the ’60s and early ’70s.

I think they are working on stringing magnetic core memory boards, which at that time was a manual procedure. Women were typically hired for this job, rather than men, because of their superior hand dexterity and, presumably, greater patience.

Each memory bit (core memory) is made from a donut-shaped magnetic material that had two address lines (X and Y) plus a sense lense that indicated either an “on” state (1) or an “off” state (0). For example, a typical core memory board may have contained 1,024 words of computer memory. If the computer word was 16 bits long, then a 1,024-word “core memory” board contained 16,384 magnetic donuts.

The Control Data Corporation computer (CDC 3600) used magnetic core memory technology. The CDC 3600 computer was installed in June 1963, the year I graduated from MSU. The class of ’63 was also the first electrical engineering class to graduate from the “new” engineering building.

From Ted Seble, BSEE ’58

Interesting photos of the women weaving core computer memory planes. That technology was fairly widely used in the ’60s. The MSU version of the ILLIAC, built in 1955 and 1956, used something called Williams Tubes for memory. They couldn’t have had much memory capacity as they used CRTs. The tube would write a bit pattern on the phosphor—the storage medium—and an image tube would read the image and refresh it. Obviously, not very fast. Gate logic was dual triode tubes. Massive air conditioning was required. Input was punched cards. It sure beat the use of the Friden calculators, though. I took a one-term class on the computer in ’58.

Core memory came in a bit later, and had the advantage of being non-volatile (did not need to be refreshed). Each small powdered iron core represented one bit and had three fine wires strung through it. If my memory is correct, these were “read,” “write,” and “sense.” If any one core developed a crack, that was a serious problem, requiring replacement of the plane. Solid-state memory integrated circuits, which came a bit later, were much faster and cheaper.

From Thomas D. Rethard, Jr., lecturer and director of marketing and development, Department of Computer Science and Engineering, The University of Texas at Arlington

How about a hard one next time?

These folks are assembling planes of core memory. My best guess as to who they are is probably IBM employees in the early to mid-1950s (guess due to the 35¢/hour wage). If that’s correct, the memory planes are most likely for an IBM 704.

The memory plane in our collection, which closely resembles these, is from a much later Four Phase computer.

From Kelly P. Golden, BSEE ’65, MSEE ’67, PhDEE ’71

They are making magnetic-memory planes fabricated by stringing multiple wires through an array of ferrite torroids (e.g., iron-containing donuts). Their 64 × 64 locations can store 512 bytes (at 8 bits) of binary data. I have three of them, initialed by “R. R.” [Richard Reid] as tested March 25, 1960, which I rescued from a trash bin about 1970.

In those days “computer science” was just emerging as a separate discipline.
While I was grateful for the job, it was certainly off-putting to work for a machine I preferred to regard as a tool that should actually be helping me.

So I did not switch majors and instead continued studying electrical engineering—an excellent decision even in hindsight. Computer assisted analysis and design are now my primary tools for engineering design, a situation that has always seemed very natural to me thanks to the environment at MSU.

From Brian M. Kent, BSEE ’80

The folks on the back are constructing “core” memory, i.e., putting tiny magnetic loops on a matrix wire structure. Each loop was a “bit.”

The old MSU CDC 6600 used core memory, as did the first data automation minicomputer I programmed in 1976. (Only 1,024 assembly instruction memory locations!)

EDITOR’S NOTES: The MISTIC became operational on October 18, 1957. The CDC 3600 replaced the MISTIC in June 1963. The CDC 6500 was purchased in 1968. For an overview of the mainframe history, go to http://www.msu.edu/unit/complab/mainframe.html

For more about the development of the MISTIC, go to http://www.msu.edu/~complab/FrameMISTIC.html

We’d like to thank Julian Kateley and Kelly Golden for providing the photos you see on pages 35 and 36. And a special thanks to Kelly Golden for recently donating two of his core memory planes to the College of Engineering.

The College of Engineering and your former classmates are interested in you. Please keep everyone informed. Fill out this form (please type or print clearly) and return it along with any photos, news clips, or press releases to: Currents Magazine, Office of Publications and Public Relations, 3412 Engineering Building, MSU, East Lansing, MI 48824-1226.
A new occupant opened up shop in the Engineering Building on April 21. Located in the first-floor lobby near the auditorium, Sparty’s coffee house offers not only gourmet coffees, but a variety of other beverages, along with bakery items, sandwiches, soups and salads, and snack foods. The new shop is open weekdays from 7:30 A.M. to 11:00 P.M. and some weekend hours. Considering these long hours and the variety of foods, a person could conceivably work on a project in the Engineering Building from dawn to dusk without ever leaving!

The coffee house is operated by Sparty’s Stores and Cafés, a unit of MSU’s Auxiliary Services within the Division of Housing and Food Services. Initial costs were split between Housing and Food Services and the College of Engineering. Engineering will share a percentage of gross sales. Planners estimate that the initial capital outlay will be recovered fairly quickly.

Kenneth L. Deneau, assistant manager of Auxiliary Services, says his office is committed to employing students. This enables some of our engineering students to “go to work” between classes without leaving the building. Deneau believes students benefit from seeing “the importance of policies and procedures in operating any business, the necessity of planning, and the need to stay ahead of the curve by responding to customer wants and following changing trends in the marketplace.”

—Lynn Anderson

International Day in Engineering

“Many Colors, One People” was the theme of International Day in Engineering, November 12, 2002. This year’s event will be held on October 14.