New Dimensions

NEWSLETTER FOR ALUMNI OF THE COLLEGE OF ENGINEERING AND COMPUTER SCIENCE
From the Dean

It is time again to write this column, which is the first one for this millennium. During this decade, the College had many successes and only a few disappointments. The overall enrollment in the College has stabilized, although individual programs have seen their ups and downs.

The most important issue that will affect practically all programs in the College is the new national accreditation procedure for the Year 2000. The Computer Science Accreditation Board (CSAB) is merging with the Accreditation Board for Engineering and Technology (ABET). The new ABET will take an assessment approach to evaluate each program for accreditation. For over 20 years, ABET has based its evaluation of our programs on teaching. With the new criteria, the focus will be on what our students are learning rather than what they are taught.

The new guidelines require each institution to decide on its academic goals and objectives, and then prove that they have achieved them. Like high jumpers at a track meet, we will be asked to choose the height of our bar and then we must clear it. We cannot fall short of the mark.

The transition to Criteria 2000 will require extensive evaluation of our program curricula and program goals and objectives. This effort will constitute gathering input and feedback from our Industry Advisory Board members, our alumni, agencies who hire our graduates, and other stakeholders. It will require a great deal of coordination and assistance from our constituents.

We, the faculty and staff of the College of Engineering and Computer Science at CSU Sacramento are thoroughly committed to the search for truth and excellence and will grow in order to educate the next generation of engineers and computer scientists.

In 1946, poet Laureate John Masefield observed, “there are few earthly things more splendid than a university. Wherever it exists, it stands and shines...”

— Braja M. Das
Dean

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NEWSLETTER FOR ALUMNI OF
THE COLLEGE OF ENGINEERING
AND COMPUTER SCIENCE

COLLEGE OF ENGINEERING & COMPUTER SCIENCE
California State University, Sacramento

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Riverside Hall Celebrates Ten Years

The College of Engineering and Computer Science celebrated the tenth anniversary of Riverside Hall, the main engineering building, September 8. Faculty, friends, and students gathered for a program celebrating and remembering the activities and successes of the College, and to look forward into the new millennium.

The Dean presented his "Vision 2000," the goals and plans for the college in the years to come. Howard Hartman, the first dean of the School, and Don Gillott, the dean during the construction of Riverside Hall, spoke of the history of the college and the many people involved in its success.

Industry Advisory Board chair Terry Pearson discussed the College's relationship with industry and of the necessity of continued and stronger partnerships, and Orin Bennett, chair of the ECS Chapter of the Alumni Association, spoke about the activities and future plans for the ECS Alumni Chapter. Faculty and student speakers briefly presented topics of research and activities.

A festive reception, decorated with pictures and displays of College research, activities, and events, followed the program.

Co-Generation at ECS

On August 31 a Co-Generation Laboratory came on-line in Santa Clara Hall. Financed in part by the National Science Foundation, SMUD, Pacific Gas & Electric, and the College, the facility will support the education and research of Mechanical Engineering and Mechanical Engineering Technology students in the areas of thermodynamics, fluid mechanics, heat transfer, design experimentation, and the operation of modern electrical generation.

Andy Banta, Professor of Mechanical Engineering, and Thinh Ngo, Chair of the Department of Mechanical Engineering, are Co-Principal Investigators for this project.

Members of Industry Gather for Fall Meeting

Members of the Engineering and Computer Science Industry Advisory Board met at their fall meeting October 12 at the University Union. The Board discussed the necessary revisions to the 1996 Strategic Plan for the College, the steps of the process and the expectations of the accreditation review committee, and new ideas regarding scholarship support for students. In addition, the board members who serve as industry liaisons to the departments and programs of the College presented the board with summaries of their experiences and work with their departments.

Members of the Industry Advisory Board are Terry Pearson, Aerojet and Chair of the Industry Advisory Board; David Alexander, NEC Electronics; Orin N. Bennett, MHI; David Blad, SAE; James C. Castle, USCS International, Inc.; Robert Cribs, Folsom Research, Inc.; Linda Davis, SMUD; Brian Dowling, Hewlett-Packard Company; Homer Gee, Packard Bell NEC; Alan R. Gianini, SACTO; Jay Halverson, Pacific Construction Consultants; Lee Harrison, Level One Communications, Inc.; Jim Hartley, CH2M/HILL; Louis William Hebert, Intel Corporation; Lanese Leach, DTS Innovis; Chuck Meyer, NVISION, Inc.; Robert Potter, California Water Resources, retired; Mike Reinking, Intel Corporation; Jim Roberts, CalTrans; John Schimandle, Hewlett Packard Company; Dick Wallace, SMUD; Russ Whipple, Teichert Construction; and Forrest W. Williams, IBM Corporation.

HP Donation Supports Training in Operating Systems

The Hewlett-Packard Company (HP) has donated 16 advanced computer workstations to ECS to assist teaching in the intricacies of computer operating systems. Students will use the stations to design and test computer operating systems for multiple platforms, and also will learn modern debugging techniques and other skills related to implementing an operating system. The equipment will replace outdated computers used in the Computer Systems Laboratory and utilized in the "Operating System Pragmatics" course. The ECS partnership with HP dates back more than two decades.
Generous Grant from CEA Assists CM Program

The Construction Management Program has recently received a grant from the Construction Employers’ Association (CEA) to support and promote high-quality construction management education.

The CEA’s Construction Management University Program began last year in an effort to support and develop long-term relationships with the five universities selected to participate in this program. In addition to CSUS, the other universities chosen are UC Berkeley, California Polytechnic San Luis Obispo, CSU, Chico, and Stanford University.

The applications from these universities were rated one to five with the first three placeholders receiving larger grants. CSUS came in first place with a proposal to develop a cooperative, discipline-based pilot program.

Look Ma, No Wires!

Riverside Hall, the main engineering and computer science building, is now wireless. Currently operating on the first two floors, the system will eventually allow anyone in Riverside Hall’s classrooms, hallways, or out-of-the-way corners with a laptop to get connected to the College network and the Web without plugging into the wall. This improvement continues the building’s tradition of innovation. The system is designed to allow instructors in each classroom to hook into the network without being tethered to a wire. It also will allow up to 30 students per classroom to simultaneously work online without plugging in their laptops. The system requires each laptop to be equipped with a $400 PC card that can send and receive data via radio waves.

Mike Wimple (BS ’83; MS ’91), information technology manager for the College of Engineering and Computer Science, is directing the initiative.

Intel Grants Funds for Engineering Scholarships and Outreach Efforts

The Intel Foundation, the charitable arm of the Intel Corporation, has made grants totaling $40,000 to the College of Engineering and Computer Science at California State University, Sacramento to support student recruitment and academic scholarships.

Five renewable scholarships for first-year students who intend to major in electrical and electronic engineering, computer science or computer engineering will be supported by $10,000 of the donation. In addition, the Intel Foundation has committed to continue annual funding for these scholarships while each year awarding five new renewable scholarships to other first-year students. Students who demonstrate success in advanced mathematics and science in high school and community college, possess a high school GPA of 3.8 or higher, and exhibit leadership in other activities will be eligible for consideration.

The Intel Foundation also granted $15,000 for outreach programs at local high schools and for enhanced recruitment efforts in the region. CSUS faculty and administrators will host on-campus programs and tours for high school students, and work with high school counselors and teachers to encourage students to take higher level mathematics and science classes and to consider careers in engineering.

A grant of $15,000 was also made to the MESA Engineering and Computer Science Program, which recruits and assists students from educationally disadvantaged backgrounds.

Level One Establishes Scholarship

Robert Pepper, president and chief executive officer of Level One Communications, Inc., an Intel Company, presented Dean Braja Das and Provost Jolene Koester with a $24,000 check February 11 to establish a scholarship program within the Department of Electrical and Electronic Engineering.

The two-year scholarship initiative will fund the tuition, fees, and books for four students during their junior and senior years. Level One develops integrated circuits used in high-speed telecommunications services.
CSUS Offers New Master’s Degree in Software Engineering

With an eye toward meeting the intense demand for talented computer professionals, California State University, Sacramento has become the state’s first public university to offer a master’s degree in software engineering.

The new program is intended to help fill a training void created by rapid development in computer technology. Students will learn the latest practices in software development, and how to build today’s complex software systems within time and budget constraints. Courses in the new program are being offered this fall and applications are currently being accepted.

“It used to be that you learned a programming language and you just started to code, without any real structure. Well, that is no longer acceptable,” says John Miles, chair of the computer science department.

“Today, software has millions of lines of code that interacts with many other applications, so it is important that computer professionals have more specialized training,” Miles says. “Software obviously isn’t like a bridge, you can’t point to it and touch it, but failures of software systems can be quite costly.”

The addition of the new degree continues a tradition of leadership in the CSUS College of Engineering and Computer Science, which was among the first in the CSU system to offer a degree in computer engineering in addition to a degree in computer science.

Enrollment growth in the University’s computer programs in recent years has been strong. Undergraduate enrollment in computer engineering grew from 220 students in 1994 to 361 in 1998. In the same period, undergraduate enrollment in computer science grew from 415 students to 565, and graduate enrollment in computer science has remained full with about 150 students.

Demand for graduates from these programs has grown along with the region’s high-tech industry. Development of the degree at CSUS began three years ago and is based on a model created at Carnegie Mellon University’s Software Engineering Institute. It is expected that most of the students in the new program will be working professionals.

— Frank Whittatch
Senior Writer, Office of Public Affairs

May Commencement Speaker

Dr. Delon Hampton, the national president of the American Society of Civil Engineers, was the commencement speaker for the May 1999 graduation exercises. Dr. Hampton serves as Chair of the Board and Chief Executive Officer of Delon Hampton Associates, Chartered (DHA), a consulting engineering, design, construction, and program management services firm. DHA, one of the top 500 design firms in America, specializes in providing civil, structural, and environmental engineering and construction and program management and planning services to local, state, and federal agencies and the private sector. Dr. Hampton holds a Ph.D. in civil engineering from Purdue University.

HP Engineer Teaching New Technology Class

Using some of the most advanced hardware available, a Hewlett-Packard (HP) engineer is spending his Tuesday afternoons teaching a new course at California State University, Sacramento. The course focuses on the research and development of embedded systems, the small electronic controllers that help run everything from microwaves and cell phones to military jet fighters. The systems are difficult to work with because they have limited memory, they must operate flawlessly and the software used to program them is highly specialized. Computer engineers who understand the systems are in high demand.

The new course is taught by HP engineer and CSUS alumnus Peyman Shahmirzadi, with assistance from CSUS computer science professor Senad Busovaca.

The course is the latest result of a long partnership between HP and CSUS. The company has donated Shahmirzadi’s time to teach the class and also helped coordinate a donation of about $100,000 in equipment and software from VLSI Technologies and Windriver Systems. Plans call for eventually expanding the course and making it part of the University’s new master’s degree in software engineering. “We’re teaching students what embedded systems are and how to approach them,” Shahmirzadi says. “Most of them have been working on personal computers, and this requires a different mindset. The great part is, we’re showing them how the development process works in industry.”

The student project this semester is to develop an embedded system for communicating with printers.

— Frank Whittatch
Senior Writer, Office of Public Affairs

U.S. News and World Report has ranked the College of Engineering and Computer Science 26th in the nation in non-Ph.D.-granting engineering programs in its August 1999 “America’s Best Colleges” issue.

— Frank Whittatch
Senior Writer, Office of Public Affairs
Alumni Center to Debut in Spring

The long-awaited CSUS Alumni Center got its roof in place before the winter rains arrived. Thanks to contributions from alumni, the University, corporate partners, building material suppliers, and a significant gift from alumnus Steve Yamshon, the Center will be completed by next April, just in time to operate the facility for a few months to "get the bugs out" before the U.S. Olympic Team Trials take place at Hornet Stadium July 14-23, 2000. The Center, which will be named in honor of Dr. Yamshon for his commitment of $1 million to the campaign, will be a busy place during the Olympic trials.

"We expect to have numerous receptions at the Center for corporate sponsors, donors, community groups, Alumni Association chapters, and Olympic officials during the Trials," according to alumni association officials. "We really picked a great site, right across the street from the stadium."

The Center will be built by Harbison, Mahoney & Higgins, a premier construction firm in Sacramento. One of the partners is John Messner, an alumnus and former Alumni Association Board member. Messner has been a guiding force behind the scenes and has been instrumental in lining up in-kind gifts of labor and materials and enlisting the support of other members of the Associated General Contractors to assist with the project.

Here's what CSUS Alumni Center will provide:

- A home on campus where alumni can meet with other alumni, students, university officials, and members of the community;
- A place where alumni will interact with students to help them with career advice, internships, mentoring, and employment opportunities;
- A location for holding continuing education classes, Alumni College sessions, corporate training seminars, conferences and workshops;
- A place for board and committee meetings, alumni chapter meetings, campus group meetings, faculty meetings, student group meetings;
- Opportunities for social activities such as alumni reunions, pre-game parties, luncheons, dinners, and receptions;
- A beautiful setting for alumni and community art exhibitions, awards ceremonies, weddings, recitals, outdoor functions, and other special events;
- Temporary office space for alumni visiting the Capital, or between meetings when on campus.

Alumni and community groups will be able to rent space in the 12,000 square foot Alumni Center once it is completed. The Alumni Center Operations Committee will be developing a rate schedule in the coming months and groups will be able to reserve the facility months in advance. Fund raising will continue during construction to provide additional enhancements to the building. Those interested in helping should call (916) 278-6290 or 1-800-SAC GRAD.

— Steve Black
Director, CSUS Alumni Association

HEAD START High-Schoolers Welcome In New Engineering Class

Capital Region high school students will learn the basics of engineering while earning college credit this fall, in a new course at CSUS. It's the first engineering class in the state designed for both advanced high school seniors and college freshmen. Taking it in high school will give students an extra edge when they begin their college studies. The students will spend one day a week in CSUS labs, experimenting with robotics, analog and digital circuits, fluid mechanics, materials testing, surveying and more. The emphasis will be on real world applications and teamwork. When the semester is over, organizers hope students will be inspired to study engineering and help fill a growing need for engineers and other high-tech professionals.

"The goal of this class is to get young students excited about engineering," says S.K. Ramesh, the chair of the electrical and electronic engineering department who helped create the class. "We want them to see the big picture of engineering, rather than getting lost in the physics and math. Engineering is about solving problems and building things."

The class is called Engineering 001, and it began as a pilot project last semester with five CSUS students and 15 Cordova High School students. Now the one-unit course is available for all CSUS engineering majors.

The course is taught by Steven de Haas, electrical and electronic engineering; and Ed Dammel, civil engineering. They hope the course eventually will be offered throughout the state and become a high school mainstay, much like honors history or advanced placement mathematics courses. There has been interest from as far away as San Diego, and the concept was featured at the California Career Pathways Consortia conference in January.

In the Capital Region alone there are 22 high schools with special engineering programs, all of which Ramesh says would be excellent places to offer the course. To help start the course at more high schools, the CSUS professors will work with interested high school teachers during semester sessions and at special daylong workshops, the first of which was held Oct. 16. Area high schools with students enrolled in the course this semester are Cordova, Laguna Creek, Sheldon, Center and Bella Vista.

— Frank Whittlatch
Senior Writer, Office of Public Affairs
The College of Engineering and Computer Science welcomes contributors to its three donor societies for the 1999 fiscal year (July 1998 – June 1999). The generosity of all donors of gifts and in-kind donations supports and strengthens scholarship programs, facilities enhancement, and research at ECS. We are especially grateful to these individuals and corporate sponsors.

**ECS Donor Societies**

**Welcome 1999 Members**

The Dean’s Society

(Gifts of $1,000 and above to ECS)

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**Century Friends**

(Gifts of $100 to $499 to ECS)

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Riverside Partners

(Gifts of $500 to $900 to ECS)

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Alpha Kappa Alpha Sorority, Incorporated

**Newsletters for Alumni of the College of Engineering and Computer Science**
Civil Engineering

The College of Engineering and Computer Science lost a loyal alumnus this past summer. Ron Smith died on July 4. Ron was a life member of the Alumni Association and served on its Board of Directors for six years and as the president in 1995-1996. He earned three degrees from CSUS: a BS in Civil Engineering in 1962, an MBA in 1967, and an MS in civil engineering in 1996. He worked for more than 20 years for the Spink Corporation of Sacramento and for the past two years as chief engineer for the City of Portland. Ron was also a part-time faculty member in the College. A scholarship program has been established in his memory.

Maurice W. Gallarda, BS ’78, has recently been appointed Vice President of New Business Development for Southwest Water Company. In this position, he will oversee development of new business lines and acquisitions. Southwest Water Company operates and manages water supply and wastewater treatment systems.

Mike Harrison, MS ’95, an engineer with Carollo Engineers, was the guest speaker at the Sacramento Area Section of the California Environment Association’s Student Night.

Jeanine A. Jones, BS ’80, MS ’83, is Principal Engineering with the California Department of Water Resources (CDWR) and Chief of CDWR’s Statewide Planning Branch. She is responsible for overseeing the California Water Plan Update.

Steve Macaulay, MS ’72, is the Deputy Director of the California Department of Water Resources.

Larry M. Wing, BS ’75, MS ’81, is the Senior Manager for HDR Engineering, Inc., Sacramento Office.

B. Jay Schrock, BS ’60, is active on numerous fronts to advance the work of trenchless pipeline rehabilitations. He has recently published an article on this topic in Trenchless Technology.

James L. Podesta, BS ’74, was recently awarded the City of Manteca Employee of the Year. He is the Deputy Public Works Director for the City of Manteca, CA.

Construction Management

Gene Ingersol, BS ’92, Project Manager at McCarthy Construction, is in charge of the construction of the newest of the buildings on CSUS campus. Mariposa Hall is a five-story classroom that will house the department of design, the department of foreign languages, the department of family and consumer sciences, and the division of social work and the offices of the Dean of the College of Arts and Letters.

Electrical and Electronic Engineering

Patrick Iskanian, (BS ’94; MS ’96), works at Level One Communications, Inc., an Intel Company, in the product development and design group. He also has taught in Electronic Circuit Design part-time since 1997.

Brian M. Dowling, BS ’83, is the Research and Development Section Manager for Network Peripherals at Hewlett Packard, Roseville.

Paul M. Hinz, BS ’90, is Product Manager at Objective Systems Integrators.

Mechanical Engineering

Nelson R. Peña, BS ’93, is Associate Mechanical Engineer at the California Energy Commission. He was recently named California’s Commercial Building representative to the National Fenestration Rating Council (NFC), a national organization that standardizes window products sold in the United States.

Computer Science

Ragan T. Wilkinson, BS ’87, is a software development manager at DST Innovis.

Jeffry T. Boone, BS ’86, is Vice President of Marketing at Objective Systems Integrators.

Jay Goldstein, BS ’89, is the President of 800-WE-FIX-MACS, and the father of a new son, Charles, born in June.

Wyler Furgeson, BS ’89, is President and CEO of Charsmac Engineering in Newcastle, a company he founded in 1986. Charsmac employs 8 CSUS graduates.

Surfers Alert!

A special website just for alumni of the College of Engineering and Computer Science is currently under design. A survey project comprised of students in the Department of Computer Science is busily assembling, designing, and coding all the necessary parts of this project. In the meantime, visit the general College website and look for the new alumni zone to be appearing on a computer screen near you.

http://www.ecs.csus.edu/
http://www.ecs.csus.edu/alumni.html
From an Alumnus

Brief Dialog of a Mechanical Engineering Alumnus’ Adventures with the U.N.

Sometimes the fates provide you with some amazing situations and experiences. Before I graduated from the College of Engineering and Computer Science with my degree in Mechanical Engineering, I decided that I was going to take a long deserved vacation. I decided to go to Europe. The question remained, where?

I began my research with an interest in Space Law. I found a United Nations web site that discussed the Moon treaty, which was signed in 1969. That conference was known as UNISPACE I, and I discovered there would be a UNISPACE III conference held in Vienna, Austria in the summer.

I was able to locate the people who were organizing the conference. It was one of the professional societies of which I had recently become a member, AIAA (American Institute of Aeronautics and Astronautics). I inquired if I could attend, and was asked if I wanted to participate. I immediately gave an overwhelming affirmative, and became part of the logistical/organizing staff for the conference.

I joined a technical forum within UNISPACE III called the Space Generation Forum (SGF), an international youth forum for university students, graduate students and young professionals. I was appointed by the other organizers to be the supervising conference room officer. In this position I was responsible for all computer, media, security, translators, and documents coming in and going out of the conference rooms. I was also in charge of setting up a live teleconference with the MIR space station. This was a monumental task. Along with these duties, I also prepared the opening and closing ceremonies of the SGF as well as attending several high-level UNISPACE III meetings, and receptions.

UNISPACE III convened under the theme “Space Benefits for Humanity in the 21st Century” as a special session of the Committee of the Peaceful Uses of Outer Space (COPUS) open to all Member States. Space agencies, the specialized organizations of the United Nations, scientific organizations and space industry also participated in UNISPACE III.

The United Nations role during the UNISPACE III was to foster the peaceful use of space for world humanity. It provided a legal framework and a forum for discussions of future development and cooperation of space activities. Its primary objectives were to promote effective means of using space technology to assist in the solution of problems of regional and global significance and in strengthening the capabilities of Member States to use space applications for economic, social and cultural development.

The Plenary of the Conference adopted the Vienna Declaration on Space and Human Development, an international policy framework and blueprint to guide governments and industries in the first half of the 21st century. The discussions at UNISPACE III redefined the international space agenda and laid new ground for international co-operation in space-related activities.

The Space Generation Forum (SGF) was an official, integral part of the UNISPACE III conference. The SGF delegates/participants did not act to represent the interests of their nations; rather they acted as world citizens, and represented the voice of the world’s youth at UNISPACE III. It presented many young space professionals with an unprecedented opportunity to bring their vision and perspective on what should be the focus of space activities in the next century, to the current leaders and decision makers in the space arena, as well as contribute to shaping humankind’s future in outer space.

The topic of the SGF was “Visions, Ideas and Strategies for the Future of Space.” Students and young professionals attended three parallel sessions to discuss and brainstorm about future visions and realistic strategies for the space development. The emphasis of the SGF was on the strengths of the youth: creativity, historic unaffectedness, open mindedness to new concepts and approaches and the motivation to positively affect their own future.

Common trends and developments were identified and discussed, and concrete ideas were discussed on how things can be changed and improved. Part of the discussions resulted in recommendations to the UNISPACE III plenary. The initial goal was to get a few of these recommendations to be part of the “Vienna Declaration,” a very brief summary of the conference.

Discussions in the Space Generation Forum also became the starting point for further follow-on initiatives. SGF delegates were given the opportunity to participate in all other events related to the UNISPACE III conference and to interact with leading thinkers, decision makers, industry representatives, top level government representatives (e.g. ministers), top executives from space agencies and companies, as well as scientists and engineers and professional space associations (AIAA, AAAE, DOILG, etc.).

My single most memorable event during the conference was when I had a chance to read some of the UN documents before they were brought into the SOF conference rooms. I discovered that they... continued next page
dealt with the UN technical session on protecting the earth’s environment and found no mention of planetary defense system development in the documents. This was surprising since the cometary impact in Jupiter a few years ago has raised the public concern on this type of collision happening to the Earth. When I found out that this wasn’t mentioned, I discussed this concern with the administrator of the International Space University. Afterwards, he informed me that the UN was drafting up a recommendation as we were speaking. At the same time, the SGF took this issue and also drafted their own recommendations. These recommendations were also joined with the UN recommendations for implementing a planetary defense system and became one of the five recommendations that were placed into the Vienna Declaration.

The recommendations that the Space Generation Forum made complemented the governmental discussions in the UNISPACE III Committees by generating fresh ideas, alternative scenarios and new insights from the viewpoint of highly qualified young space professionals. The outcome of the Space Generation Forum was brought to the attention of the UNISPACE III Plenary, and was reflected in the official report endorsed by the Conference.

Furthermore, an executive report of the SGF activities was included in the official UNISPACE report. In addition, the Space Generation Forum provided an excellent setting for meeting young space professionals from all over the world and for establishing and extending professional working-relationships.

— Shane Kemper
BS ’99; Current MS Student

For Reardon, Machines and Students are Perfect Combo

Fred Reardon says he’s primarily a people-person, and it’s obvious after seeing him work with students that it’s true.

Sure, the longtime CSUS engineering professor enjoys his field. He’s known he wanted to be an engineer since he was a child and has been researching propulsion, thermodynamics and the like since the go-go days of rocket building in the 1950s. But throw students into the mix — such as in the confines of the measurement lab or at Sacramento’s recent “kinetic sculpture” race, in which students raced their 30-foot Herky the Hornet across both land and water — and Reardon shines.

The latest Outstanding Teacher in the College of Engineering and Computer Science says students keep him energized.

“I just like the interaction with students,” Reardon says. “I never get burned out while teaching. Administrative duties, paperwork, that gets old, but never the teaching.”

Students lucky enough to take courses from Reardon over the years have certainly picked up on that dedication. Robert Wichert, a former student now with SMUD, wrote in support of Reardon’s nomination for the Outstanding Teacher award: “As an instructor, I found Professor Reardon to be both demanding and enlightening. His efforts to make me a better student of thermodynamics have led to my professional success.” And a current student, Steven Crosby, wrote: “Not only has Professor Reardon demonstrated excellence in his ability to teach, but also he has provided exceptional one-on-one student counseling as a faculty advisor to myself and many others.”
Reardon earned his bachelor's and master's degrees in mechanical engineering from the University of Pennsylvania. And because a professor had convinced him to teach a course in drafting, he enrolled at Princeton University with the goal of someday being a professor. At Princeton, he completed his doctorate degree in aeronautical engineering with an emphasis on jet propulsion and then went to work at Aerojet in Sacramento. He was a supervisor in the combustion dynamics section.

"I figured if I wanted to teach engineering, I had to have some practical experience first," Reardon says matter-of-factly. "Some of my friends told me I would never go into teaching if I stayed in industry too long, but after five years I did just what I said I would."

Reardon joined the CSUS faculty in 1966. It was one of the few institutions, he says, that was actually recruiting people with practical engineering experience as opposed to academics straight out of doctorate programs. During more than three decades here, he’s held numerous positions in addition to his teaching duties. He’s been the chair and graduate coordinator in mechanical engineering, and was the first associate dean of the College of Engineering and Computer Science. Currently, he’s coordinator of the mechanical engineering technology program. But he says it has always been working with students that is most rewarding.

In class, he focuses on developing students’ general problem-solving skills, rather than pushing them to become specialized in certain areas, and he encourages group work. For each of his courses, he has a website with assignments, notes and other information. He has developed a web-based tutorial on thermodynamics. Reardon also wrote and continually updates the manuals for the engineering program’s measurement lab and the management engineering technology computer applications class.

**Electrical and Electronic Engineering Faculty Member Mahlon Heller has Exciting Research in Progress – An Autonomous Shadow Vehicle**

A driverless “shadow vehicle” under research and development in the CSUS College of Engineering and Computer Science may one day save the lives of some CalTrans workers. A team of electrical and electronic engineering and computer engineering students, under the direction of professor Mahlon Heller, is designing and constructing a computer-driven vehicle, called the Autonomous Shadow Vehicle (ASV), for use in protecting highway maintenance operations. The unoccupied vehicles will replace the human-driven ones that now follow CalTrans repair trucks engaged in low-speed operations like sweeping, paint striping and cone placement. If all goes as planned, the ASV will be the first operational driverless vehicle in the world that drives on freeways under computer control at speeds up to 40 mph.

Shadow trucks are the first vehicles you see at a road construction site, bearing flashing signs warning of freeway maintenance work ahead and possible lane closures. They act as buffers on freeways to prevent drivers from rear-ending the maintenance vehicles and workers on the roadside. Unfortunately, highway drivers often hit the shadow vehicles instead. Every year, shadow truck drivers are killed or seriously injured in highway accidents.

The current phase of the project, funded by a $676,342 grant from CalTrans, has been in the works for four years. Mike Jenkinson is the CalTrans program manager for the ASV project. Other partners in the project include the state of Minnesota and the Federal Highway Administration. In addition to its uses in highway maintenance, Heller says the driverless technology has military applications and commercial applications such as in mining.

The driverless vehicle under development at CSUS is actually part of a two-vehicle package, a lead vehicle and a shadow vehicle. The shadow vehicle is an imposing four-ton diesel, with a battery of computers and sensors on board. The truck also has a large yellow crash attenuator, which is designed to absorb the first impact if a car hits it from behind. A four-wheel drive Dodge truck is used as the lead vehicle which simulates a highway maintenance vehicle, but has a litany of tracking equipment mounted on the back.

When completed, the autonomous shadow vehicle will automatically follow the lead maintenance vehicle at a distance of 20 to 100 feet set by the lead driver. Three tracking systems are used for redundancy. The antenna tracking system uses a microwave transmitting antenna on the lead vehicle and a receiving antenna on the shadow vehicle. The vision tracking system uses a camera on the shadow vehicle trained on a symbol on the lead vehicle. And the GPS (global positioning system) system uses GPS units mounted on the lead and shadow vehicles. The shadow vehicle can function in stop-and-go mode using a handheld radio control unit, where crews working alongside can move the shadow vehicle forward at walking speed, and in autonomous mode, where the vehicle will advance at speeds up to 40 mph tracking a lead vehicle such as a sweeper.

In addition to producing a much-needed tool to make highway work safer, the project provides invaluable training for Heller’s students. Heller says the students get a true sense of the skills they’ll use in the real world such as design, documentation, scheduling and budgets, as well as and group processes like team meetings and cooperation. “It’s a real, live engineering research and design experience,” he says.

Yong-ook Lee, a visiting professor from Shingu College in Korea, and several undergraduate and graduate students are working on the project. They, along with Heller, call themselves the “ASV Team.” Lee, who returns to Korea in February, performed theoretical calculations in support of the antenna tracking system. Mark Minzyk, a computer/electronic technician in the College of Engineering and Computer Science, also assisted with the project.

The current student group includes Julie Zawadski, Sandip Ladhani, Marbella Lora, Ted Lombardi, Dan Nguyen, Vince Herman, D.J. Rosenblatt, Jay Schultz and Jason Stein. Two of the team members gained an additional skill that they hope they won’t be called upon to use post-college. Zawadski and Schultz obtained Class B driving licenses so they can drive the massive shadow truck to test locations such as McClellan Air Force Base where they will use the runways as test tracks.

The project is now in phase three — the prototype phase. After analyzing possible technologies to use and demonstrating basic automatic control, the ASV team has designed and installed the equipment and are ready to test it. By the end of phase three, in spring 2000, Heller hopes to show CalTrans that the prototype shadow vehicle is reliable. The first round of testing features slow speed, short distance tests in parking lots on campus. Later, they will move the vehicles to McClellan Air Force Base for more extensive runs, traveling between five and 40 miles per hour and distances of 20 to 100 feet. After that, there will be another two of freeway trial tests using actual sweepers and paint strippers as lead vehicles.

— Laurie Hall
Senior Writer, Office of Public Affairs
Online Learning at ECS

During the Fall semester, Jean-Pierre Bayard, professor of electrical and electronic engineering, worked as one of six fellows for the College Level One Institute for learning technology at the national Institute for Science Education (NISE) located at the University of Wisconsin-Madison. The NISE project involves finding active learning environments involving the use of computer-based technology in science, mathematics, and engineering and technology (SMET).

Additional fellows include Susan Millar, LEAD Center Director, University of Wisconsin-Madison; Marco Molinaro, Director of Multimedia Development for Modular Chemistry Systemic Reform Project, UC Berkeley; Flora McCarty, Assessment Director of the National Engineering Educational Delivery System, (NEEDS), UC Berkeley; John Jungck, Professor of Biology and Director of BioQUEST, Beloit College; Steve Ehrman, Director of Flashlight Program and Vice President of the TLT Group.

The goal is to find a sample of some 60 promising "practices" at both the classroom and broader institutional levels, including two-year institutions, liberal arts colleges comprehensive and research universities. A "practice" is a learning environment that makes use of computer-based technology (ranging from e-mail to high performance computing) to engage in one or more of the following seven activities: encourage student-instructor contact; encourage cooperation among students; encourage active learning; give prompt feedback; emphasis time on task; communicates high expectation; and respect diverse talents and ways of learning.

The Fellows plan to interview instructors who have adopted and/or adapted instructional technology in their curriculum, and use what they learned as resources for a theme-based web site. They believe that this web site will be a valuable resource to faculty and administrators seeking to use emerging computer-based technology as tools to facilitate curriculum reform. In addition to his work with the NISE, Bayard has combined instructional component created with Asymmetric ToolBook II Instructor, Microsoft PowerPoint, and HTML with Asymetrix Librarian testing modules to create a comprehensive web-based course in Introductory Circuit Analysis here at ECS.

While the College has experimented with televised instruction in the past, ECS and Bayard are optimistic about the many possibilities for this style of learning. In addition to the more obvious benefits of giving students flexibility with regard to when and where they can do their studies, Bayard says, "early feedback shows that student performance is rising." He believes that one reason for this improvement is the feedback that this new style of learning provides to students.

"If a student does poorly initially, it can create a downward trend that's hard to recover from, but with Asymetrix Librarian's testing and immediate feedback, students are able to keep track of how they are doing."

Keith Bisharat, Program Coordinator of the Construction Management Program, recently received a prestigious faculty award from the CSU Chancellor's Office. The Bautzer Faculty University Advancement Award was established in 1996 and sponsors one faculty member from each of the CSU campuses to attend the annual Council for the Advancement and Support of Education (CASE) District Assembly. Bisharat's work toward securing an endowment for the Construction Management Program was cited as one of his qualifying activities.

John Cleverger, Professor of Computer Science, recently received a $30,000 grant from IBM to support continuation of the PC^4)2 programming Contest Control software project. PC^4)2 is used to run Regional and International Contests as part of the ACM (Association for Computing Machinery) International Collegiate Programming Contest. Cleverger is also the Director of Contest Systems for ACM.


Jose J. Granda, Professor of Mechanical Engineering, will spend his sabbatical at the Rhein-Sieg University of Applied Sciences in Germany. He will be conducting research with Dr. Wolfgang Borouzky in the department of Electrical and Mechanical Engineering under the sponsorship of a grant from the DAAD (Deutscher Akademischer Austauschdienst), conducting research on electromechanical system models and Mechatronics.


James Post, Professor of Civil Engineering, Emeritus, has recently published a paper on “Sodium Bentonite from Western Nevada,” in the Transactions of the Electric Power Industry, Mattingly, and Exploration and a paper on “Beidellite and Associated Clays from De Lamar Mine and Florida Maittun Area, Idaho” at the Clays and Clay Minerals conference.

Frederick H. Reardon and Thinh Dinh Ngo, Program Coordinator for the Mechanical Engineering Technology Program and the Chair of the Mechanical Engineering Department, respectively, are the authors of the Proceedings of the 36th Heat Transfer and Fluid Mechanics Institute, California State University, Sacramento (1999).

Jim Ster, Equipment Technician, is the co-author of “Force Sensing Control for Electric Powered Wheelchairs” in the IEEE Transactions on Control Systems.
Popular Giving Program
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CSUS is now offering this popular, proven method of philanthropy that guarantees the giver lifelong income. For CSUS alumni and supporters, the annuities afford the best of both worlds - a donation that benefits CSUS, and annual payments for life. “It’s an effective, proven way to support future CSUS students while putting money to work for yourself and your family,” says Robert G. Jones, CSUS vice president for university affairs.

Here’s how it works: In return for your gift of $5,000 or more to CSUS of money or an asset, the University agrees to pay back a set amount every year for the rest of your life. Your investment is secure, backed by the assets of the entire CSU system. Eventually, the proceeds from your gift go toward CSUS programs. In addition to its other benefits, a charitable gift annuity also offers great tax breaks:

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The income you receive is a percentage of the gift you give. The size of the dividends depends on the size of your initial gift and your age when you make the contribution. For example, if a person makes a contribution at age 65, the rate of return will be 7 percent. That’s competitive with certificates of deposit and other “safe” investments. Any portion of your contribution remaining at your death becomes a gift to support CSUS. You also have the option of naming a beneficiary to receive payments after your death, although the payments will be made at a smaller percentage. If you’d like to make your contribution now, but collect your payments at a later date, you can opt for a deferred gift annuity.

To find out how a charitable gift annuity can work for you, or to learn more about other tax-deductible, charitable giving to support the College of Engineering and Computer Science and/or CSUS, call Amanda Carson Banks, Director of Development for the College at (916) 278-6629 or Kim Kuenlen, the Gift Annuities officer for CSUS at (916) 278-5184 or visit the CSUS Web Site at www.csus.edu/pubaf/givingagift.
Grad Project Tackles Costly Computer Failures

Five computer science graduate students at California State University, Sacramento have completed comprehensive standards for managing large computer projects. The effort could help reduce the incidence of computer failures, which cost business and government millions of dollars and years of delay during the last decade. Among the most notable of these failures was in 1997, when California abandoned a $100 million system for collecting child support.

The new "Software Engineering Core of Knowledge" is backed by the Institute for Electrical and Electronic Engineering Computer Society (IEEE-CS), a professional organization of computer engineers and scientists. The group is recognized as one of the foremost computer professional societies in the world and a leader in setting standards for the computer industry. The student project is developed around IEEE-CS software engineering standards. It spells out the knowledge and skills required of software engineering project managers.

Large computer projects have often proven unwieldy because of the large number of possible configurations. Their sheer size can require the effort of hundreds of contractors, technical personnel and managers. All of this makes them difficult to build and even more difficult to test. "Unfortunately, there is a serious problem with finishing these projects, and with keeping them on time and within budget," says Kathryn Wende, the computer science graduate student who headed the project. "There is a tendency not to think through all the costs and ramifications of a software development program. These projects really have to be treated as an engineering project."

John Miles, chair of the computer science department, expects the new standards to be used by state agencies to hire managers for large projects, as well as software developers bidding on government contracts. In addition to Wende, the students involved include Karma Griffin, Ed Perillo, Tim Schoenhard and Jon Wilhelmsen. They all worked under Miles and computer science professor Richard Thayer and are using their work on the standards as a final project for their master's degrees in computer science.

SRE Formula Car to Race in Detroit this Spring

Students in the Mechanical Engineering Department are hard at work designing and building a new formula car. The College last raced a formula car in 1996, taking 9th place overall in the nation. We are aiming for number ONE this year. You can visit their web site to find out more information and to keep up-to-date with their progress.

The address is: http://hornet.racing.itgo.com. If you or your place of business is interested in sponsoring this vehicle, please contact the ECS Development Office at (916) 278-6629. Such support goes a long way in making this project successful.

Scholarships

Many of our students are fortunate to receive scholarship support from outside sources and agencies. The Ladies Auxiliary of the American Society of Civil Engineers awards one scholarship each year to a female civil engineering student that covers the cost of tuition. Scholarship recipients are selected through an application process with consideration given to grade point average and participation in college activities.

The American Public Works Association also has a yearly scholarship competition with scholarship winners being selected from students interested in public works engineering from a number of area universities including UC Davis, CSUS, and CSU Chico. This year, the scholarship recipient was Olivia Alcaraz, a junior in Civil Engineering. Olivia was selected for her involvement in school activities, her very high GPA, and was recognized for her academic excellence in addition to her role as a wife and as a mother of a three-year-old son.

Meet 'Herky the Hornet'

Students from the Mechanical Engineering Department entered a human-propelled vehicle, known as "kinetic sculptures" in the first annual River Otter Amphibious Race in Sacramento in late September. The entry was the product of three months of work by eight students using material gathered from salvage yards, hardware stores, garage sales, and family members.

The vehicle, powered by pedals and paddles, began in Old Sacramento on pavement, moving to Discovery Park and onto the American and Sacramento Rivers to finish at West Sacramento's River Walk Promenade. Their vehicles portrayed the popular CSUS mascot, Herky the Hornet. Team members included Jenette Levers, Tammie LeBar, Chris Phillips, Otilio Barranco, Mark McNatt, Todd Koropp, and Frederick Wulson.
Life as an Engineer

On September 25 we arrived at Old Sacramento at 9 am. Of course, most of us were up a lot earlier that day, a little anxious and a little nervous. The Department Chair Dr. Thinh Ngo came to wish us well the day of the race and the ASME advisor and MET coordinator, Dr. Frederick Reardon, took great pictures of our struggles and accomplishments throughout the race. The race was fun and exhausting at the same time. Best of all, we brought home an award.

Being President of ASME has honed my managing abilities and allowed me to become the project team leader for the solar car project. This is the first time CSUS has tried to build a solar car from scratch. Our team is in the beginning stages of designing this vehicle and is still learning. As a whole, our group has minimal car knowledge so we have broken the car up into pieces. We each have focused on a particular part such as steering, chassis, or batteries. We have found some companies very willing and excited to work with our project and others who would not return our numerous e-mails or telephone calls. If anyone was stuck working on their part, I, as project team leader, helped to get them back on the path to progress.

The development of the solar car is laid out in a one semester conceptual and detail design project, and a one-semester virtual prototyping project. The first semester’s work included reports to solicit funding for the fabrication group.

One of our group members talked the Tire Company Bridgestone/Firestone, Inc. into donating all four tires needed. We have another team member who found us a contact for the batteries we want to use. Students who had solar panels in their project last semester donated them to our project.

All the little donations have inspired the group and me forward on this large project, not to mention the two mechanical and two electrical professors who are willing to be our advisors so far. We are willing to take on new team members, advisors, advice and donations at any time (seclipse@gaia.ecs.csus.edu). I have just visited San Diego State University on an ASME leadership conference and had the chance to look at and drive the solar car they designed and built. Their struggle to build their solar car was inspiring.

In addition to my extra activities, I work part time during school and full time on breaks, like many students at CSUS. I grade homework, help in the computer lab, and work off campus. The cash keeps my car running most of the time, pays for books and tuition, and all of those incidentals.

Everything is not for the individual at CSUS. There is a strong comraderie among my classmates. We watch out for each other, keep each other on track and informed, and of course, there is always a little competition. It’s fun at the end of the day to go out, grab dinner, and get to know each other better.

The comraderie also exists between the faculty and the students. Although I am a mechanical engineering student, I have continued to keep in close communication with computer science, English, and electrical engineering professors. The professors are there to lend a helping hand with homework or projects even when you catch them in the hall. They provide valuable insight to problems and inspiration on projects. Sometimes it feels like they are tutors on patrol.

In the development stages at Sac State is the Mechatronics program. Mechatronics is a multi-disciplined academic area encompassing mechanical, electronic/electrical, and computer engineering, designed to provide a state-of-the-art manufacturing experience to the engineering student. A team of faculty members are involved in the planning stages of the Mechatronics program at CSUS. Parts have been donated by NEC to kick the program off in the right direction. One faculty member will pursue undergraduate and graduate research at UC Berkeley in the year 2000 to get the Mechatronics program started. I will miss being in the program, but at least it will be here for the next generation of students.

My experience at the College of Engineering and Computer Science has been positive. It has given me a firm foundation for the future, and some good job offers.

— Jenette Levers
Senior in Mechanical Engineering
Concrete Canoe Team Takes First in the Mid-Pacific Competition

The Engineering and Computer Science Concrete Canoe Team took first place last April at the Mid-Pacific regional competition, placing them in second place nationally at the Florida Institute of Technology in June. The team went on to compete against 12 other teams from other universities to determine the best concrete canoe in the country. The canoes were judged on an academic paper, oral presentation, and display in addition to their performance in races with two and four-person teams.

First Place Winner: "The Green Hornet"