MESA-Sac Unified Partners Celebrate $2.5 Million Grant

Hundreds of guests joined leaders of the CSUS-based Capitol Center MESA (Mathematics, Engineering, Science Achievement) program and the Sacramento City Unified School District on February 1 to celebrate their new partnership under a $2.5 million grant awarded by the National Science Foundation. The MESA-SCUSD grant was one of only 14 awarded in the nation under the NSF's Partnerships for Minority Student Achievement (PMSA) program.

The gala event at the Vizcaya Pavilion brought together guests representing the many constituencies of this comprehensive program, dubbed MESA²: SCUSD and Board of Education, CSUS, UC Davis, MESA statewide headquarters at the UC President's Office, community organizations, and government agencies. Other guests were district parents, teachers, and administrators; Capitol Center MESA staff and teacher-advisors; representatives from several local industries that support the MESA effort and sponsored this event; and MESA's founders.

The partners will use the grant to effect systemic change in the delivery of mathematics and science instruction to 17,000 students in grades K-12 of the SCUSD. MESA² will enhance an existing MESA program in 25 Sacramento City schools as well as add another 25 schools to the partnership's network. Six enthusiastic, highly-respected coordinators will each establish and implement MESA² at all grade levels in one of the targeted SCUSD areas.

"The goal is systemic change," said Jim Harold, Capitol Center MESA director, who teamed with Barbara Caretto, E&CS Alumni and Development Director, Carol Fields of the statewide MESA office, and key SCUSD staff to develop the PMSA program and grant application. "This is not a bandage," he emphasized; "there will be significant changes within the system." He noted that although the MESA²

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BME Professor Gets Prestigious Whitaker Award

Biomedical Engineering Professor and Associate Dean John T. Oldenburg has received a $155,000 grant from The Whitaker Foundation to develop a Biomedical Engineering Virtual Instrument Instructional Laboratory in the CSUS School of Engineering and Computer Science. By broadening access to biomedical engineering instruction, the project will bring the benefits of advanced medical technology to future generations throughout the world.

Virtual Instruments (VIs) are software-based simulations of widely-used clinical instruments such as heart monitors and magnetic resonance imaging (MRI) devices. The project's primary goal is to develop new, industrially relevant curricula and teaching materials in medical instrumentation design and applications using VIs, thus eliminating faculty and student dependence on these scarce, expensive and specialized instruments for BME instruction. Drawing on databases of actual patient heartbeats and other physiological signals, the new VIs will enable more BME students to learn to operate, design, and test high-tech instruments using only personal computers, data acquisition hardware and appropriate signal transducers.

Oldenburg and faculty colleagues Warren Smith and Tom Gray are using Whitaker funds to purchase new equipment and specialized software for the

See Whitaker, page 4
Message from the Dean

As this newsletter goes to press, the report card for the School has mixed grades. I wish I could tell you that the state of the School is excellent in all respects. It is not so. We are still suffering from the financial effects of the recession in the state.

During the Fall 1994 semester, there were 2,504 majors in the School. This number has dropped to 2,351 majors in the Spring 1995 semester. In order to increase the enrollment in the School and to attract some quality students, we have taken several steps and are planning to take still others. During National Engineers Week in February 1995, the School of Engineering and Computer Science had an open house. This event was attended by about 400 area high school juniors and seniors and some junior college students. I followed up by sending a personal letter to each student thanking them for their participation. We are also increasing faculty visitation to area high schools on their career days, to provide information about E&CS programs.

In order to attract highly qualified high school graduates to the various programs in our School, I am making a serious effort to raise more scholarship money which will be awarded based on merit only and which can be guaranteed for four years. This is presently at the top of my agenda. I hope that all of our friends — alumni, faculty, employers, emeriti and others — will support this scholarship drive.

Given changing times, financial resources at hand, faculty and student profiles, it seems reasonable to reevaluate ourselves as a School and to ask where and what we want to be five or ten years from now. For that reason, we are developing a strategic plan for the School which will be entitled “School of Engineering and Computer Science – 2000 and Beyond.” The strategic plan will include scope and mission statements for the School, roles and responsibilities of the faculty and staff, recruitment and retention of students, teaching strategies and equipment plans for the future. Professor Ken Kerri of Civil Engineering and Professor John Miles of Computer Science are taking the lead in developing the draft. I would appreciate any suggestions from our readers.

The primary purpose for the very existence of our School today is still the same as it was 25 years ago: to provide quality education in small classes in a friendly environment to prepare quality engineers and computer scientists for the American work force. However, with changing times, some diversity in our approach is essential. We are now making serious efforts to provide courses through distance learning programs, increasing our role in regional and continuing education, and involving ourselves in externally-funded applied research and design. We are listening closely to the nationwide call to efficiently provide a quality education relevant to the needs of society. I sincerely appreciate the interest and support that we receive from so many of you. In return, we promise to listen to your ideas, build upon the School’s numerous achievements, and deliver an even higher level of educational excellence.
Positive Job Outlook for E&CS Graduates

This year’s graduating E&CS seniors can look forward to a thriving job market, according to the School’s recent survey of public and private sector employers of technical professionals.

Cici Mattiuzi, E&CS career programs director, sent questionnaires to 588 employers located primarily in the greater Sacramento area and Northern California region. She targeted those with a history of recruiting E&CS graduates, but also included a small number of companies in six other states. Among other items, employers were queried about their hiring plans for the next six to twelve months. Based on the response, Mattiuzi said, “The market looks super!”

The 85 employers returning the survey anticipated 2900 openings. The Peace Corps indicated another 2000 openings for technical professionals. The Environmental Careers Organization, which places interns with government and private organizations, reported requests for 300 computer science and engineering students to fill internships. “The numbers are impressive,” said Mattiuzi. “Sixty-one organizations reported a grand total of 5200 opportunities.”

Of the employer respondents, 67% reported plans to hire engineers or computer professionals in the next six to twelve months. Some of the most impressive numbers come from employers engaged in manufacturing and consulting, where the projected number of reported engineering and computer science openings totaled 708 and 638, respectively; there were also strong job projections in telecommunications (409), aerospace (100), and biotechnology (75).

Of employers with hiring plans, six reported openings for biomedical engineers; 30 for civil engineers; 24 for computer engineers; 28 for computer science professionals; 13 for construction management professionals; 25 for mechanical engineers; 34 for electrical/electronic engineers; and 12 for MET graduates. Hiring of engineering and computer science professionals at all levels of government is going to be conservative for the next six to twelve months, cautioned Mattiuzi, although two agencies reported plans to hire engineers and computer scientists: the Drug Enforcement Administration (350) and the California Air Resources Board (10).

The largest declines are projected in the utility sector: PG&E anticipates 3000-6000 layoffs in all job categories, with unspecified numbers in engineering categories. Caltrans is also in a layoff mode, with 700 anticipated engineering layoffs — 250 in the Sacramento area. Mobil Chemical Company has closed its Woodland operations.

CSUS Construction Management Program Wins Full ACCE Accreditation to Year 2000

The CSUS Construction Management Program has been granted the full six-year accreditation through July 31, 2000 by the American Council for Construction Education (ACCE). The ACCE recognized the CM Program for its stringent engineering management requirements and broadly-based curriculum.

Besides the ACCE accreditation, the CM Program received a full six-year accreditation in 1992 from the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET). The CSUS CM Program is the only one in the CSU system — and one of only a few in the nation — that has dual accreditation, enhancing its already distinguished reputation.

Enthusiastically supported by local industry, the CSUS CM Program is uniquely structured. Graduates earn the bachelor’s degree in Engineering Technology/Construction Management Option (BSET), with a Business Administration minor. No other CSU campus offers a CM program with a business minor; the business portion of the curriculum includes accounting, business law, construction law, industrial relations, statistics, organizational management, and business communications.

Incorporated within this specialized professional program of 140 semester hours are four distinctive but interrelated components: Engineering Fundamentals, Construction Management, Business Administration, and General Education. This curricular diversity reflects the wide-ranging demands placed on contemporary constructors. “Communication and organization are the keys,” said Prof. Keith Bisharat, who directs the CM Program. “The single most critical skill is probably an ability to communicate, orally and in writing.”

This program of rigorous study prepares students for careers as construction managers, contractors, project managers, and construction estimators, among other positions. “Our graduates are well known as quick-studies,” said Bisharat. “They rise rapidly to positions of great responsibility.”
CSUS/IEEE Power Quality Symposium Addresses Power Purity

Over 100 delegates from across the U.S. attended the first Power Quality Symposium sponsored by CSUS and the Institute of Electrical and Electronic Engineers (IEEE) last October 18-19. CSUS Electrical and Electronic Engineering Professor John Balachandra was the general chairman of the symposium, which focused on the worldwide problem of non-pristine power — power that is not as pure as it could be.

Business Week has estimated that between $26 to $30 billion are lost each year due to power imperfections delivered by the system grid. "Non-pristine power affects digital systems," said Balachandra. "And with the proliferation of digital system equipment, specifically in the computer industry, we are faced with a very serious problem."

Sagging voltage is responsible for 87% of the problems traced from digital equipment. When utility companies switch their high voltage capacitors on and off even for a fraction of a second, a surge is sent through the system that disrupts the smooth operation of some of the digital equipment. Circuits are becoming smaller and more critical because of increased applications; if the voltage drops for whatever reason, the operations of delicate, intricate instrumentation are grossly affected, Balachandra explained.

Collaborating with Balachandra and chairing various conference sessions were Technical Program Committee members Lt. Col. M. Gravely, USAF, McClellan AFB; Jim Bemis, Power Quality Supervisor, SMUD; and John Mead, Power Electronic Division Research Associate, PG&E. Engineers in industry and academia, as well as several CSUS students, submitted papers on electric power quality and related issues. Most participants came from the utility industry, electronic industry, and the military sector in the Sacramento area.

With its focus on the researcher's rather than the manufacturer's point of view, this was the first conference of its type to be held on the West Coast, according to Balachandra. Designed to provide a better understanding of the sources of power distortions, the symposium also provided insight into the various ways in which subsequent problems could be eliminated.

"This entire field of power quality is new," said Balachandra. "It has opened up a huge vista of opportunities for researchers like me, other professors, and scientists." The challenge is three-fold: Identify the problem, devise a plan to solve the problem, then inform manufacturers of what they ought to do to make the equipment less susceptible to changes in the voltage. Under Balachandra's direction, CSUS contributes to power quality refinement by researching the improvement of superconducting magnetic energy storage (SMES) units. SMES units enhance power quality by ensuring that electrically-powered devices continue operations uninterrupted despite fluctuations, which they can sense in advance.

The CSUS/IEEE Power Quality Symposium is slated to be an annual event where delegates can brainstorm and network. About 250 delegates are expected to attend next year's symposium; even more delegates — 350-500 — are expected for the 1996 international conference in San Francisco.

As a result of this year's Power Quality Symposium, Balachandra attended another power conference in Amsterdam and visited several universities in England (see page 13) to deliver presentations on CSUS's power quality research and the SMES project.

Whitaker

Continued from page 1

lab. The CSUS team will collaborate with colleagues at the University of Wisconsin, Madison to develop a database of VLSI and physiological signals which will later be distributed worldwide without cost to any interested professional via the gopher system on the Internet. Local biomedical industry personnel will be involved in the project as advisors and evaluators.

Oldenburg's was among the $7.5 million in grants awarded to faculty at 11 U.S. institutions under The Whitaker Foundation's highly competitive Special Opportunity Awards program, initiated last year for the purpose of establishing or enhancing biomedical engineering education. CSUS shares this year's honors with Cornell University, Duke University, Harvey Mudd College, Massachusetts General Hospital, MIT, University of Michigan, University of Pittsburgh, Rice University, University of Tennessee, and University of Virginia.

Dr. John Oldenburg (L) and BME graduate student Doug Hatch.
“Miracle Man” Speaks at CSUS

An overflow crowd of alumni, students, faculty, staff and community members gathered on December 7 to hear legendary builder Clinton “C.C.” Myers describe his rapid restoration of the earthquake-ravaged Santa Monica Freeway. Introducing Myers, E&CS Dean Braja M. Das praised his “can-do” spirit, comparing him to astronaut Neil Armstrong and to America’s pioneers.

Sponsored by E&CS and the Construction Management Program, Myers’ appearance inaugurated a series of free lectures and seminars sponsored by E&CS and its departments and degree programs.

Videotaped TV news clips, interviews with Myers and his employees, and views of the reconstruction in progress helped Myers describe the challenging process of rebuilding the I-10 following the earthquake that shook and shattered much of the Los Angeles area on January 17, 1994. Immediately after getting the state’s go-ahead, C. C. Myers, Incorporated began the daunting project with only minimal information, material, equipment — and planning. He acknowledged that he took a great risk: The contract was structured so that beyond the 125-day contract period, there would be either a $200,000/day bonus or penalty.

The blunt-spoken Myers credited his staff’s “where there is a will there is a way” approach with completing the job in only 66 days — 74 days ahead of schedule. The company earned a bonus of nearly $15 million. Myers also praised the cooperation of state employees who worked with his crews around the clock. Labor unions also pitched in, allowing Myers to employ some of his northern California workers along with those hired out of L.A.

union halls. Myers noted that one of his top estimators (Steve Grossman) is a CSUS Construction Management Program alumnus and that he had hired a second CM graduate, Todd Mannerino.

Dubbed the “Miracle Man” by the Sacramento Bee, the self-made millionaire had already demonstrated his expertise in alleviating earthquake-related highway disasters long before the January temblor stranded Los Angeles commuters. During the October 1989 Bay Area earthquake, Myers’ company was called to help free victims trapped in collapsed freeway structures. The company also reconstructed a key quake-damaged bridge in Santa Cruz County — also in record time — rescuing the county’s transportation system from chaos.

He’s just done it again, earning another early completion bonus ($870,000) for rebuilding the twin bridges on I-5 near Coalinga that collapsed on March 10, killing seven people.

Besides highway projects, Myers’ enterprises include a far-flung real estate development empire in Utah, Colorado, Nevada and California. In addition to his public works, Myers is noted for his philanthropic works.

MESA
Continued from page 1

program targets students from historically underrepresented groups – Latinos, African Americans and American Indians, “It will truly affect the lives of every other student” through innovations in classroom teaching and curriculum delivery, and through extensive school site and community involvement.

Dr. Jim Sweeney, SCUSD deputy superintendent for school improvement, is the co-Principal Investigator on the PMSA grant with Jim Harold. Speaking of MESA’s record of success, Dr. Sweeney said, “You don’t make a difference by talking about it, but by doing something about it.” He said that the district wants to be first in the world in math and science, and that this is what MESA is all about.

Students from local elementary, middle and high schools who show potential will be identified and served by MESA and nurtured academically through high school graduation. The program fosters an appreciation for math and science at an early age by providing hands-on experiences. The program offers students year-round enrichment programs in math, science, language arts, and computer science. Other key components of MESA are summer enrichment programs, Saturday academies, AVID classes (supporting middle and high school students taking college prep classes), teacher training and parent empowerment and training.

Electric Car

ME graduate student H.A. Mergen (L) and his father, Howard Mergen, pose with Best of Class trophy garnered by the CSUS MC1 electric race car at the Sacramento Autorama, Feb. 1-5. ME students built the car “from scratch” to NASCAR standards from donated parts and cash.
CSUS Civil Engineering Professor Is Dam Safety Expert

Prof. Ralph B. Hwang, director of the Office of Hydrological Studies (OHS) of the CSUS Department of Civil Engineering, is in the forefront of dam safety and dam failure research. Since he established the OHS in 1991, Dr. Hwang’s grants have provided funding for four undergraduate and seven graduate students who assist him with his various research projects. Hwang’s goal is to enhance OHS’s role, creating one of the nation’s major research institutes to address hydraulics, hydrology, flood plain management, reservoir system analysis, and groundwater modeling.

With the support of $156,000 in grants awarded by the California State Office of Emergency Services (OES), Hwang has been instrumental in improving the area of dam break inundation mapping studies. In 1991, he developed the Inundation Mapping Seminar, a training workshop for the OES. Moreover, his booklet Sequence of Steps in Inundation Map Preparation, which was officially adopted by OES, is now standard procedure.

Hwang’s OHS team has researched and reviewed dam break inundation mapping studies for over 100 non-federally-owned dams in California. The dam break inundation maps, which are guidelines employed by local communities to develop emergency evacuation plans, incorporate floodwave characteristics: flood arrival time, flood peak time and deflood time from the start of dam failure, as well as flood peak flow, and floodwave maximum elevation (or stage).

With $20,000 in funding from the California State Department of Education, the OHS team conducted an intensive study of the potential floodwave inundation of Chaparral High School in Riverside County where two dam breaches were assumed: the Domingoni Valley Reservoir West Dam and the Skinner Reservoir Dam.

Another successful research area for Hwang’s team is unimpaired streamflow forecasting during dry years. Aided by $25,000 from a three-year contract with the California State Water Resources Control Board (SWRCB), the OHS developed a personal computer streamflow simulation model (SSM) capable of simulating the necessary hydrology on the tributaries of the Russian River. “I am extremely pleased to be able to develop the SSM,” said Hwang. “It is a breakthrough in the low-flow hydrology area in California and solves a long-standing problem for the SWRCB: the urgent need for low hydrology on 22 tributaries and 80 pending water right projects within the Russian River watershed.” The SSM was developed by CSUS under Phase 1. The workable SSM will be applied and calibrated throughout California in Phases 2 and 3.

In another project, funded by the Caltrans Materials and Research Division and Caltrans’ 11th District in Los Angeles, Hwang received a $15,000 grant to design, calibrate and install six roadside flumes and splitter devices on Los Angeles County freeways to collect and analyze storm water runoff. The calibrated flumes enable Caltrans to characterize freeway runoff in order to establish long trend and mass loading of various constituents.

In addition to his other projects, Hwang is co-investigator for the joint research contract with the Hydraulics Laboratory, Agricultural Engineering and Civil Engineering Departments of National Taiwan University. With travel funding for Phase 1 of a three-year, $430,000 research grant, Hwang investigates reservoir system operation rule curves during the drought years in Taiwan. "This could lead to large-scale international research cooperation with the Pacific Rim countries,” said Hwang. With funding from National Taiwan University and National Water Resources Council of the Republic of China, the OHS could provide technical support, training and advising for National Taiwan University’s research programs.

BEST Math/Science Picnic

About 200 students from the CSUS Business Education Science Team program came to campus for the BEST Math/Science Picnic on March 25, accompanied by teacher-advisors, parent volunteers and other family members. The event provided hands-on competitions and a chance for students to meet others with similar interests. Visiting scientists and engineers brought exciting displays and manipulatives.

The photo shows elementary-level students building craft stick bridges, later subjected to weight testing with buckets of water. Students calculated the volume of water supported by their bridges.
Hewlett-Packard Equipment Grants Top $360,000

The Hewlett-Packard Company has selected three E&CS projects to receive equipment grants totaling $362,336, under its 1995 University Grants Program.

The largest grant, valued at $301,695, went to Dr. Charles Washburn of the Mechanical Engineering Department, who will receive hardware and software for a new Design and Analysis Laboratory. About 315 undergraduate students per year will use the HP products, primarily those enrolled in a new upper division four-course product design/project sequence. The equipment will directly support the new design curriculum, which enables junior-level students to work in industry-style teams to execute the product development life cycle, from problem formulation to conceptualization of alternative solutions to detailed design to prototype production and testing. The grant also includes training for faculty and staff.

Dr. Ronald Becker, Computer Engineering Program director, has received four logic analyzers valued at $48,412. These instruments will be housed with and complement four older HP logic analyzers in the CPE project laboratory that were insufficient to meet increasing student demand. Approximately 150-200 students per year use the laboratory, primarily computer engineering majors.

Minority Engineering Program Director Madeleine Fish received the third grant, HP Vectra PCs and peripherals worth $12,229. These more powerful, networked machines will significantly upgrade the MEP's existing computer laboratory, increasing student access and usage while facilitating more effective lab management. With this upgrade, the lab will be able to accommodate over 300 student users every day.

Besides receiving several very important equipment gifts under the annual corporate university grants competition, many E&CS programs — including MESA, BEST, Women's Programs Office, MEP, and the E&CS alumni chapter — benefit from the continuing volunteer support of HP staff.

WE'RE GETTING THERE...

CSUS has mounted the CAPITAL CAMPUS CHALLENGE, a campaign to raise $50 million by June 30, 1998 — a million for each year since the campus was founded. That $50 million includes the School of Engineering and Computer Science's goal of $5,850,000 in cash and in-kind contributions to meet our urgent needs for:
- student support: recruitment, retention, scholarships, tutoring
- laboratory equipment
- computing equipment
- software
- facilities upgrades.

E&CS is almost halfway to our goal. The support that we have received from E&CS alumni has special meaning: It shows that you value your CSUS years and want to guarantee that succeeding student generations also enjoy a top-quality educational experience, despite alarming decreases in state funding. E&CS thanks alumni who have generously responded to our E&CS Alumni Annual Fund drives and to other appeals for assistance. We ask you to dig even deeper when you get that next telephone call — and/or send a gift now to E&CS.

E&CS Creates Academic Success Center

Academic success and timely graduation are now attainable for all motivated E&CS students, thanks to the new E&CS Center for Academic Success, directed by ME Professor Sue Holl and MEP Director Madeleine Fish.

The School and the Minority Engineering Program (MEP) pooled funds and expertise to create the new service, and the Liberal Studies program provided space in T-RR 3. The programs share the services of secretary Kristin Anderegg, who keeps the facility running daily from 8:00 a.m. to 5:00 p.m.

The CSUS MEP pioneered techniques and activities that have dramatically improved academic performance and retention of MEP students. Foremost among them is the study group, led by an advanced undergraduate or graduate student. Research has shown that students who regularly participated in study groups consistently led their peers in GPAs attained; they also enjoy the reinforcement of mutually supportive relationships with peers. Successful students don't delay graduation by repeating classes. Study groups will now be offered to ALL students who use the Center.

Drop-in tutoring and academic advisement by volunteer faculty are other services offered daily by the Cen-
RECRUITMENT FOCUS

E&CS welcomed 400 high school juniors and seniors to a School-wide celebration of National Engineers Week on February 24. E&CS sponsored the event in cooperation with the E&CS Alumni Chapter and the Sacramento chapters of CSPE, ACIA, ASCE, ASME and IEEE.

Faculty representing all E&CS specialties welcomed student visitors to tours of labs and facilities, explained exhibits, conducted demonstrations, and answered questions about the School and its programs. Assisting with all aspects of the day-long event were members of student professional societies. E&CS alumni were on hand to present displays of current projects and also spoke to student audiences about their personal challenges and the
OF E&CS OPEN HOUSE

rewards of careers in engineering and computer science. Students competed for scientific calculators donated by Hewlett-Packard in contests and drawings.

The School has made outreach to area high schools a priority this year. Declines in enrollment, reflecting a nationwide trend in engineering schools, prompted the decision. Efforts are aimed at providing information about engineering and computer science careers in general and about the special features of E&CS.

Dean Das, who wrote to every student who attended the E&CS Open House, reported that many are responding with requests for more information about School programs and the admissions process.

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Tom Grey, BME lecturer, explains a modern medical “monster” to visiting high school students.

Alan Nakahara (BME graduate student) gave Tin Man a beating heart. The project was called “The Beating Art.”

Students learn about the Supermileage Vehicle project from ME student Phil Spartz.

CE student Diane Zhuhrle explains why this concrete canoe doesn’t sink.
CSUS Joins Sacramento Technology Coalition

CSUS has joined UC Davis, American River College, Sierra College, Science & Engineering Associates, Inc., and Sacramento Air Logistics Center at McClellan Air Force Base to form the Sacramento Technology Coalition (STC).

The STC links education, industry and defense interests in a unique, annually renewable partnership of shared resources. By collaborating and exchanging information, members hope to develop new processes and new products.

Interaction is the key. McClellan shares technology and equipment; the community colleges provide training and technician certification programs; the universities provide fundamental and applied research; and industry provides internships for student engineers. The expected result is increased employment opportunities, commercialization of products, and the creation of an advanced technology center that will attract more industry to locate in the Sacramento area.

The center is expected to pioneer the "dual-use" development and commercialization of electro-optics, microelectronics, and adverse environment technologies and applications employed in such areas as hazardous waste treatment, biomedical sensors, agricultural processing, and communication via fiber optics.

Joining the coalition allows CSUS students and faculty to participate in joint research and development activities. Dr. S. K. Ramesh, chair and professor of the E&CS Electrical and Electronic Engineering Department and one of the STC's creators, thinks that there are specific areas, such as optical engineering, where CSUS's expertise and reputation will significantly contribute to the coalition. "We are perceived as having trained and capable students who are prepared to work on design and development problems right away," said Ramesh.

CSUS is already benefiting from STC participation: The quarter of a million dollars worth of equipment loaned by McClellan to the E&CS Optical Engineering Lab exposes student users to the technology and instrumentation that they will encounter as industry professionals. Two EEE graduate students, Russ Tatro and Elizabeth Cordova, are working at McClellan's Photonics Laboratory on research projects for their master's degrees.

"There are so many hurdles and so many different agencies that have to cooperate to really pull this off," said Ramesh. "It's amazing that we agreed to this in the first place."

In Brief . . .

The CSUS Supermileage Vehicle team will compete against rivals from the western states on June 17-18 at the Caltrans test track in West Sacramento. MET students are entering three vehicles in other upcoming SAE student design competitions: two in the Mini-Baja and — for the first time — one in the Formula SAE competition in Detroit, MI. A utility trailer, purchased and donated to the School by the SAE Student Chapter, will haul vehicles to competitions. • Forty 7th- and 8th-grade students will leave their reservations to attend the American Indian Math/Science Summer Camp from July 16-Aug. 4; MEP is sponsoring the camp, which is federally funded through the statewide MESA STC (Success Through Collaboration) program. • Over 60 students, faculty, staff and industry supporters braved heavy rains to consume delicious goodies, donated by local bakers, at the Women's Programs Office's first Industry Mentor Dessert Social and fundraiser (yield: $3100) on March 10. • Pacific Gas & Electric representative Monique Hunt (BSCM'92) brought a $9,000 check to Dean Das and MEP Director Madeleine Fish on March 9; the PG&E funds will support a model peer counseling program designed to boost retention of MEP freshmen and community college transfers. • The California Cooperative Education Association awarded a $1,000 scholarship to CE major Richard Reinhardt at their annual conference on April 26-28 in San Diego; his essay on the value of degree-enhancing experiences won the prize in a statewide competition. CE student Elizabeth Sparkman received a $2,000 scholarship from the Consulting Engineers and Land Surveyors of California. • The ME Department used a $5,000 gift from GenCorp/Aeros patriot to purchase new tools for the Tech Shop; the tools will be used for ME senior projects. Other GenCorp gifts went to the MEP. • Loral Western Development Labs has contributed new electrical and electronic components valued at $155,230 to the EEE Department this year. • The Carson family, which boasts several CSUS alumni, added $10,554 in proceeds from their annual Carson Classic golf tournament and fundraiser to the KIT Contractors Endowment Fund for Construction Management scholarships. CM also received $5,625 from Associated General Contractors this year. • The Electric Power Education Institute, Project Success, MEP, and Women's Programs Office received several gifts totaling $11,000 for program support and scholarships from the Bechtel Foundation.
Instructional Cogeneration Laboratory Wins Support

Probably the first undergraduate cogeneration laboratory in the U.S. — perhaps in the world — is being established by two CSUS mechanical engineering professors, Drs. Andrew R. Banta (department chair) and Ngo D. Thinh. While many other universities have cogeneration plants for heating and cooling their campuses, the CSUS laboratory is being built as an instructional facility and will be used primarily for that purpose.

Banta and Thinh received a $99,000 grant under the National Science Foundation’s Instrumentation and Laboratory Improvement program to purchase equipment for the CSUS Instructional Cogeneration Laboratory. They have secured $70,000 of the required matching funds from SMUD, and the remainder from CSUS. To fund the project’s full cost of approximately $250,000, they anticipate additional support from other partners with an interest in hiring graduates who will have the unique experiences that the lab is designed to provide.

“We believe that this laboratory will offer our students solid preparation into the 21st century for employment and/or advanced studies.”

The equipment being acquired by the two investigators will expose about 100 students per year to modern engineering practice and provide hands-on experience in efficient energy use. Accordingly, Banta and Thinh decided to use natural gas instead of fuel oil to power the turbine in order to provide students experience in a typical cogeneration operation and to minimize stack emissions. The new equipment will also enable the Mechanical Engineering Department to expand its experimental instruction in several areas within the discipline. “We believe that this laboratory will offer our students solid preparation into the 21st century for employment and/or advanced studies,” Banta said.

A unique feature of the project is that much of the actual design and assembly of components into a workable system is being done by undergraduate mechanical engineering and engineering technology students in their senior project courses, under careful faculty supervision. However, the broad plans for the lab were done by the faculty.

In endorsing the cogeneration lab for funding, SMUD Board Vice President (and E&CS alumna) Linda Davis said, “I am proud of [SMUD’s] effort to promote efficient energy use and competition in the energy markets by providing these training tools for Sacramento’s educational community.”

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MESA Students
Harness Sun’s Power

Students from the CSUS-based Capitol Center MESA (Mathematics, Engineering, Science Achievement) program constructing a solar cooker in the ECS patio last summer. Each summer, MESA conducts hands-on math and science enrichment programs for students and training for teachers in an effort to increase the number of students from historically underrepresented groups who pursue advanced studies in math-based fields such as engineering.
Alumni Notes

KRISTEN M. ANDERSON, BSME’90, is a material test engineer for Loral Space Systems (formerly Ford Aerospace), Palo Alto.

DOUGLAS BROWN, BSC/M’89, is the western regional manager of Hancor Inc. (manufacturer of polyethylene draining products), directing the sales force in five western states out of the company’s Pacific area office in Roseville.

R. MICHAEL (MIKE) BARLOW, BSME’88, is a project engineer with Delco Electronics in Kokomo, IN.

COLIN E. MACK, BSCSc’91, is an engineer at Northern Telecom in Dallas, TX. He plans to graduate with an MBA in International Business from the University of Texas, May 1995.

LISA MIRANDA, BSEE’93, is an engineer in radio systems for the Telecommunications Division of the State of California’s Department of General Services. Her daughter Rosina was born in November 1994.

ARPAD MURANYI, BSEE’94, won the second prize at WESCON 94 for his paper, “The Effects of Clampng Diodes on Signal Integrity,” in Anaheim, last September 29. Muranyi received a check for $300 and a HP48GX calculator. The first CSUS graduate to win at WESCON, Muranyi defeated a field of regional contest winners. He is now an engineer at Intel in Folsom.

RUBEN R. ROBLES, BSE’91, MSEE’93, is an assistant civil engineer with the County of Sacramento.

RICHARD A. ROSTOMILY, BSEE’94, is employed by the Morning Star Co. in Woodland.

MICHAEL SMITH, BSC/M’95, received his bachelor’s degree in January and has joined Earl Contraction Co. as a junior project engineer.

BERNARD SUSANTO, MSEE’93, is a process engineer in the Department of Public Works, City and County of San Francisco.

CHARLES E. SWIMLEY, JR., BSC’89, an assistant engineer at Siegfried Engineering, passed the civil engineering registration exam. He lives in Lodi with wife Danielle and son Jack.

ROBERT WHARTON, BSEE’83, MSEE’87 and Darcy Wharton (BA, Liberal Studies) announce the birth of their second daughter, Sarah Elizabeth, on Jan. 4. Wharton is a development engineer at Hewlett-Packard Co. in Roseville, and serves on the Alumni Chapter Board. He coordinated the E&CS equipment grant application to HP.

CARLOS ZENTENO, MSBME’86, is a biomedical engineer with the Renal Division, Operations Engineering, Baxter Healthcare Corp. in McGaw Park, IL.

Honored for their outstanding achievements at the Alumni Honors Luncheon on September 30, 1994, sponsored by the CSUS Alumni Association, were LINDA DAVIS, BSEE’84, MS Eng, Mgr’91; JOHN HASKELL, CM’77, and ANITA SCHILLER, BScSc’81. Davis, an associate electrical engineer with the California Resources, Conservation and Development (formerly Energy) Commission, was elected to the SMUD Board of Directors in 1992 and is now its vice president. As executive vice president of Earl Construction Co., Haskell has been responsible for constructing a variety of structures including shopping centers, office and multi-family complexes, and warehouse expansions; he is the immediate past president of the Sacramento Builders Exchange and is a member of the American General Contractors of California, American Society of Professional Estimators, and the Board of Directors of United Cerebral Palsy Assoc. Schiller has held many senior management positions at Silicon Graphics, where she is now the director of electronic marketing; among other duties, she is involved in CommerceNet, a Silicon Valley consortium creating infrastructure for electronic commerce using Internet. She co-founded and leads the Women’s Information Network.

Fulbright scholar FERNANDO PROANO left CSUS and Sacramento to return to his teaching position at the Escuela Superior Politécnica de Chimborazo (ESPOCH) in Riobamba, Ecuador, after graduating with an MS in Computer Science last spring. Wife Maria is a civil engineer and part-time teacher at ESPOCHE; she and their two children accompanied him to Sacramento. Proano asks our readers who wish to donate much-needed books, software, equipment, and other engineering and computer science teaching materials to contact him directly at P.O. Box 185, Riobamba, Ecuador, or through Juan H. Cruz, President, Asociación Ecuatoriana de Sacramento (AES), 6601 Indian River, Citrus Heights, CA 95621 (916/344-9553). You can also communicate with Proano via e-mail: proanof@esPOCH.ESCS.

E&CS Holds 15th Annual Career Day

Hundreds of hiring employers and job-seeking students came together on March 3 at the 15th Annual E&CS Career Day, filling the USU Redwood Room. The event was cosponsored this year by the Sacramento Chapter of the Institute of Electrical and Electronic Engineers.

Recruiters from 40 private- and public-sector organizations attended, offering permanent as well as part-time and summer employment, and sharing information about their activities and career opportunities. Many candidates reported invitations to subsequent on-site interviews and job offers.

Career Day also featured seminars led by professionals from local industry and government agencies, covering topics of concern to students entering today’s job market:

- “California’s Energy Technology Future,” with panelists Scott Hays and Wayne Ash (PG&E)
- “The Future of Advanced Transportation Technologies,” with panelists Ty Laskey (UC Davis) and Dave Ashukian (Caltrans)

- “The Defense Industry — Recovered, Dynamic, and Hiring Again,” with Dave Blottie (SAIC), Monty Yunke (TRW) and Steve Powell (USAF)
- “New Trends in the Computer Industry,” with Irv Thomas (Intel) and Mike Perkins (Hewlett-Packard)
- “The Cycles of Engineering — Thriving with Ups and Downs,” with Mike Clader (Inmex) and Terry Murphy (Caltrans)
- “Pacific Bell—Exploding Opportunity in Communications,” with Rich Heffernan

The E&CS Career Office, directed by Cici Mattiuzzi, prepares students for job searches by offering workshops on interviewing techniques and resume writing. E&CS alumni continue to have access to services, including JETS on-line job listings.
Faculty/Staff News

Prof. JOHN BALACHANDRA, EEE, organized a two-day symposium on Power Quality at CSUS on Oct. 18-19, 1994 (see story, page 4); another is set for Oct. 16-17, 1995. His papers, "Trends in Power Quality Improvement" and (co-authored) "Recreation of Power Disturbances and Harmonics for Testing Digital Systems," were presented at the Symposium. He presented SMES (superconducting magnetic energy storage) seminars at Oxford and Cambridge universities, Imperial College, University of London, University of Manchester's Institute of Science and Technology, and Loughborough Technological University, Aug. 14-25, 1994, and at the City University, London, on Oct. 28, 1994. He has received a $140,000 extension of his SMES subcontract. While on sabbatical, he is setting up a High Power Electronics Center and a new Power Electronics Laboratory at CSUS. Three publications have been accepted for publication/presentation at the IASTED International Conference on Modelling and Simulation, Sri Lanka, July 1995: "Methodology of Alternate Substation Design Using the Reliability Cost-Worth Analysis"; "Recent Trends in Power Quality Devices"; and "Computer Controlled Power Systems Simulator." His paper, "Simulation of Power Quality Disturbances for Testing Digital Systems," has been accepted for presentation/publication at the IEEE Power Technology Conference, Stockholm, Sweden, June 1995.

Prof. JEAN-PIERRE BAYARD, EEE, was awarded a CSUS mini-grant of assigned time in Spring 1995 to work on his project "ENG 17 on CD ROM." His coauthored paper, "Scan Performance of Infinite Arrays of Microstriped Dipoles with Bent Arms Placed on a Printed Substrates," has been accepted for publication in IEEE Transactions on Antennas and Propagation.

Prof. and CM Program Coordinator KEITH BISHARAT, CE, and wife Patti have a new son, Ian Miles, born on Feb. 24, 1995. (See story on CM Program, page 3.)

Prof. JOHN CLEVENERG, CSC, received a 1994 CSUS Outstanding Teacher Award. The award was established to affirm the primacy of teaching in the University's mission and to recognize outstanding teachers among the faculty. A full-time faculty member since 1978, Clevenger received his BS at CSUS and his MS and Ph.D. degrees at UC Davis. The PC2 software developed by his students was used to run the ACM International Collegiate Programming Contest Finals in March 1995 in Nashville, TN; it has also been designated as the system to be used in next year's finals in Philadelphia.


Prof. NIKROUZ FAROUGHI, CSC, will present his paper, "Reconfigurable Digital Image Processing System: A Structured System Approach," at the 2nd Workshop on Reconfigurable Architectures (RAW '95), 9th International Parallel Processing Symposium, April 25-29, Santa Barbara, CA. The paper was supported in part by a 1994 Summer Fellowship Grant.

DONNA FOX, retention counselor in the Minority Engineering Program, was among the honorees at the CSUS Women of Color Day, March 6, 1995. Students, staff and faculty nominated award recipients based on their achievements and contributions both on campus and in the local community.


Prof. MAHLON HELLER, EEE, was awarded contracts of $69,075 (for 8/94-12/94) and $40,901 (through 6/30/95) from Caltrans to continue his development work on a Prototype Shadow Vehicle.

Prof. RALPH B. HWANG, CE, is collaborating with the Hydraulic Research Institute of the National Taiwan University on a three-year (FYs 1994-96), $430,000 research project, "An Investigation for the Reservoir Operation Rule Curves During Severe Drought Years in Taiwan." He was invited as a foreign advisor for a visit on Jan. 5-15 to advise, review and write the project's phase I progress report. (See story page 6.)

Prof. and Water Programs Director KENNETH D. KERRI, CE, presented a paper, "Rate Setting Alternatives," at the Smaller Utilities Committee's Small Systems Day session, AWWA (CA-NV Section) meeting in Fresno, April 12-14. He co-authored a paper, "National Evaluation of Water Quality Issues for Highway Planning," presented at the 74th Annual Meeting of the Transportation Research Board in Washington, D.C., Jan. 24, 1995. Kerri spent much of Jan. 1995 in Malaysia and Taiwan, consulting on operator training and certification programs. ENSearch, a Malaysian professional organization, retained him to help develop operator "need-to-know" criteria, and also operator training and certification programs. Government ministers expressed their interests in programs for operators of drinking water facilities, municipal wastewater treatment plants, and industrial wastewater treatment plants. Taiwan National University sponsored his work in Taiwan, a continuing effort to train the operators of industrial wastewater treatment plants there. His paper, "An Industrial Pretreatment Facility Inspector Training Program," was published in Water Science Technology; the paper describes one of the training programs offered by the CSUS Office of Water Programs (OWP), directed by Kerri. Dr. Kerri and TOM WILEY, Information Systems Administrator for OWP, presented their paper, "Self-Paced Operator Education," at the American...

Prof. WILLIAM NEUMAN, CE, serves as secretary of the Society of Forensic Engineers and Scientists. He organized the technical program of the Society's quarterly meeting in Napa in April 21-23, and also presented a paper on premises liability. He presented a paper on slip and fall standards at the Sacramento Trial Bar Association meeting, April 27-28. Last October, he organized and chaired a panel discussion on "Preparing Students for an Engineering Career in the Global Environment" at the annual meeting of the American Society of Civil Engineers. He serves on steering committees for the ASEEE Education Division conference set for June 9-11 in Denver and for the ASEEE national convention in San Diego next October. He is on four other ASEEE national committees.

Associate Dean JOHN OLDENBURG, BME, was appointed to a three-year term on the Research Committee of the Sutter Institute for Medical Research. He received a Special Opportunity Award of $15,500 from The Whitaker Foundation to develop a "Virtual Instrument Instructional Laboratory." (See story on page 1).


Prof. SURESH VADHVA, EEE, received a grant of software and analog interface circuitry and components valued at $3,907 from the Texas Instruments University Program for a voice recognition project. Next fall, his students will participate in the TI DSP Solutions Challenge, a worldwide design contest with a grand prize of $100,000 for the winning team as well as a prize for the advising professor.


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E&CS mourns the death of Computer Science Prof. RONALD ERNST.

RETIREMENTS

Faculty: Prof. ALBERT M. COOK, BME, now the Dean of Rehabilitation Medicine at the University of Alberta in Edmonton, Alberta, Canada; Dean Emeritus DONALD H. GILLOTT, EEE, serving as CEO of Christian Brothers High School; and Prof. LESTER LUTHER, ME, pursuing a second career as a financial consultant at Baraban Securities.

Staff: MURIEL LINDER, former Computer Science Department secretary; RON WILL, Tech Shop.

Correction: Prof. John Balachandran received a subcontract from the Defense Nuclear Agency and not a grant, as reported in the Summer 1994 issue of E&CS News.
A Message to E&CS Alumni

by Orin Bennett,
Chair, Business Affairs
E&CS Chapter Board

Since the founding of Sacramento State College in 1947, the state-funded institution has not had to actively recruit students. It offered an excellent education at a low cost. Many departments enjoyed reputations that attracted students. The location of the campus provided easy access.

Those ingredients still exist; however, competition for students has increased dramatically. The cost of a baccalaureate degree has become more competitive among schools. The relative number of quality students is declining. Financial hardships have caused changes, and the media have been active in reporting negative trends. Some of those reported trends, such as extended times for graduation, larger class sizes and classes scheduled at fewer times, are often exaggerated.

As a result, we all need to be aware of the need to advance CSUS at every opportunity. Everyone involved with the University must begin to tell the CSUS story and recruit quality new students. Faculty, administrators, athletics staff, and alumni all must take opportunities to tell potential students of the many positive attributes of CSUS. As alumni, we have a great opportunity to thank the University by encouraging students to consider CSUS for their higher learning experience.

The beautiful campus, the convenient location, the outstanding faculty, the programs respected across the state and often across the nation, and the long list of very successful CSUS graduates, are all among many reasons that make CSUS a great choice. TELL A FRIEND.

New Face at E&CS

Dr. Ramzi Mahmoud is so fond of the Golden State that he only applied for teaching positions within California. A specialist in geoenvironmental engineering — a combination of geotechnical engineering and environmental engineering encompassing movement of chemicals and soil systems — Mahmoud joined our Civil Engineering Department last August. During the previous six years, he was a part-time instructor in the Mathematics Department at American River College and was on staff at the Toxics Substances Control division of the California Environmental Protection Agency. Dr. Mahmoud earned the Ph.D. and M.S. in Environmental Engineering at Utah State University in Logan, Utah. He holds an additional M.S. in Mathematics from Utah State and a B.S. in Civil Engineering from Iraq.

You Are News!

What are you doing now? What do you think about this newsletter? What articles would you like to see? After all, this news is for you, so if you'd like to share some information with your former classmates and us, just fill out the following survey. Thanks for your help, and we appreciate your donation of a stamp and envelope!

Name ___________________________ Sex □ M □ F
First Name ___________________________ Middle Initial ______ Last Name ___________________________
(Maiden) ___________________________

Name while attending CSUS, if different ___________________________

Degree □ BS □ MS Received Fall ______ Spring ______ 19 ____ Major _______________

Home Address ___________________________
Street ___________________________ Apt. ___________________________ City __________________
State __________ ZIP __________

Home Telephone ___________________________

Employer ___________________________
Title ___________________________

Home Address ___________________________
Street ___________________________ Apt. ___________________________ City __________________
State __________ ZIP __________

Work Telephone ___________________________

Comments: ___________________________
________________________________________________________________________
________________________________________________________________________

Yes, I want to be involved in the CSUS Alumni Association Engineering and Computer Science Chapter!

Categories of membership (check one): □ $400 Life Joint Spouse
□ $350 Life Individual
□ $45 Annual Joint Spouse
□ $40 Annual Friend Individual
□ $350 Life Individual
□ $45 Annual Joint Spouse

Make check out to CSUS Alumni Association. Thanks for your membership!

Please send this correspondence and/or membership dues to:
Barbara Caretto, Director of Development and Alumni Relations
CSUS School of Engineering and Computer Science
6000 J Street
Sacramento, CA 95819-6023
(916) 278-6629
Who's afraid of the big, bad goose?

Alumni and faculty renewed old ties while enjoying a scrumptious barbecue.

Picnic "Album"
E&CS alumni and their families kicked back, played and pigged out at the Third Annual Alumni Picnic last September 18 at the CSUS Aquatic Center. Watch your mailbox for details about the next picnic, set for Sunday, September 17.

Some took advantage of sailing and other water sports.

Kids watch as the bridges they built are tested for strength.