Nobel Laureate to Address Engineering and Computer Science Grads

Dr. Kary Banks Mullis, recipient of the 1993 Nobel Prize in Chemistry for his groundbreaking DNA replication method, will speak at the E&CS Commencement on May 24, 1997.

The scientist (and ardent surfer) conceptualized the polymerase chain reaction (PCR), a method of rapidly cloning DNA strands, in a “revelation” on route to his Anderson Valley cabin in April 1983. Hailed as one of the great scientific techniques of this century, PCR has wide applications in medicine, genetics, biotechnology and criminal investigation. It was in the latter arena where popular attention was recently focused on Mullis, who was engaged as a consultant to the O. J. Simpson defense team (he didn’t testify). PCR also provided the theoretical basis for Michael Crichton’s popular novel Jurassic Park.

DNA is the genetic building block of tissues; polymerase is the enzyme that triggers duplication of DNA within dividing cells in nature. Mullis’ PCR method uses a machine to accelerate this process exponentially, multiplying a single, specific microscopic strand of DNA found in a tissue sample into millions of copies within hours. Analyses of even minute specks of blood, skin and hair have yielded important crime clues. The process is also valuable in identifying genetic diseases.

Mullis’ discovery rested on many years of research experience and very solid academic credentials. He holds a B.S. in Chemistry from Georgia Tech (1966) and a Ph.D. in Biochemistry from UC Berkeley (1972), where he also lectured until 1973. In 1979, following stints as a postdoctoral fellow in pediatric cardiology at the University of Kan-
sas Medical School and in pharmaceutical chemistry at UC San Francisco, he began a seven-year career at Cetus Corporation in Emeryville, California, where he worked in oligonucleotide synthesis and chemistry, and in DNA technology. He worked for Cetus at the time of his discovery, which netted him a $10,000 bonus and the company $300 million when it sold the patent rights to the PCR process to Hoffmann-La Roche, Inc.

After leaving Cetus in 1986, he became director of molecular biology at Xytronyx, Inc. in San Diego; there, he worked in DNA technology and in photochemistry and photobiology. He has done private consulting on nucleic acid chemistry for more than a dozen See Mullis, page 7

CSUS and National Science Foundation Host Vietnamese University Officials

Agreements for cooperation and exchanges between CSUS and four Vietnamese universities were reached during the U.S.-Vietnam Engineering Education and Joint Research Workshop hosted by CSUS and the National Science Foundation last November 4-8.

President Donald Gerth and Provost Jolene Koester welcomed nine high-ranking administrators representing Hanoi University of Technology, Hue University, Vietnam National University-Ho Chi Minh City, and Vietnam National University-Hanoi. They exchanged information and ideas with other CSUS faculty and administrators and with guests from Santa Clara, Tufis, and San Jose State universities, CSU Fullerton, American River College, University of the Pacific, University of Massachusetts-Lowell, and University of Northern California.

Drs. Trevor Davey and Ngo Dinh Thinh, CSUS ME professors, were workshop co-directors. They received an NSF grant to implement the program. Participants drafted cooperation and faculty/student exchange agreements; identified topics for joint projects in the areas of environmental management technology, solar energy conversion, biomedical instrumentation and computer integrated manufacturing; and took a field trip to the Wheeled Mobility Center at San Francisco State University to explore international cooperation in wheelchair R&D.

Workshop topics reflected participants’ other mutual interests in accreditation and the course credit system, student-faculty relations, admission procedures and requirements, student advising, alumni and advisory boards, technical society relations, and private and public university relations. A reception hosted by Deans Braja Das (E&CS) and William J. Sullivan, Jr. (Arts and Letters), climaxed the workshop.

“The workshop was very successful. The participants were able to exchange ideas on a wide range of topics,” said Thinh, ME Department chair. He found discussions on engineering and science education particularly useful. “Since one of the expected outcomes of the workshop was student and faculty exchanges, it was important that the programs and curriculum content of each participating university be clearly understood.”

The Vietnamese universities will host a followup conference next year.
A Message from the Dean

Academic year 1996-97 is in many ways a turning point for the School of Engineering and Computer Science. We see School efforts in student recruitment and retention begin to pay off in terms of both enrollment and student academic success. The School has instituted a “student centeredness” program improving student/faculty and student/student interaction in and out of the classroom. Improvements are also being made in advising students beyond the major in general education, career planning and campus life. Better coordina-

tion of staff to improve staff-related functions has resulted in increased efficiency. The School’s relationship with industries and the community at large has led not only to tangible benefits such as equipment donations and cooperative efforts, but to some intangible benefits as well.

Fall 1996 enrollments at Census Date surpassed 1290 FTES (full-time equivalent students), not only reaching our fall target for the first time in many years, but exceeding it by more than 5% of the targeted FTES. While the market demand for our graduates has had a major impact on these enrollment trends, much of the success should be attributed to several recruitment programs initiated a year earlier such as the School’s “Adopt-A-School Program” involving some 100 high schools using faculty volunteers, and the outreach efforts to community colleges through both personal contacts and organized meetings. In spite of this, a number of programs still suffer from enrollment decline.

Efforts are being expended this academic year to expand the highly successful GRAD_2000 scholarship/internship program begun last year and funded by Hewlett-Packard and Intel Corporation. With the help of our friends in industry, the program — previously available only to incoming freshmen majoring in computer science, computer engineering and electrical engineering — has been extended to new transfer students in other majors. Notable successes involve Aerojet for mechanical engineering majors, Tensar for civil engineering majors, AMS for computer science majors, and TRW for electrical and electronic engineering majors. The selection of awardees for these scholarships is done in cooperation with the faculty of community colleges, further strengthening the relationships with our feeder institutions. It is hoped that these attractive scholarships will pay off in the long run not only with increased enrollments, but with a greatly improved quality of students.

Our partnership with industry extends beyond asking for support through cash gifts, equipment donations and scholarships, although these have indeed been generously contributed by several of the partners. Recently instituted cooperative efforts include team teaching between faculty members and engineers provided at no cost by industry. Several companies donate software, some still unreleased to the market, for educational and testing purposes. Under discussion with Intel through their “preferred school” program are faculty co-ops, joint research, sponsored work by faculty and/or students, and providing the tools needed for “state-of-the-art” curriculum.

At this time, more than 14 faculty members are engaged in externally-funded research activities which are expected to increase rapidly in future years. Many of these projects employ students as research assistants, broadening their educational experience.

As the economy in California grows, we will expand our industry-education partnerships and research activities. We will continue to provide our students a quality education and experience which will bring success in their future professional career. To do all that, we will continue to solicit your good will and support.

Phone Numbers (Area Code: 916)

Dean’s Office 278-6366
Civil Engineering (CE) 278-6982
Construction Management (CM) 278-6616
Computer Science (CSC) 278-6834
Computer Engineering (CPE) 278-6844
Electrical and Electronic Engineering (EEE) 278-6873
Biomedical Engineering (BME) 278-6458
Mechanical Engineering (ME) 278-6624
ME Technology (MET) 278-7081
E&CS Computing & Communications Services 278-7350
MESA Engineering & Computer Science Program (MEP) 278-6699
BEST 923-1224
Career Services Office 278-7091
Cooperative Education 278-7220
CSUS Alumni Office 278-6295
E&CS Development/Alumni 278-6629
MESA 923-0844
Project Success 278-5468
Women’s Programs/STARS 278-7877

Our home page at http://www.ecs.csus.edu keeps you in touch with the School. Come visit us.
BME Program, Physicians Collaborate to Improve Instrumentation

The proliferation of medical instrumentation for monitoring patients during surgery and in intensive care units has increased the cognitive burden on anesthesiologists and other medical staff. New “minimally invasive” surgery procedures have also greatly increased physical and mental burdens on surgeons; in these, the surgeon is guided by a fiber optic TV system, operating by special instruments inserted into the patient through small incisions. But tasks such as tying knots may require minutes instead of the seconds needed in traditional surgery.

Graduate students and faculty in the CSUS Biomedical Engineering Program are collaborating with anesthesiologists and surgeons at the UC Davis Medical Center to improve information management and instrumentation for patient monitoring and surgery. These specialists participate in BME coursework and master’s thesis research. BME’s LabVIEW-based Virtual Instrumentation (VI) Laboratory is a valuable resource in this collaboration. BME students are developing VIs to monitor the surgeon’s muscle and mental workloads, to emulate and compare alternative operating room monitors, and to integrate the outputs of multiple monitors of a trauma patient’s cardiovascular status in the intensive care unit.

BME students Denise Forkey and Venkata Vegesna have developed VI monitors of a surgeon’s workload. Forkey’s VI measures three electromyogram channels to show the exertions of the surgeon’s thumb and forearm muscles. Vegesna’s VI measures heart rate variability from an electroencephalogram as an indicator of the surgeon’s mental workload. The two developed these VIs as part of their master’s thesis work under the direction of BME Prof. Warren D. Smith and Dr. Ramon Berguer, M.D.

Forkey and Vegesna were invited to demonstrate their VIs at the national 1997 SAGES (Society of American Gastrointestinal and Endoscopic Surgeons) conference in San Diego on March 19-22. Their VIs monitored conference participants who performed simulated traditional and minimally invasive surgeries. The VIs graphically showed the greater physical and mental efforts required during minimally invasive surgery.

Civil Engineering Has First Female Department Chair

Few women are drawn to civil engineering, with its macho, dusty hardhat image. But Dr. Joan Al-Kazily, new chair of the CSUS Civil Engineering Department (and its only female member) is exceptional in many ways.

She was attracted to engineering through her love of mathematics and fascination with practical problems, particularly water supply systems. Encouraged by her teachers and an uncle, the British native ignored her parents’ apprehensions and took her B.Eng. and M.Eng. in civil engineering from Liverpool University. She went on to earn the Ph.D. in civil engineering at UC Berkeley. Al-Kazily joined the CSUS faculty in 1984. She had previously worked for companies in San Francisco that were designing BART.

Transportation remains her primary teaching and research interest. Before becoming the department chair, she taught transportation-related courses at both the graduate and undergraduate levels. At the moment she is working with CalTrans on storm water runoff management from transportation facilities. Although runoff from highways affects overall water quality, the magnitude of the problem remains to be determined. CalTrans is concerned that environmentalists’ demands for a clean environment are met, but also that taxpayers’ dollars are well spent. “I will probably spend the rest of my life on this,” she said.

Al-Kazily takes the department’s reins at a critical time: There is unusually high turnover this year due to several faculty retirements and sabbaticals, and “the right people must be found to fill in” and ensure a smooth transition. She is also troubled by a downturn in employment prospects for civil engineers. Most work for public agencies such as CalTrans, which are doing little hiring due to reorganizing and downsizing.

Nonetheless, she plans increased recruitment and retention activity to boost student enrollment. “If they are planning to study civil engineering, we want to encourage them to come here.” Another concern is improving student-faculty communication and improving services to students. She plans to spend more personal time advising students and encouraging faculty to do likewise.

Another goal is to have a CE industry advisory group, and she looks primarily to alumni to serve on it. There is such a group for environmental engineering, but not for other areas nor for the department as a whole. She urges those interested to contact her at (916) 278-7346 or alkazily@ecs.csus.edu.

Al-Kazily has just taken on another project: She is chairing the School’s 50th Anniversary Celebration committee, which is planning a series of events that will take place during November 1997.
Nothing Succeeds Like Project Success

An intensive Professional Development Conference at the start of each academic year is a critical part of Project Success, an E&CS effort to increase retention, promote academic achievement, groom future professionals and managers, and decrease time to graduation. Targeted students are from groups with a low rate of participation in engineering and computer science careers — African Americans, Latinos and Native Americans.

Project Success is a joint effort of the MESA Engineering and computer science Program (MEP), CSUS Cooperative Education Program and industry sponsors. Since 1991, program staff annually offer outstanding high school seniors opportunities to alternate full-time study at CSUS with well-paid, progressively more professional employment. This year, 32 students (“fellows”) are working for 18 public and private employers such as NEC, Hewlett-Packard, Intel, GenCorp Aerojet and Sacramento County.

Fellows begin working in the summer immediately following high school graduation, and work during school breaks thereafter until they are juniors; then they work full time as co-op students during summers and alternating semesters. This plan amounts to approximately 26 months of full-time employment and an estimated $40,000 in wages paid directly to the student over a six-year period. Coupled with scholarships and financial aid, this income enables fellows to graduate sooner than their peers who, because of financial constraints, may need eight years or more. Besides providing employment, sponsors fund student services through a membership fee. The MEP provides recruitment, instruction, orientation, counseling and monitoring of fellows throughout the program. Fellows participate in a five-year professional development program which includes enrollment in a three- unit class each semester and attending the three-day annual Professional Development Conferences.

The fourth conference last August kicked off the academic year. The few distractions at the Granlibakken Conference Center just outside of Tahoe City enabled fellows from all class levels to devote themselves totally to the intense program. Besides establishing a foundation for the ensuing Project Success class, the conference integrated new fellows into the program; inspired participants’ continuing pursuit of high academic and professional goals; and promoted strategic and tactical planning and commitments to achieve set goals. Professional trainers David K. Butler, principal of David Butler and Associates, and Jay Elgren of Franklin Quest, facilitated a variety of exercises that led students to identify causal links between personal, professional and academic success and their own principles and behaviors; and to develop strategies for behavioral change, including techniques and tools to help them achieve effective management of “time” (defined as “appropriate control of events”). Students grappled with reconciling a sense of personal control with uncontrollable events and beliefs held by others (e.g., racism).

Students eagerly assembled the components of Franklin Day Planners which each received. Elgren provided training in their use through interactive exercises that considered priorities, values and steps to completing the tasks required to reach identified goals. A reception for alumni, their younger peers, and the staff provided a sense of continuity and tradition.

The conference was sponsored by Intel Foundation, with GenCorp Aerojet also contributing funding for materials.

E&CS Students Host ASCE Concrete Competition

Pitted against 10 tough teams in a grueling weekend-long competition that tested mettle as well as concrete, CSUS civil engineering students co- veted a shot at the American Society of Civil Engineers national concrete canoe contest. But by the end of the MidPacific Region Conference on April 11-13 at Lake Natoma, the CSUS team trailed winner UC Berkeley and CSU San Jose in overall scoring.

The CSUS ASCE student chapter hosted the regional meet this year. Besides the climactic Sunday concrete canoe races, the annual event featured other contests, including best canoe design paper, presentation and display; steel bridge building; surveying — even a concrete shoe race over an obstacle course. Stanford’s spirits sank along with its craft on Saturday. Paddling

“Xtreme,” CSUS finished in the top four in all canoe races (co-ed sprint, men’s and women’s endurance and sprint).

CSUS had taken the regional crown for the past two years against perennial powerhouse rivals UC Berkeley, UC Davis and Chico State; two years ago the CSUS team placed second in a stunning overall performance at the national meet, and last year ranked sixth. The team had hoped for another regional and national splash with a design for a canoe that was shorter and narrower than last year’s.

About 30 CSUS CE students planned, managed and competed in the various activities. Continuing team members are already looking to next year’s competition, and seeking cash and in-kind support. Supporters can call Dr. Ramzi Mahmood, faculty sponsor, at 278-7375 (or mahmoodr@ecs.csus.edu).
Briefly...

EEE graduating senior Tunde Gyurics keeps piling up honors: She won first place at the CSUS Student Research Competition on March 8, and will represent CSUS at the CSU systemwide competition on May 2-3 at Cal Poly SLO (while simultaneously competing on May 3 at UOP in the IEEE paper contest). Gyurics, whose family left Romania for the U.S. when she was a teenager, has a stunning 3.92 GPA, the highest among graduating E&CS seniors. She won first place in a statewide essay contest (college/university division) for co-op students. Last fall the CSUS faculty chose her (from among 90 undergraduate applicants campuswide) as the Faculty Merit Scholar, fully funding her spring fees. As a participant in the elite CSU Pre-Doctoral Program last year, she visited several Ph.D. programs and conferences; she will enter Stanford University next fall. Frosting on a very large cake: She added a generous Tau Beta Pi fellowship to her Buck Foundation fellowship previously received to further her education through graduate school. • Three students captured all of the scholarships presented by the Construction Management Program at its annual awards banquet on March 13. The Beavers Charitable Trust and Specialized Carriers & Rigging Foundation scholarships went to Shane Dees; the Carson Family scholarship recipient was Rachel Huffman; Huffman and Jonas Vass received Richard A. Nickles scholarships; Vass and Dees received the Sacramento Builders Exchange scholarships; and both the Associated General Contractors/Bud Rogers and the California Building Industry Foundation scholarships were awarded to Vass. • Dordaneh Eslamian and Sukhbir S. Dulay will receive Environmental/Water Resources graduate scholarships for 1997-98, funded by annual industry contributions. • MEP students and staff proclaimed Nov. 22 “Madeleine Fish Day” to honor the MEP director’s dedication and achievements on behalf of MEP students; their resolution was read and presented to her at the annual MEP Scholarship Luncheon on that day. • CSUS will host two major conferences in May: the Power Quality Symposium, May 27-28, with a workshop on the 29th; and the biennial 35th Heat Transfer and Fluid Mechanics Institute, on May 29-30. • GenCorp Aerojet presented checks to the ME Department for $5,000 to support instruction and $8,000 for scholarships for community college transfer students. • Lockheed Martin awarded a total of $38,000 to E&CS profs to conduct six research projects specifically involving students as research assistants. • The EEE Dept. received a $26,000 in-kind gift from Lockheed Martin Western Development Labs; and laboratory equipment valued at $77,460 from Hewlett-Packard under its University Grants Program. • Snell Memorial Foundation donated a 3D color digitizer to the BME Program valued at $63,200. • Dade MicroScan, West Sacramento medical instrument maker, is collaborating with the BME Program to improve instruments that identify bacteria and determine the best antibiotic therapy. MicroScan has lent the BME Program valuable instruments for use in BME 220 (Advanced Topics in Medical Instrumentation); the coursework will lead to further collaborative master’s theses, with MicroScan providing financial support both to these thesis students and to the BME Program. • E&CS Career Day ‘97, on March 21, was a huge success, reflecting the economy’s upswing and employers’ mad scramble for technical professionals; reps of 55 employers and over 1,000 students and alumni packed the USU Redwood Room and Forest Suite. Cici Mattuzzi, E&CS Career Services Director, organized the event.

Eugene Carson, Sr. presents check to Prof. Keith Bisharat as wife Hamelore Carson and sons Eugene Jr. (L) and Merwin Carson (BSCM ’83) look on. Built up over the years with proceeds from their annual invitational golf tournament, the Carson Family Endowment Fund is the largest benefiting E&CS, with over $32,200 deposited. Fund earnings provide generous annual scholarships to Construction Management students. Bisharat heads the CM Program.

Tunde Gyurics

Terry Pearson, E&CS Industrial Advisory Board representative from GenCorp Aerojet, hands checks to Dean Braja Das and ME Chair Ngo D. Thinh.
800 Students Visit School of Engineering and Computer Science

Over 800 students jammed E&CS labs and classrooms on February 21 to learn more about engineering and computer science at the School's annual Open House. E&CS students, faculty and staff were on hand to provide demonstrations, exhibits, information, food and friendship.

Visitors from 21 high schools joined others from American River, Cosumnes and Sierra community colleges to explore the many specialties within each of the School's departments and programs, often through hands-on experiences, and learn about student services and professional societies available at CSUS. Hewlett-Packard donated scientific calculators as prizes for winners of the Association for Computer Machinery's programming contest and for some lucky ticket holders.

A CAD seminar capped the daylong event; 22 instructors who attended with students received free Bentley Microstation Academic Suite software donated by Archway Systems, Inc. of Huntington Beach.

The event celebrates National Engineers Week.

Photos show students...

... preparing for ACM contest with CSC Prof. John Cleveger.

... participating in a hands-on demonstration of water pollutants in the Environmental Engineering Lab.

... watching a MOBOT in the Robotics lab.

... examining SAE vehicle exhibit.

... learning about electrical transmission via a Tesla coil in the Power Lab.
E&CS Prof Explores Engineering Curricula in Australian Universities

A sabbatical leave spent teaching in Australia last fall gave ME Prof. Andrew Banta an excellent opportunity to study engineering education there as an insider, and to compare it to the general U.S. model. Overall, he found more emphasis on the practical aspects of the profession, along with good communication with local industry and a greater emphasis on meeting the needs of those industries.

Banta spent most of his time at the University of Technology, Sydney (UTS), where he taught a third-year, second-semester course that covered the broad aspects of mechanical engineering design. He also visited 11 other universities, spending anywhere from a few hours to half a day.

He reports that engineering programs usually are three- to four-year programs, including some form of industrial internship varying from 12 to 40-plus weeks. None of the programs includes anything similar to the general education courses (history, arts, etc.) found in U.S. schools. All universities require a senior thesis which is either research or design oriented. While some institutions are showing an increase in enrollment, more are showing a decline. As in the U.S., the decline seems more pronounced in mechanical engineering.

Banta found considerable similarity among ME curricula in terms of design content. First-year students enroll in drawing and/or space visualization courses and often do a project to strengthen the concepts, e.g., designing a footbridge over a highway purely in terms of shape. By the second year, the students move to more elaborate projects, e.g., designing a farm gate; the very popular Warman Student Design-and-Build Competition, e.g., involves the design and construction of a device for competition among universities. (This year’s device had to pick up and transport pellets.) Significantly, statics, dynamics and mechanics of materials are first- and second-year courses as opposed to sophomore- and junior-level courses in the U.S. The third year includes some serious design projects, sometimes actual problems from industry and mostly team projects. Courses on team building, technical communication and other design-related topics are often included in the curricula.

Engineering education programs appear more closely related to local needs. In Western Australia mining is of prime importance; in South Australia the emphasis is on agriculture. The University of Tasmania stresses timber and paper industries with some interest in hydroelectric power and ship-building, specifically very large aluminum catamarans. This specialization seems to accompany the less stringent requirements of the Australian accrediting agency, the Institute of Engineers.

Most of the universities, including the Australian Defence Force Academy (technically a campus of the University of New South Wales), offer graduate programs. While master’s programs are coursework-based, all Ph.D. programs are entirely research under the guidance of a faculty member. Given the small number of students, this arrangement makes excellent sense. The only costs are administrative and space (generally more abundant there than at U.S. universities).

University financing is quite different than in the U.S. Australian universities are financed by the national government, not by the states. They appear to be where California universities were a few years ago, increasing class size and cutting nonessential services. As at many U.S. universities, the laboratory equipment is aging. While varying from one university to another, computer facilities appear to be adequate but not as numerous as those at CSUS. Students are charged fees under the Higher Education Contribution Scheme (HECS) which currently run $A3300 to $A5400 per year (about $2,600 to $4,300 U.S.). Once graduates earn over a minimum salary — about $A28,000 per year — a percentage is deducted to pay the additional costs of their higher education.

Teaching load is stated as contact hours per week with no distinction as to the type of activity (e.g., lecture or lab). In these terms, the average load ranges from eight to about 15 hours with an average of 10 to 12 hours per week — the number may even vary widely within a single school, unlike at California universities. Another distinction is the total lack of agreement among universities about how to count students’ credits.

Banta was impressed by one other aspect of Australian tertiary (higher) education: the “Technical and Further Education” (TAFE) colleges. These are “very roughly” similar to U.S. community colleges, in that they providing career programs in technology and other fields. They are important to a discussion of engineering education in Australia because a significant fraction of the engineering faculty have entered teaching through the TAFE system.

Mullis
Continued from page 1
biotechnology companies since 1987, including Angenics, Cytometrics, Eastman Kodak, Milligen/Biosearch and Specialty Laboratories.

Besides the Nobel Prize, Mullis has received numerous other prestigious international awards, including the generous ($450,000) Japan Prize from Japan’s Science and Technology Foundation (1993), and an Honorary Doctor of Science from the University of South Carolina. He holds several major patents.

Born and raised in the Carolinas, the father of three now resides near the La Jolla surf and visits his 30-acre Northern California ranch (named “Institute for Further Study”).
E&CS Alumna: Technology for the Next Millenium

E&CS alumna Linda M. Davis won reelection last November to a second term on the Sacramento Municipal Utility District (SMUD) Board of Directors. The only electrical engineer on the seven-member board, Davis represents Ward 1, which includes the communities of Citrus Heights, Fair Oaks, and Orangevale.

Formerly SMUD Board vice president, Davis now chairs its Integrated Resources Committee, charged with resource decisions for SMUD’s future energy needs. Resources considered by the committee include water, clean air, people, and transportation. She also is employed by the California Energy Commission as an associate electrical engineer, acting as a regulatory consultant for electrical power transmission.

Her current board term expires in the year 2000. She sought a second term because she “felt effective in helping improve our local resource utilization at a reasonable cost to keep lots of dollars in our local economy.” Moreover, she liked knowing that “I’m bringing technology to the next millennium.” She doesn’t rule out the possibility of a policy position at the state or national level in the future.

Davis is the very negation of all stereotypes: Orphaned as a teenager, the ex-welfare recipient and mother of five entered CSUS at age 28, following previous educational (and marital) false starts. She received her BS in Electrical and Electronic Engineering in 1984.

She had begun her college studies long before at San Juan Delta College, majoring first in Early Childhood Education (“too boring”), then Music (“too solitary”). A long-standing fascination with science, reignited by a look at semiconductors under a microscope in a biology class, led her to an AA in physical science and eventually to electrical engineering. “After 15 years as an engineer, it hasn’t gotten boring yet,” she commented.

Her graduate degree program at CSUS was characteristically unconventional: Unable to decide on a degree in business or in engineering, she took all of the MBA program prerequisites and also engineering courses. After over 50 graduate units and a thesis, she got a “designer” MS in Engineering Management in 1991 at age 41, with a master’s committee drawn from both schools. Davis expressed appreciation for the flexibility that CSUS allows. She cited operations research, personnel management, financial management and urban planning (taught by a former SMUD director, Emeritus Prof. Cortus Koehler) as some of the courses that have proven immensely valuable in her career.

Still actively connected with E&CS, she serves on the technical conference committee for the upcoming Power Quality Symposium and Workshop, which E&CS will host on May 27-29. She has been instrumental in securing SMUD support for the Cogeneration Lab being developed by the School. “I always have Sac State in mind,” she said. E&CS still has her in mind too: Her achievements were recognized by the EEE Department at the 1995 Alumni Honors Luncheon.

Davis has finally met her match for individualism in her fiancee, engineer-poet Michael Tomolillo, also a Sac State grad (BA English, BSEE ‘87). The couple met at a neighborhood coffee shop.

Although still strikingly attractive and youthful, Davis has already decided on a retirement site: a “ranchito” on her land near Redding, near a daughter and two grandchildren. Her children, who include another daughter and three sons, range in age from 15 to 25. Two sons, 15 and 17, still live at home. She predicts that the youngest will be an engineer or scientist.

Field Trips an Integral Part of Power Education

Industry, faculty and alumni are collaborating to make power generation and its associated modern technology more real for E&CS students. Last fall, Profs. Andrew Banta and Miroslav Markovic brought electrical, civil and mechanical engineering students to local facilities for a first-hand look.

During three separate visits to SMUD’s Cogeneration Plant in Elk Grove, PG&E’s Vaca-Dixon High Voltage Power Substation and California Department of Water Resources’ Oroville Hydro-Power Plant, student groups were given special, detailed tours of normally restricted areas, thanks to the advocacy of alumni, E&CS industry friends or current student employees.

The visits exposed students to a variety of features, problems and design solutions exemplified by each site, e.g., aesthetic considerations for facilities located in residential areas (SMUD); sophisticated relay protection systems to withstand natural disasters (PG&E); and an underground power facility at the highest dam in the U.S. (Oroville).

Markovic’s grateful students autographed a group photo and presented it to him. “Such field trips are not a right but a privilege and should not be taken for granted by either students or faculty,” commented Markovic.
Faculty/Staff News


Dean Braja Das, Development Director Barbara Caretto, and MD Research Director Coordinator Marianna Rivera received Founders Awards for their work on behalf of the Mathematics, Engineering, Science Achievement (MESA) Program, at the 1997 MESA Industry-Education Luncheon/Math Competition, Jan. 17.

Dennis Dahlquist, EEE lecturer, has had his article, “Confusers in Engineering,” published in California Professional Engineer (July/August) 1996.

Madeleine Fish, MEP director, has had her article, “An Electronic Look at My Students’ Belief Windows,” published in Success 101, a publication dedicated to strategies which enhance student retention and academic success.

Dwight Freund, CSE, presented his original puzzle, “Word Bash,” at the cryptic-crossword solving contest at the 137th Convention of the National Puzzlers’ League in Chicago, Oct. 1996. The puzzle was reprinted in Enigma, the League’s monthly publication, Oct. 1996.

Isaac Ghasah, CSE, was among 22 participants who were competitively selected to participate in the 1996 Summer Faculty Program at the NASA/John F. Kennedy Space Center.

Jose J. Granda, ME, was general chair of the 1997 International Conference on Bond Graph Modeling and Simulation, January 12-15, Phoenix, AZ. The conference was part of the 1997 Society for Computer Simulation Western Multiconference on Computer Simulation, and brought together academic and industrial users of Bond Graph modeling methods in automotive, aircraft, fluid power, kinematics, multibody systems, and social and biological systems.

John Gwyrn, CSE, has been analyzing card games: Dead 21 and Progressive Stud Poker (for Harvey’s Lake Tahoe and for game inventor); Tahoe 21 Side Bet (for Harvey’s Lake Tahoe); and Double Hand Marquez (for game’s inventor).


B. Hwang, CE, received a three-year, $135,000 research contract from the California Water Resources Control Board for R&D of four Windows-interface computer models. He also received a sixth research grant ($55,344) from the California Office of Emergency Services to conduct dam-break inundation mapping studies for 16 non-federally owned dams, and comparative analyses of inundation maps developed in the ‘70s and ’80s for six selected dam-break studies. Both grants are funding student work on MS theses and projects and have the goal of journal publications.

Kenneth D. Kerri, CE, has had a coauthored (with K. Kumasavim and L. Hori) article, “Development of Privatized Operator Training and Certification Programs for Malaysia,” published in Water Science and Technology, pp. 147-154, Vol. 34, No. 12, 1996. He presented a seminar on Collection System Performance Indicators to Control SSOs and CSOs at UC Davis on Feb. 27.

Miroslav D. Markovic, EEE, has completed the first edition of the text-manual for the EEE 131 Electromechanics Laboratory, which reflects the theory presented in the EEE 130 Electromec-hanics Conversion course required of EEE majors. He involved many students in developing both theoretical and practical parts of the work.

Cici Mattiuzzi, E&CS Career Services director, was honored for her achievements by the CSUS Economics Department at the 1996 Alumni Honors Luncheon, Oct. 14. She has CSUS degrees in psychology (BA ‘74) and social science (MA ‘81).

Carole M. McNamere, CSE, presented (with R. Gebala and R.A. Olsson) “An Interpreter for an Imperative Concurrent Programming Language” at the International Conference on Parallel and Distributed Techniques and Applications (PDPTA’96), Aug. 9-11, 1996. Gebala was a CSE master’s student.

S. K. Ramesh, EEE chair, received an equipment grant from Hewlett-Packard valued at $77,460 that will upgrade the Electronics Lab and provide the cornerstone of the new electronics curriculum set to premier in fall 1997. He presented “Terahertz Communications: Myth or Reality?” at the Physics Campus Colloquium on Dec. 5. He was appointed to a three-year term on the KXR/KXJZ Board of Directors beginning in Jan. 1997.


I. James Ster was recognized for 15 years of service at the Staff Employees Award Luncheon on March 26.


Milestones

Faculty retirements planned after Spring ’97 are: B.P. Lathie, EEE; Leonard Hom, Kenneth Kerri, William Neuman, and Hon-Hsien Su of CE; Leo Dagbahan, ME; and Fred Blackwell and Abe Low, CSE. Su and Dagbahan will continue to teach some courses under the Faculty Early Retirement Program (FERP). Carole McNamere was promoted to the rank of professor.

Congratulations to: ME Prof. Jose Granda and wife Imelda on the birth of their son, Jose Jr., on Dec. 3 (8 lbs., 20 in.); and to ME Lecturer Jim Peluna and wife Lori on the birth of their daughter, Colleen, on March 24 (8 lbs. 5 oz., 20 in.). Prof. Turan Ege, EEE, and Francisc Cheong-Siat-Moy, CE, were chosen by School committees as, respectively, Outstanding Teacher and Outstanding Scholar for 1996-97; technician Bruce Scott is Outstanding Staff.

In Memoriam... The School mourns the passing of Prof. Emeritus Norman J. Castellan last Nov. 23, at age 84, following a distinguished career in teaching, administration and business. Castellan came to Sac State in 1955 and was the first chair of the Civil Engineering Department. He went on to head the Engineering Division, predecessor to the School of Engineering and Computer Science, and then again chaired the CE Department. He retired in 1978. Castellan received a bachelor’s degree in civil engineering from the Colorado School of Mines and a master’s degree from the University of Colorado in Boulder. His eulogy, CE Prof. William Neuman spoke of Castellan’s enduring legacy to CE students: “It was the balance struck between theory and practice... to know why as well as how.” He is survived by his wife Evelyn, two daughters, nine grandchildren and eight great grandchildren.

Dr. Ajit Virdee, 65, who joined the CSUS faculty in 1970, died on April 5 at his home, from a heart attack. Twice chair of the CE Department, he had just retired in January 1997. Co-author of three widely-used textbooks, Virdee was an expert in structural design, including stability analysis. He remained professionally as a consultant, as well as personally involved in assisting students until the end of his life. The Kenya native prepared for his career at Westminster Technical College, London (B.S.); University of Illinois (M.S.); and UC Davis (D.Engr.). He is survived by his son and daughter, one grandchild, and his companion, Aurea Quaresma. Donor’s Memorial scholarship should be sent to CSUS School of Engineering and Computer Science, P.O. Box 191792, Sacramento, CA 95819.
Alumni Notes

Samer M. Batarseh (BSEE’95) is a system engineer at System Integrators Inc. in Sacramento, following a rapid (nine months) promotion from a trainee to an associate. “We are hiring,” he wrote recently.

Richard Heidenreich (BSEE’71) is director of R&D and Brother International Corporation in Bartlett, TN.

Holly Hayes (BS CSC’95) and Robert McFarland (BSEE’92) were among recent graduates who represented their employers at this year’s E&CS Career Day on March 21. They work at Bently Nevada in Minden, NV. McFarland, father of two, is a senior engineer; Hayes, who has a daughter, is a software engineer. The two met with current E&CS students following McFarland’s presentation, “An Engineering/CS Career at the Base of the Sierras!” They reported that our curricula and project experiences made E&CS grads highly valued at Bently Nevada.

Ravi Jain, Ph.D. (BSCE’61, MSCE’68), retired from federal service after two years as founding director of the U.S. Army Environmental Policy Institute and 18 years as chief of the Army Corps of Engineers Environmental Division. He is now associate dean for research and international engineering and professor of civil engineering at the University of Cincinnati. Early in his career, he worked locally as an engineer for the Spink Engineering Corp., State of California Department of Water Resources, and Development and Resources Corp. Jain also holds a Ph.D. in civil engineering from Texas Tech (1971) and an MPA in management and public policy from Harvard (1980). He was a fellow of Churchill College, Cambridge University while visiting engineering faculty member (1986). He has written and published voluminously (including 10 books) and has won numerous honors.

Amjad Obeidat (BSEE’91), former CSUS Senior Achievement Award recipient, has just earned the Ph.D. in Optics from Johns Hopkins University.

CE alumni presented papers at the National Water Environment Federation Conference in Dallas, TX, Oct. 5-9, 1996. Graduate student Mark Perry (BSCE’95) et al., “CW FATE: A Pollutant Fate and Transport Model Applied to the Sacramento Constructed Wetland Wastewater Treatment System”; and Dr. Theresa Poxon (MSCE’86), “Structure and Dewaterability in Anaerobically Digested Sludge.”

Ron Smith (BSCE’62, MSCE’95) moved to Oregon in March, to work as chief engineer for the City of Portland’s Bureau of Environmental Services. Smith was president of the CSUS Alumni Association last year. He also taught part-time in the CE Department and was a longtime member of the E&CS Industry Advisory Board.

Cassandra D. Stoll (Cawthorn) (BSCE’93) is a project manager at Union Pacific RR in Oakland.

Baron (Borong) Wang (MSEE’91) lives in Beijing, where he heads Asian operations for Itron, a Bay Area maker of CATscan equipment. Congratulations to Laurence H. Neuman (BSCE’96, MSCE’92) and wife Laura on the birth of twins Georgia and Wyatt on Feb. 3, 1997. A California-licensed civil and traffic engineer, Neuman studies at McGeorge School of Law. CE Prof. William R. Neuman is the proud grandfather.

Alumni Honors Luncheon

Each fall, the University’s academic departments recognize outstanding alumni at the CSUS Alumni Association’s annual Honors Luncheon. Last October 14, E&CS honorees were Dr. Gary Gaugler (BSEE’70), Patrick Vujovich (BSCE’69), and Michael Ellis (MSCE’83). Before joining TRW Systems Integration Group in Sacramento as chief engineer, Gaugler worked for seven years as chief scientist/engineer at Sacramento Air Logistics Center, McClellan AFB, capping a 25-year federal service career. He received his MBA from City University, Bellevue, WA and doctorate in MIS from Walden University in Minneapolis. Vujovich is principal-in-charge for Buehler and Buehler Associates, and is a registered engineer in California, Nevada, Florida, Oregon, Idaho and Arizona. He has worked on projects at CSUS, Cal Poly SLO, CSU Fresno and CSU Chico. He has also served as an advisor on several committees for the Division of the State Architect on California public school design.

Ellis joined Hewlett-Packard in Roseville immediately upon graduation, rising from a support role in manufacturing and shipping automation to his current assignment as a section manager at the recently-formed Direct Connection Operations Division with several network connectivity products.

CSUS Alumni Association Honors Caltrans Official

Civil Engineering alumnus Richard P. (Dick) Weaver (BSCE’63) was one of the nine recipients of 1997 Distinguished Service Awards presented by the CSUS Alumni Association on March 17 at the Radisson Hotel.

In keeping with the spirit of these annual awards, Weaver has combined outstanding professional achievement with extensive community service. Chief Engineer/Deputy Director since 1989, Weaver joined the staff of the California Department of Transportation in 1961 while still a CSUS student. At Caltrans he is now responsible for highway design, right of way, construction, project management and local programs, commanding a 1996-97 fiscal year budget of $1.9 billion. He is involved in light rail projects in both Sacramento and San Diego, and has served as California’s representative to the San Diego Metropolitan Transit Development Board.

In addition to work on numerous committees of the American Association of State Highway and Transportation Officials, he has been active with his church and in the community, serving as chairman of the local school board, president of his homeowners association, trustee on the National Arthritis Association Board, and president of the American Juvenile Organization. He also earned a master’s degree in public administration from San Diego State University.

Weaver and his wife will move to Montana following his impending retirement.

Join the Party!

CSUS will celebrate its 50th anniversary all next year, beginning Sept. 24, 1997 and ending with a grand finale on May 16, 1998. Each academic school has the spotlight for a month. E&CS has November.

Watch the next issues of E&CS News and the CSUS Capital University Journal for information about our special festivities and how you can join the fun next November.
Message to Alumni

California State University, Sacramento, School of Engineering and Computer Science! That's sure an impressive description . . . long too! Most alumni, if asked where they went to school, would use the shorter, more popular, “Sac State.” Whether you are identified with Sac State or with California State University, Sacramento, School of Engineering and Computer Science, your career training demands and receives the respect of engineering and computer science professionals.

Most college or university graduates view their degree as something in and/or from the past. It’s memorabilia! Few recognize that their diploma, or perhaps more appropriately their education, is an appreciable asset. Much as a piece of real estate improves in value if properly maintained, or as a financial investment grows more rapidly if profits are reinvested, so the value of your “Sac State” education improves as the education delivered to new CSUS students improves.

The cost of a college education continues to increase. It is probably not out of line to say that the cost of a bachelor’s degree completed in four years is about $100,000 when you include room and board along with the actual costs of education. At CSUS a significant portion of these costs has, in the past, been paid by the taxpayers. This is becoming less and less true. More of the costs must now be paid by the students and by other private, rather than public, entities.

Over the last several years there has been an increase in corporate and individual contributions to the various CSU institutions and particularly to CSU Sacramento. A key part of this private support has been contributions to our campus made by alumni. As these former students progress in their careers, they have both the means and the opportunity to invest in CSUS. Many have chosen to do so. They have chosen to invest both in CSUS and in the appreciating value of their degree.

There are a number of ways in which you might make an investment in your alma mater. The most obvious and direct would be a financial contribution to CSUS . . . and hopefully to the School of Engineering and Computer Science. Another equally valuable option would be a contribution of your time to the School of Engineering and Computer Science by serving on one of several advisory committees or as a guest lecturer. Many have chosen to join the CSUS Alumni Association. Others have reinvested in the value of their own education by recruiting new students to the CSUS School of Engineering and Computer Science.

So, be sure to invest in the appreciation of your education. Choose the investment which best suits you. But ... don’t fail to invest!

(Ed. notes: Ron Smith was president of the CSUS Alumni Association last year, and has taught part-time in the School of Engineering and Computer Science. The E&CS Alumni Annual Fund drive is now in progress — a great opportunity to appreciate the value of your CSUS degree with a pledge.)

Make News! What are you doing now? To share some information with your former classmates and us, just fill out this form. Please let us know when you move, so you can get the News faster and save us postage. Thanks for your help — and we appreciate your donation of a stamp and envelope!

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

Categories of membership (check one):

- $35 Annual Individual
- $350 Life Individual
- $40 Annual Friend Individual
- $45 Annual Joint Spouse
- $400 Life Joint Spouse
- $50 Annual Friend Joint Spouse

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

Please send correspondence and/or membership dues to:

Barbara Caretto, Director of Development
CSUS School of Engineering and Computer Science
6000 J Street
Sacramento, CA 95819-6023
(916) 278-6629 FAX: (916) 278-5949 carettob@ecs.csus.edu
STARS Mentor Program Targets At-Risk Youth

Far too many talented Sacramento teens are lost each year to gangs, drugs and violence in Sacramento. But often a connection to a caring, accomplished "role model" can alter a destructive direction. Such connections seldom happen accidentally.

A grant from the Governor's Office to the Capitol MESA (Mathematics, Engineering, Science Achievement) Center based at CSUS is funding an experimental three-year program of volunteer mentoring and tutoring, aimed at keeping as many as 200 at-risk adolescents in school. "At-risk" students have a history of poor grades, poor attendance, discipline problems and minimal career awareness; Project STARS (Service To At-Risk Students) will intervene before they enter the 10th grade, when data indicate they are most likely to drop out.

The Capitol MESA Center, California's largest, reaches over 4500 K-12 Sacramento-area students; thanks to close collaborations among industry, teachers and parents, the typical MESA student is a college-bound, ambitious achiever. STARS — which began last fall — targets the other end of the academic spectrum: 7th, 8th and 9th graders in high schools and feeder middle schools with dropout rates that are among the Sacramento City Unified School District's highest. STARS and District staff are collaborating to reach students who teachers and counselors believe have potential for academic success — with assistance.

STARS Director Sally Leake of MESA and the CSUS School of E&CS works with volunteer mentors and tutors — drawn from industry, government agencies, colleges, and service and professional organizations — to help students improve academic performance, appreciate the value of education, and develop life management skills. The most stellar STARS mentor is former State Senator Gary Hart, director of the Institute for Educational Reform at CSUS. STARS mentees attend community and college events, job shadowing and workshops, to supplement volunteers' tutoring and coaching efforts.

There are 32 mentor/mentee pairs at C. K. McClatchy High School and its principal feeder, California Middle School. STARS is now recruiting 100 additional mentors for next year's program to serve students at those schools as well as at Luther Burbank High School and C.M. Goethe Middle School. After two years, 120-160 mentors will have worked with an equal number of mentees. Each mentor-mentee match is expected to last one academic year, although mentors may extend the commitment. "Ideal mentors are willing to commit time and energy to work with mentees and their families, and sincerely believe in mentees' potential to grow, succeed and contribute," said Leake.

Mentors gain too. Cheryl Shores-Taylor of the California Department of Education recently wrote, "When I began ... it was to be a part of a solution, not more of the problem. But I had no idea of how much I would benefit ... Being Tina's mentor ... has lit up the corners of my life."

Leake will present STARS to potential mentors or other resource people. Call (916) 278-7877 for more information. There is no cost to candidates for screening and training.