Dedication of New Building Set for September 8

Mark your calendars and plan to attend the September 8, 1989 dedication of the new Engineering and Computer Science building. The dedication will begin at 11:00 am on the north end of the new building. The program will include an address from Westinghouse Corporation President, Paul Lego, followed by a tour of the new facility.

Paul Lego was instrumental in obtaining a $25,000 gift from Westinghouse for the Investment in Tomorrow Fund, the University’s campaign to raise $5 million to equip the new facility and support special programs. “After one year of intense effort, I’m delighted to report that $4.5 million has been raised in gifts and cash,” says Don Gillott, Dean of the School. “We expect to go over the $5 million mark during the coming academic year.” A major gift of equipment from AT&T valued at $3.2 million made headlines just a few months ago.

The Investment in Tomorrow Fund is making it possible to significantly upgrade the quality of equipment going into the new building. In addition, AT&T’s gift includes 180 computer workstations with associated local area networks which will be of great use to the faculty.

“The new Engineering and Computer Science building is one of the first steps in the University’s $214 million master plan for campus construction,” notes President Donald R. Gerth. CSUS is building to meet the growing needs of the Sacramento region.

continued next page
Building Completed: Focus Now On Lab Equipment Needs

On June 5, the School of Engineering and Computer Science began its long-awaited move into the New Building Addition. Those of you who have visited our facilities during the past few years know how badly this building addition has been needed and how important it will be to the quality of our educational programs and the ability of the School to carry out its educational mission in the community.

The building addition includes 7 lecture rooms, one large auditorium seating 110, 24 laboratories for instruction and graduate research, the CSUS Assistive Device Center, and 94 faculty and 31 administrative and support offices. In excess of $2.1 million in state-supported new equipment is being supplemented by over $4.5 million in in-kind gifts from the Investment in Tomorrow Campaign. Community support has been enthusiastic and tremendously appreciated by both faculty and students.

The new building contains a special presentation and development facility, thanks to AT&T. Included as part of its $3.2 million gift, this facility contains AT&T's leading edge technology. All hardware and software are completely maintained by AT&T. Besides serving as a showcase for the Company's "state-of-the-art technology", the facility provides excellent education (research and instructional) opportunities for our faculty and students.

Some of the other highlights of the new addition include: an automated structural laboratory with facilities for state-of-the-art structural testing and video monitoring for instruction; a materials laboratory with a scanning electron microscope and energy dispersive x-ray spectrometer for detailed examination of the physical properties of materials; a Computer Research Laboratory housing a 32 node hypercube parallel-processing super minicomputer; a 110 seat lecture hall equipped for multimedia video presentations and including an electrohome 4000 series computer video projection system; and a state-of-the-art GPIB bus instrumentation laboratory made possible through substantial in-kind donations from Hewlett-Packard and an NSF equipment grant. One of the most fascinating features of the new addition is the result of a research project being carried out by Dr. George Kostyrko of the Civil Engineering Department. George was interested in finding out if information obtained from strain gauge monitoring of a building during construction and after completion could provide insights into structural design that might not be obtainable in any other way. Early in the planning for the new addition, George developed plans for the strain gauge instrumentation of the structure in cooperation with the building's structural engineers from the firm of Cole, Yee, and Schubert. With funding from both University and private sources and help from numerous volunteers, he began the tedious process of instrumenting key structural components of the new addition during the construction phase. His work included taking strain measurements during all phases of the construction and will continue with computer monitoring of the gauges now that the addition has been completed. George's work will help provide information on the building's structural response to construction stresses, wind loading, and (possibly) earthquake stress that could simply not be obtained in any other way. It will make a dramatic addition to laboratory instruction in the structural area of the CE curriculum and has also landed George several opportunities to present his research at major national conferences.

In addition to these special features, there are 14 self-instructional laboratories in the new addition, including a new facility for our Center for Computer-Aided Design. Each of these laboratories is planned for a full complement of computer workstations for data processing, acquisition, and control applications. The necessary workstation hardware/software, networking, and file servers are being acquired, in large part, as a result of in-kind gifts from AT&T, Apple, Computer, and Digital Equipment Corporation. These gifts include some of the latest and best offerings from each company such as 6386 workstations and 382 network file servers from AT&T, 3100 workstations and file servers from DEC, and Macintosh IIX workstations from Apple.

We have also attempted to modernize laboratories in the original building. The move of the CAD laboratory has made room for a new Graphics Laboratory which will feature Computer-Aided Drafting on AT&T 6386 workstations. The growing Minority Engineering Program will occupy larger space vacated by the move of the School's administrative offices from the 1200 wing. The program will have a greatly enlarged tutoring laboratory facility in 1217 and a room for computer workstations. A new soils laboratory will be developed in the 1100 wing and an automated manufacturing laboratory will be located in the 1300 wing. This particular lab has already been substantially equipped via donation of an Excello computer-controlled lathe from Aerojet General and through purchase of a new Bridgeport computer lathe this past year.

The School is indeed proud of its new facilities and of the substantial progress made in equipping the laboratories. The Investment in Tomorrow Campaign has been successful so far in focusing on major corporate gifts, however, there are many other specialized equipment needs that have not yet been met and which we hope will be at least partially addressed through contributions from our alumni and friends. As of this writing, the alumni appeal portion of the Campaign has just begun. We urge you to contact Dean Gillott or one of our department chairs (Vishnu Agaskar, CE; Mary Jane Lee, CSE; Jim Simes, EEE; and John Zickel, ME) to find out how your contribution may help.

Please take the time to stop by the new addition and visit us if you are in the area.
The nation faces a shortage of engineers and scientists. Estimates place the shortfall at 560,000 science and engineering professionals by 2010. Understanding why this shortage is developing is essential to an effective response.

There are two primary factors causing this shortage—a shrinking pie, and shifting demographics.

Engineering is claiming a smaller percentage of a shrinking pie where college students are concerned. In 1987, 9 percent of all freshmen reported an interest in engineering as a major, down from 12 percent in 1982. Worse, the number of 18 to 24 year-olds is projected to decline by 20 percent between 1980 and 1995. There will be 7 million fewer 18 to 24 year-olds in 1995 than there were in 1980.

Compounding the developing shortage of engineers are demographic trends and engineering’s historical record of representation. The engineering profession has, despite great effort, a poor record of representation from women and minorities. Nationally, approximately 70 percent of all engineering degrees go to white males while black, Hispanic and Asian students account for only 11 percent.

In California the problem is even more immediate. California’s Department of Finance predicts that 75 percent of 15-24 year-olds will be minority and female by 1990. In the past, less than 25 percent of all engineering degrees have gone to these groups. Engineering can ill afford to leave the vast talent pool of women and minorities untapped.

Better representation of women and minorities will become an increasing priority for engineering education in California. Unless progress is made, the survival of some of our strong institutions may well be called into question. It is important to remember that past remedies to job market shortfalls will not automatically respond to this problem. In the past, a shortfall of engineers meant higher salaries for graduates as companies bid up salaries to attract engineering graduates. That is sure to happen again, but in the past those higher salaries have attracted more white males to study engineering. Higher salaries will not solve the problem unless engineering education is able to attract and retain significant numbers of women and minority students.

The next issue of E&CS News will explore what the school is doing to diversify its student body.

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Students Are Great! cont.

Ruben Torres, a CSUS Computer Engineering major, has won first place in a national technical presentation contest sponsored by the Society of Hispanic Professional Engineers.

Torres was awarded $900 and a Hewlett-Packard calculator in the Student Technical Presentations competition held in Los Angeles.

In his presentation, Torres described X400, an international communications standard that several large computer companies adopted for their electronic mail systems in 1984. “I explained how people can talk to each other on computers manufactured by different companies,” Torres said.

Torres, 30, is a graduating senior and the first in his family to attend college. He is a member of the CSUS Minority Engineering Program.

“I worked hard on my presentation,” said Torres. “I think college graduates should have excellent communication skills in addition to a solid technical background. Companies are looking for graduates who can speak and write well.”

Computer Science students produced a computer-generated message that read “Thank you AT&T for reaching out and touching us.” The message was reproduced and made available for all students to sign. Once completed, the pages were leather bound and presented to AT&T. The project was initiated by Computer Science student Pamela Gibeling, with the computer graphics created by Matthew Mills. On Thursday, June 22, Pamela and Matthew represented the Engineering and Computer Science students in expressing their gratitude by making a presentation to Dennis Williams, Sacramento Branch Manager of AT&T. The presentation was made in the conference room of the new building. Our students understand and appreciate the significance of this AT&T gift and we are proud of them for the manner in which they displayed that gratitude.
NEC Electronics In Partnership With CSUS

(The School of Engineering and Computer Science gratefully acknowledges a grant from NEC Electronics which provides major underwriting for this issue of E & CS News.)

NEC Electronics, Inc. is a leading American manufacturer of semiconductors and electronic components used in today's computers, telecommunications systems and a wide variety of consumer products.

The company was established in 1981 and is headquartered in Mountain View, California. Today, over 1200 employees provide quality products and outstanding service to customers throughout the United States.

NEC Electronics represents NEC Corporation's commitment to a growing U.S. electronics market. Recognizing the specific requirements of this market and the need to be closer to the customer, NEC made the decision to build a major semiconductor manufacturing facility in this country. It was the first Japanese company to make a major investment in the United States to support this rapidly-expanding industry.

This 200,000 square foot facility, located in Roseville, California was a $100 million investment for the company. The plant has extensive, sophisticated factory automation in addition to data analysis. It began production of advanced semiconductor devices in 1984. Since opening its doors, NEC has added nearly $40 million in improvements to meet current technology standards. The facility now employs 700 people in production, administration and engineering functions.

In May, 1989, NEC announced a major expansion of its Roseville facility. The new facility will add approximately 220,000 square feet of fabrication and sort capability and will employ an additional 400 people. The expansion will cost $400 million and will be designed with the latest semiconductor manufacturing technology.

Initially, this new plant will produce the 4 megabit Dynamic Random Access Memory (DRAM) chip. However, the facility will have the capability to produce more advanced products as the market demands.

In addition to its DRAM production, the company is adding capacity for the fabrication and assembly of microprocessors and other Application Specific Integrated Circuits (ASICs) to address customized applications.

As the company's manufacturing presence continues to grow in size and scope, there will be an increasing need for engineering graduates from a variety of disciplines. These include electrical engineers, mechanical engineers, MIS, computer science, chemical engineers and physicists.

NEC Electronics is committed to continuing its strong relationship with California State University, Sacramento. CSUS has shown the ability to provide an excellent academic environment while supporting business activities in the Greater Sacramento Area. NEC Electronics has formed strong ties with the Engineering School over the past few years and looks forward to an even greater level of involvement with the University in the future.

The company has been very successful in hiring CSUS engineering graduates who are currently pursuing successful careers at NEC Electronics. We intend to continue this practice.

With both NEC and CSUS expanding, we look forward to a rewarding, long term partnership.

School of Engineering & Computer Science

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