Enrollment in School of Engineering and Computer Science at New Peak

Recently released figures from the Registrar show that the number of students in the School of Engineering and Computer Science has reached the highest level in the School's history. A total of 2729 students are currently enrolled, of whom 2345 are undergraduates. This number of undergraduate students represents an increase of 7% over 1982, but is only slightly larger than the 1981 value. Enrollment controls, including earlier application cutoff dates and impact of the Computer Science and Electrical & Electronic Engineering programs, resulted in a one percent decrease in the undergraduate enrollment between 1981 and 1982. These controls became necessary when annual growth rates in the late 1970's averaged 16%, sending the number of students past the School's capacity.

The growth pattern of the School is shown in the accompanying graph. In the last 15 years the total School enrollment has more than quadrupled, with the most rapid growth taking place since 1976. Undergraduate enrollments have grown more than graduate enrollments. In the last seven years, the number of undergraduate majors has increased by 163%, with Computer Science, Mechanical Engineering, and Electrical & Electronic Engineering showing increases of more than 200%. During the same time period, the number of graduate students has just about doubled. The graduate enrollment peaked at 440 in 1982, then declined to the current value of 380.

It is estimated that 400 Bachelor of Science degrees will be awarded to students in the engineering, engineering technology, and computer science programs during the 1983-84 academic year. In addition, about 60 students are expected to earn Master of Science degrees in engineering and computer science. Since the first degrees were awarded in 1959, the School of Engineering and Computer Science has granted 3000 bachelor's degrees and over 500 master's degrees.

Computer Engineering Curriculum Being Developed

The Computer Science and Electrical & Electronic Engineering Departments are developing a BS degree program in Computer Engineering. This effort was begun last spring in response to suggestions from industry as well as strong interest expressed by students. The curriculum has been defined by a joint faculty committee headed by Ron Becker (E&EE) and Jerry Dillion (CS); the process of gaining campus and system approvals has begun. The new curriculum is designed to be accredited by the Accreditation Board for Engineering and Technology under the new ABET criteria for Computer Engineering. A careful balance has been achieved between computer science and engineering studies so that the graduates will be equally well versed in both the software and hardware aspects of computing.

E & CS NEWS

E & CS NEWS is published four times during the academic year to inform our alumni and friends about student, faculty, and alumni activities, curricular development, research results, and other items of interest. We invite your comments and suggestions. Please address all communications to the Editor:

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Message from the Dean: The Crisis in Engineering Education

Most engineering schools throughout the United States have been forced to restrict the numbers of students in their engineering and computer science programs because resource allocations have not kept pace with enrollments, threatening the quality of these programs. At CSUS, we have also had to limit the number of students in our School of Engineering and Computer Science. We have officially "impacted" the undergraduate programs in Computer Science and Electrical & Electronic Engineering. Our Construction Engineering Management and Mechanical Engineering Technology programs will be impacted next year. When impacted, secondary criteria, including grade point average, are used to select a limited number of students from among those qualified. Civil and Mechanical Engineering undergraduate enrollments are controlled by closing admissions after some pre-set number of students have been accepted on a first-come, first-served basis.

Even though we have been restricting admissions, thus limiting our School's size, resources have not kept pace with student growth over the past seven years. To describe the trends over these years, two graphs are presented. Figure 1 shows how the ratio of support dollars to full-time equivalent student enrollment has varied over the past several years. Figure 2 presents the ratio of full-time equivalent student enrollment to instructional faculty positions allocated to the School for the same time period. From these graphs, it can be seen that the financial support and faculty allocations to the School have not kept pace with the enrollment increases. The trend is dangerous and degrades the quality of our academic programs.

![Graph 1: Support Dollars per Student (Full Time Equivalent)](image1)

![Graph 2: Number of Students (FTE) per Faculty Position](image2)

The Deans of Engineering of the California State University, at their council meeting of November 4, 1983, expressed their concern about maintaining quality engineering education in a System faced with a continuing decrease in total resources. They adopted a resolution which reads, in part, "The CSU Engineering Deans recommend that, starting Fall 1984, the Schools of Engineering reduce their enrollments in order to maintain quality accredited engineering programs until resources are brought into alignment with the number of student majors".

Solutions to the problems facing engineering education will come from joint programs involving government, industry and the educational community. On November 30, the California Engineering Foundation and the California State Joint Committee on Science and Technology held a Conference on the Future of Engineering Education in California. The conference concentrated on those needs that require changes in public policy. Several proposals were prepared for action during the 1984 State Legislative Session. If real change is to be effected, so that we can see improvement in the quality of our engineering programs, more partnership programs are needed both at the state and national levels.

Tau Beta Pi Chapter Established

The 1983 Convention of Tau Beta Pi, the national engineering honor society, granted a collegiate chapter, California Upsilon, to California State University, Sacramento. Denise Marques, President, and Dr. Susan Holl, Faculty Advisor, represented the CSUS Engineering Honor Society at the convention, which was held at the University of Illinois at Urbana-Champaign, in October. Over 550 top engineering students attended this 78th annual convention of Tau Beta Pi, which has 189 collegiate chapters, 52 chartered alumni chapters, and a membership of over 270,000. Students in engineering curricula are elected to membership on the bases of scholarship (they must be in the top 20% of their classes) and character. The Convention also granted collegiate chapters to the United States Naval Academy, the University of Illinois at Chicago, and the Montana College of Mineral Science and Technology.
Seven E & CS Faculty Promoted

Five Computer Science and two Civil Engineering faculty were awarded promotions this year. Anthony Caruso (CE) and John Clevenger (CSc) were promoted from Assistant Professor to Associate professor. Those raised from Associate Professor to Professor are Frederick Blackwell, Floyd LeCureux, Anne-Louise Radimskey, and Donald Steward, from Computer Science, and Francois Cheong-Siat-Moy, from Civil Engineering.

Anthony Caruso joined the CSUS Civil Engineering faculty in January, 1977 after five years in the U.S. Navy, eight years as Staff Engineer with the State Water Resources Control Board, and six years of operating a multidisciplinary investment service company. Tony is a Registered Professional Engineer and has degrees from UC Berkeley and CSU Sacramento. He teaches courses in probability and statistics, engineering economics, and transportation engineering. One of his teaching strengths is the ability to bring his extensive practical experience into the classroom. While at CSUS, Tony has conducted several planning studies for cities and counties in California. He has developed a complex computer program that determines the economic feasibility of proposed transportation and development projects. This program is in commercial use; Tony uses it in his classes to introduce his students to the economic considerations and complexities inherent in modern civil engineering practice.

Frederick Blackwell and Francois Cheong-Siat-Moy

Frederick Blackwell came to CSUS in 1978 from the Rand Corporation, where he worked for eleven years on designing guidance systems using pattern recognition techniques, developing an on-line symbolic mathematics system, and designing information systems for school systems. Born in Indiana, Fred was a Quiz Kid on NBC Radio. He took his undergraduate studies at Indiana University and then moved to California, where he earned his MS at Stanford University and his PhD at the University of Southern California. He spent five years at TRW Systems doing research on graphics computer languages before joining the Rand Corporation. At CSUS, Fred’s interests have focused on artificial intelligence and computer-aided instruction (CAI). He is a co-author of the CAI course on FORTRAN that is part of the PLATO system developed by Control Data Corporation and in use at CSUS and 50 other universities. One of his current research topics deals with improving CAI courseware through interaction with students at terminals.

John Clevenger is one of our own alumni, having earned his baccalaureate in Computer Science in 1975. He returned to CSUS in 1978 to teach in the areas of operating systems, computer graphics, and computer organization. Having committed himself to a teaching career, John has completed the Master’s program at UC Davis and is now putting the final touches on his PhD dissertation. He is regarded by students as an excellent teacher and has developed several sets of instructional materials that are in current use by Computer Science Faculty.

Donald Steward joined the CSUS Department of Computer Science in 1978 after extensive industrial and academic experience. He holds degrees in Physics from Iowa State University, in Mathematics from Stanford University, and in Computer Science from the University of Wisconsin. Don has published numerous papers, reports, and books on systems analysis, the structure of complex systems, including social systems, data processing, nuclear engineering, the automated engineering office, and group decision support systems.

Floyd LeCureux is the CSUS expert in computer graphics and computer-aided design. He came to Sacramento from Michigan State University, where he earned his master's and doctor's degrees. While teaching at Michigan State, he developed self-paced courses in FORTRAN programming and engineering graphics. Since he holds two degrees in mechanical engineering, it is not surprising that among Floyd's research interests is three-dimensional, nonsteady heat transfer. He has been working with the U.S. Navy for several years in the design and development of launchers to accommodate new anti-aircraft missiles. As Director of the CSUS Center for Computer-Aided Design, Dr. LeCureux spends much of his time working to provide graphics hardware and software that will keep this University at the leading edge of the technology.

Francois Cheong-Siat-Moy has been a member of the Civil Engineering Department for three years. A native of Mauritius, an island in the Indian Ocean off the coast of Madagascar, he earned both his baccalaureate and doctoral degrees at the University of Sydney, Australia. From 1974 to 1977 he conducted research in structural stability at Lehigh University and served as secretary of the Structural Stability Research Council. Dr. Moy then joined the faculty of the University of Minnesota, continuing his research and teaching in the structural area. At CSUS he has established a reputation as an excellent teacher as well as maintaining his research activities. The students have elected him to be Faculty Advisor for the student chapter of the American Society of Civil Engineers. Currently, Francois is working on improving design criteria for frame structures. He is a member of the Structural Engineers Association of California, the Structural Stability Research Council, and the Council on Tall Buildings and the Urban Habitat, a non-governmental organization affiliated with UNESCO.

Anne-Louise Radimskey came to CSUS after several years of teaching at UC Berkeley and UC Davis. She was the first woman to become a full-time member of the faculty of Engineering and Computer Science at CSUS. After earning a degree in Aeronautical Engineering in her native country, France, she came to California and completed the MS and PhD degrees in Electrical Engineering (Computer Science) at UC Berkeley. She specializes in microcomputer-based data systems and natural language processing. With two young daughters, Anne-Louise is also very much interested in the education of young people, particularly in regard to computers.
System Integrators, Inc. – Growing with Sacramento

System Integrators, Inc., is a Sacramento-based company which specializes in the design, production, and sale of computer systems for text production industries. Among these are newspapers, magazines, and wire services.

The Company, founded in 1973 by James P. Lenane, now employs 350 people and has annual sales of $34.5 million this year. In addition to our facility in Sacramento, we also maintain offices in Sydney, Australia, and Hamburg, W. Germany, to support our rapidly growing international markets.

Our principal product is the System/55, a computer system that integrates Tandem NonStop central processors, our own proprietary software, high-speed interface devices, and an intelligent video display terminal known as the Coyote. This system provides high reliability and flexibility and enables each customer to modify the system to meet his individual requirements without extensive computer programming. The system also allows system expansion and maintenance without requiring downtime or reprogramming. These features have given System Integrators, Inc., a significant advantage in selling System/55 to the publishing industry, both domestically and internationally.

System Integrators, Inc., recognizes that the success we have enjoyed with the System/55 is directly attributable to the creativity of our personnel, many of whom are products of the California State Universities. Our continued success will depend upon new ideas, new people and the breakthroughs they achieve. We recognize that a significant source of the talent we need has and will come from the California State Universities. As we have done in the past, we will continue our support of this system in the coming years. This will help to ensure a supply of creative and innovative people from which System Integrators, Inc., can draw to maintain our preeminent position in the industry.

Faculty Activities

Donald Nostrand, Construction Engineering Management, attended the mid-year meeting of the Board of Directors of the Associated Schools of Construction in Kansas City, Missouri, in November. Nostrand is the Director for the Western Region of the association, which promotes and coordinates BS and MS programs in construction engineering. There are 65 member schools nationwide; about 1300 baccalaureate degrees are awarded in this field each year.

Ajit Virdee, Civil Engineering, was elected President of the Applied Technology Council (ATC) at the Council’s annual meeting in Palo Alto, November 1983. The ATC is an independent, national, non-profit corporation which was established to conduct research projects in structural and earthquake engineering, with funding from government agencies as well as the private sector. Dr. Virdee will direct his efforts during the coming year to producing a consensus document on national building codes for seismic design.

Computer Science Seminars

Scheduled for Spring

The Computer Science Department will continue its popular noon-time seminar series during the spring semester. Under the direction of Prof. Richard Thayer, these seminars present topics ranging from recent theoretical developments in computer science to current practices in the “real world” of industry. The seminars are held on Mondays from 11 am to 1 pm. The tentative schedule for the first part of the semester is:

- Feb. 6: "LOGO", Dr. A.-L. Radinsky, CSUS
- Feb. 27: "Data Processing Job Market in the Bay Area", speaker from Source EDP, San Francisco, CA
- Mar. 5: "Human Factors in Computer Systems", Dennis Streveler, University of California, San Francisco, CA
- Mar. 19: "State of the Art in Array Processor Capability", Roger Wood, University of California, Santa Barbara, CA
- Mar. 26: "Methods for Programming AI-Based Systems", S Gadol, Xerox, Palo Alto, CA
- Apr. 2: "ADA at McCellan AFB", W. W. Happ, Engineering Division, Sacramento Air Logistics Center

Interested persons should call the Computer Science Department at 454-6834 for the latest information on the locations of the seminars and possible changes to the schedule.

Coming Events

The Electric Power Educational Institute, sponsored by the CSUS School of Engineering and Computer Science, will present two seminars during the month of January. Both seminars will be led by Dr. Miroslav Markovic, Professor of Electrical & Electronic Engineering and Director of the Institute. The first seminar, January 12-13, 1984, will deal with “Electric Power System Short Circuit Analysis—Theory and Engineering Applications.” On January 26-27, 1984, the seminar topic will be “Utility and Industrial Distribution System Relay Protection—Theory and Practice.”

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