

College of

ENGINEERING

San José State University

Newsletter for Alumni, Friends and Silicon Valley Industry ■ Winter 2004-05

2004 China/Taiwan Study Tour Exceeds Expectations

It has been seven months since the 25-member cohort of Global Technology Initiative Scholars returned from its two-week study tour and the sheen has still not worn off. By all measures, the inaugural tour was an extraordinary success.

says Dean Wei. "And there's no better way to do that than to see it for themselves first-hand. I am grateful for the generosity of so many of the College's supporters that made this trip possible at no cost to the students."



Taiwan Semiconductor Manufacturing Company hosts SJSU College of Engineering Asia Study Tour delegation at TSMC headquarters in Taiwan.

Conceived by Dean Belle Wei as part of a larger college-wide global technology initiative, the tour took students to six major Asian cities in China and Taiwan and to some of the region's most prominent electronics manufacturing and semiconductor fabrication plants, research and development organizations, science parks and incubators, and university engineering programs.

"The goal of our Global Technology Initiative is to better prepare our students for work in a global market place,"

"For me, it was a life changing experience," says senior in electrical engineering Hadi Alamdard. "Most of the companies we visited—foundries, design houses and electronics manufacturing plants—had something to do with what I was studying. And most of the people we met at these companies had advanced degrees from U.S. universities, like Stanford and Berkeley. The first thing I did when I got back to the U.S. was to start looking into graduate schools."

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Abu

"You had to be there to feel the energy," says junior in industrial and systems engineering Irete Abu. "I wouldn't have been able

to get this in the classroom or from my mentor. It is an experience I will never forget."

Says Christopher Russek, junior in aviation: "Going to China made me realize that China is really a partner, not a competitor."

Students selected for the study tour participated in a six-part seminar series that included lectures by professors from SJSU Colleges of Business, and

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Message from the Dean



Dear Friends of the College,

I am pleased to share with you our progress on a number of initiatives underway within the College of Engineering: our trip to Asia as part of the Global Technology Initiative, increased funding for research and curriculum development projects, and community outreach.

Since returning from the two-week Asia Study Tour last summer, our 25 Global Technology Scholars have been sharing their experiences with their classmates through a series of College-wide seminars. They presented their new knowledge about globalization and the ways in which China's and Taiwan's political, cultural and educational systems drive their nations' competitiveness. We are especially pleased that many of the students who participated in the study tour came home with a newly-found interest in continuing their education in graduate programs. Plans are now underway for the 2005 tour.

Our investment in the infrastructure necessary to make the College a vibrant center for research is showing extraordinary gains. In the last year, through the efforts of our faculty,

externally-sponsored grant and contract awards have increased by some 133%. This means added resources for curriculum development, as well as increased opportunity for our students to become involved in a wide range of research projects.

Now in its second year, the Partnership for Student Success in Science (PS³) project, funded by the National Science Foundation, is providing an important forum for the area's K-8 science teachers to develop their teaching skills and programs. The collaborative project between SJSU's Colleges of Engineering and Education, as well as nine local area school districts, is expected to reach as many as 1,400 of the region's K-8 science educators.

While there is always more work to be done, we have accomplished a great deal toward making the College a vital resource for our young people and the Bay Area businesses that employ them. As always, I am grateful to those of you who have helped pave the way for our continuing efforts to achieve the high quality of our programs and increase our influence as a key critical player in the Bay Area community.

Sincerely,

Belle Wei
Dean, College of Engineering

China/Taiwan Study Tour

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Humanities and the Arts on the global economy and cultural differences between the U.S. and Asia.

"Before the trip, I think the students had a narrow discipline-based view of the world," says Michael Solt, SJSU professor of finance, who presented a pre-trip lecture on globalization. "After coming back, they have a more globally-oriented view that includes the recognition that there are a lot of interdependencies among different groups in different parts of the world."

"When you enter business in Silicon Valley, you have to be prepared to work globally," says SJSU College of Engineering alumnus and general partner of Telos Venture Partners James Hogan.

According to Jacob Tsao, associate professor in Industrial and Systems Engineering and the tour's faculty project lead, the College plans to organize another study tour for 25 select engineering students in May and June of this year.

The College once again extends its thanks to the following Global Technology Initiative Founding Sponsors for making this inaugural trip possible:

Sandy and Ruth Chau,
Trident Investments;

Her-Daw and Jean Che, CTO,
Symphoniq Corp;

Wu-Fu and Ellen Chen,
General Partner, Acorn Campus;

Chun and Jane Chiu, President,
Silicon Valley Taiwanese American
Industrial Technology Association;

Hsun K. Chou, EICO, Inc.;

James H. Hogan (B.S. '78 Math and CS;
M.B.A. '80), General Partner, Telos
Venture Partners;

David and Cathy Tsang,
General Partner, Acorn Campus;

Chester and Olivia Wang,
General Partner, Acorn Campus;

David (M.S. '83 CE) and **Jessie Weng**,
President, Essence Technology and
VP, Silicon Valley Taiwanese American
Industrial Technology Association;

T. C. Wu, Executive VP, Atmel;

Yuh-Ning Chen, CEO, MartSoft.

Alumni and friends of the College who wish to contribute to the Global Technology Endowment Fund can contact the Office of the Dean at 408-924-3800. ■

Grant and Contract Awards More than Double in FY '04

The College's revenue from externally-funded grants and contracts reached nearly \$5.9 million during FY '03-'04, an increase of more than 133% from the previous fiscal year, according to Associate Dean for Research Kevin Corker.



Corker

According to Corker, who has tracked the College's external funding data since 1992, there are several interacting factors that drive such large increases in funding.

"The accrual of grant and contract revenues is driven by grant cycles, review timing and national initiatives," says Corker. "But, I think what you're seeing overall is a response to the College's new direction toward establishing a strong footing for SJSU Engineering with respect to excellence in research. Over the past couple of years, we've been putting the infrastructure in place to get that done," continues Corker. "The result is a pretty significant jump."

According to Corker, the College's strategic blueprint, currently under review by the department chairs, will set a dollar figure goal for externally-funded projects.

"In addition to targeting dollar amounts for strategic research areas, the College is also setting goals for the extent to which that research will be integrated into the classroom and enrich professional development for our faculty and students," says Corker. "That means more involvement of students with principal investigators, more publications and greater exposure of the

College through these publications and participation in national conferences."

"It's clearly in the interest of the College's strategic direction that excellence in research is valued," says Dean Belle Wei. "The faculty is

quickly realizing the rewards associated with external funding, such as funding for laboratories, curriculum development, student assistants and more. I am pleased that they have responded so favorably." ■

Faculty Collaborate to Land \$100K Curriculum Development Grant

Professors John Lee (MAE), Emily Allen (CME) and Lily He (EE) have been awarded a National Science Foundation planning grant to enhance undergraduate engineering education by infusing existing engineering courses with nanotechnology content. The project team anticipates that the results of the project, *A Bottom-Up Approach to Interdisciplinary Engineering Education in Nanotechnology*, will also be transferable to other multi-disciplinary topics.

"From a practical standpoint, the time and infrastructure needed to implement several new courses across multiple disciplines to teach nanotechnology would be prohibitive," says lead principal investigator and Assistant Professor of Mechanical Engineering John Lee. "By developing relevant modules on the topic, we will be able to integrate smaller components of nanotechnology across several courses College-wide, and as a next step connect to other programs like physics, chemistry, and biology." According to Lee, an additional benefit of incorporating new content into existing courses is that it will make



Lee

it possible to expose students to the latest technology without having to register for additional courses or changing their degree program.

"Graduate engineering programs are naturally very specialized. It is especially difficult for an undergraduate to know what opportunities exist beyond traditional B.S. degrees," says Lee. "Teaching new material in this integrated way can provide an eye-opening stepping stone for students interested in advanced study."

Of particular interest to some of the NSF reviewers was the way in which the project fosters peer-to-peer professional development across disciplines in the College. "As faculty members, we too have to address the issue of continuous improvement," says Lee. "Because of the way in which the project is structured, each person on the team will be proactively exposed to disciplines outside their circle of expertise. This makes it an important professional development opportunity for faculty as well."

For more information about this NSF-funded project, contact Prof. Lee at sjlee@sjsu.edu. ■

PS³ Project Aids Region's K-8 Science Teachers

A five-year collaboration between SJSU's Colleges of Engineering and Education and nine local area school districts is boosting the classroom teaching skills of nearly 1,400 of the region's K-8 science educators. Partnership for Student Success in Science (PS³), supported by a \$6.7 million National Science Foundation grant and support from Agilent Technologies and Synopsys, is expected to impact science education for as many as 26,000 of the Bay Area's K-8 children.

According to Kurt McMullin, associate professor of civil and environmental engineering and the project's principal investigator, typically K-8 science teaching has focused on content. "But science is more than memorizing facts," says McMullin. "In 12 years of school, it's no longer possible to cover every subject in science. What is possible, though, is teaching students how to learn about science—how to ask questions and solve problems."

"What the PS³ project is about is helping science educators to teach students how to approach science as a scientist would—to have an inquiring mind," says Chair of SJSU's Department of Elementary Education and co-principal investigator Carolyn Nelson. "Those are skills that can be applied across all of their studies." Further, says Nelson, "with

"The ability to solve problems is essential to all engineering disciplines."

the emphasis on student achievement tests in math and reading, there has been less attention paid to other subjects, including science, social studies, and the arts. One of the big values of the

project is that it puts an emphasis on science in the curriculum."

"The ability to solve problems is essential to all engineering disciplines," says McMullin. "Students who benefit from this program will

be much better equipped to succeed in college as engineering students and in the workforce as engineering professionals."

Funding from the project supports three additional content experts from the College: Thalia Anagnos, Civil and Environmental Engineering; Nikos Mourtos, Mechanical and Aerospace Engineering; and Claire Komives, Chemical and Materials Engineering.

The PS³ Project is now in its second year of the five-year grant.

For more information about PS³, contact Kurt McMullin at mcmullin@email.sjsu.edu. ■



Eighth-grade science teachers Kia Brown (l) and Melissa Bender (r) explore a lesson on the topic of force and motion at the the 2004 PS³ Summer Institute.

NSF-Funded Electronics Cooling Lab Provides Venue for Undergraduate Research

Mechanical and Aerospace Engineering professors Nicole DeJong Okamoto and Tai-Ran Hsu have been awarded a \$106,000 grant from the National Science Foundation to build a facility and develop a laboratory curriculum to further study the thermal management of electronics. The 1,000 sq. ft. lab, located in 114 Engineering Building, is being outfitted with state-of-the-art equipment, including an airflow test chamber, low-speed wind tunnel, automated data acquisition systems, and a liquid crystal thermography imaging system. The NSF grant also supports the development of experiments that complement classroom instruction in heat transfer and provides for the implementation of a new course, "Thermal Management of Electronics." In this new elective, tentatively set to be offered during Fall 2005, graduate and senior design students will design a cadre of new, practical experiments. Laboratory handouts associated with the experiments will be posted online for professors on any university campus to use in their own laboratories.

"Enabling our students to see the practical applications of what we are teaching in the classroom really enhances the learning experience," says Okamoto. "The management of thermal dynamics is a problem of ever-increasing importance in Silicon Valley as electronic systems decrease in size and increase in power. The new laboratory, which is co-directed by Prof. Jinny Rhee, should enable us to more successfully compete for applied research grants with industry as well." For more information, visit http://enr.sjsu.edu/ndejong/Electronics_Cooling.htm. ■

Friends of the College Support Student Scholarships

Thirteen scholarship sponsors were recognized for their continuing support of student scholarships at the annual Engineering Scholarship Recognition Luncheon held last October. The sponsors, including Applied Materials, Atmel, David Brown (B.S. '68 Mechanical Engineering), the Benzing Family, Cadence Design Systems, Charles W. Davidson (B.S. '57 Civil Engineering), the Ditmore Family, Hewlett-Packard, Intel, Lam Research, Lockheed Martin, National Semiconductor and Solectron, provided more than \$200,000 per year in scholarship support for 36 of the College's most outstanding students.

"Our association with San José State has gone back many years," says Spencer Clark, Vice President and Chief Learning Officer, Cadence Design Systems. "The scholarship program is just one part of a much larger, more integrated university program that Cadence participates in. We support the scholarship, a laboratory, tens of millions of dollars in software, student internships, and faculty support. What we get," continues Clark, "is a pipeline of engineers that are better trained to come into the technology sector. Once employed, that better training shortens their learning curve toward productivity tremendously."

"Lam Research's support of student scholarships is our way of investing in the future," says Steve Lindsay, Group Vice President of Global Sales and Corporate Marketing. "At a time when so many students are considering careers in the 'soft' industries, we need to make sure that our local universities can provide continuing education for those still interested in

engineering careers." Lam Research also supports a student internship program with the College.

"What we get is a pipeline of engineers that are better trained to come into the technology sector."

Says Dana Ditmore: "Scholarships like the one Elaine and I created make a college education possible for under-represented students who may not otherwise be able to afford it. If we're going to continue the miracle of

Silicon Valley, we have to be able to help everybody who has the desire to complete a technical education."

"My scholarship has been and continues to be a blessing to me," says junior in electrical engineering and Lam Research Scholar Andrew Gaul. "Above all, it allows me to attend classes as a full-time student without the pressure of having to work to support myself or having to worry about incurring debt."

Says Cadence's Clark: "There is a very short list of things that are more thrilling than seeing the impact of our scholarships on the students."

For more information about sponsoring student scholarships, contact the Office of the Dean at 408-924-3800. ■

CME Student's Thesis Named SJSU Thesis of the Year

Chemical and Materials Engineering master's graduate Walter Prater ('03) was recognized with the Outstanding Thesis Award 2003–2004 for his thesis project entitled *Partial Oxidation of Copper and CoFe10 Thin Films: Microstructural Mechanisms*.

Prater, whose research was supported by an NSF-funded SJSU/IBM Joint Study on Surface Chemistry, conducted his research at the IBM Almaden Research Center. Parts of Prater's thesis will be published in the March '05 edition of *Applied Physics Letters*. A second, longer article is in preparation for publication in the *Journal of Applied Physics*.

According to Emily Allen, chair of the Department of Chemical and Materials Engineering, the industrial relevance of Prater's research is its application to thin films used in the fabrication of spin valve heads employed in disk drives. ■



Prater

Meet the Faculty

Ahmet Bindal

**Associate Professor,
Computer Engineering**

ahmet.bindal@sjsu.edu



Bindal

Prof. Bindal joined the faculty in 2002 with more than 20 years of industry experience, most recently as a senior chip and technology architect for Cadence Design Systems, where he developed

the architectural specifications of a System-on-Chip design for 802.11b Wireless Local Area Network (WLAN). Since 1982, when he completed his master's degree in electrical engineering at UCLA, Bindal has worked at several of the world's leading semiconductor companies including Phillips, Intel, IBM and Hughes Aircraft. Bindal also holds a Ph.D. in electrical engineering from UCLA.

Bindal is a member of the IEEE and Eta Kappa Nu. He holds numerous patents and has published widely in a range of technical journals.

At San José State, Bindal teaches undergraduate courses in Computer Architecture, Advanced Computer Architecture, System-on-Chip Design, and Digital Circuit Design.

Mohamed Fayad

Professor, Computer Engineering

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Prof. Fayad came to San José State from the University of Nebraska, Lincoln, where he held the J. D. Edwards Professorship in Computer Science & Engineering. Prior to his

appointment at the University of Nebraska, Fayad was an associate professor of computer science and computer engineering at the University of Nevada. His industry experience includes senior software engineering positions at McDonnell Douglas Corp., Apache Control Systems, American National Can and Aquatrol Corporation.



Fayad

Prof. Fayad has published widely in such areas as object-oriented software engineering methods, aspect-oriented programming, Internet and

Web applications, software stability, enterprise and application frameworks, design patterns, and management. He has given tutorials and seminars on these topics at conferences worldwide.

Prof. Fayad is a Senior Member of the IEEE and the IEEE Computer Society, and an IEEE Distinguished Speaker. He is also a member of the ACM and an associate editor and columnist for *Communications of the ACM*.

Fayad has served as president of the Arab Computer Society (ACS) since April 2004.

At San José State, he teaches graduate and undergraduate software engineering and database courses.

Minnie Patel

**Associate Professor,
Industrial & Systems Engineering**

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Prof. Patel comes to San José State from the University of Wisconsin-Milwaukee's Industrial and Manufacturing Engineering

Department, where she had been a faculty member since 1990 and chaired the department from 2001-2002. At UWM Patel played a major role in developing a master's degree program in engineering management, jointly offered by the Colleges of Engineering, Applied Science, and Business.

Patel received her Ph.D. in industrial and systems engineering from Georgia Tech in 1988, and master's degrees in operations research from Georgia Tech in 1984 and systems engineering in 1981 from the University of Illinois-Chicago.

Her research interests are mainly in operations research applications and applied statistics. She has published numerous research articles in a variety of refereed technical journals and conference proceedings. She has organized and chaired technical sessions at a variety of national and international conferences. At SJSU, she teaches courses in advanced operations research, supply chain management, engineering statistics and probability, engineering economy, financial methods for engineers and senior industrial engineering design I.



Patel

Patel is a full member of the Institute for Operations Research and Management Science (INFORMS), a senior member of the IIE, and

a member of the IEEE Engineering Management Society. She is currently serving as Faculty Advisor of the SJSU Student Chapter of the IIE and as IIE expert in the IIE's New Student Advisor Program.

Weider D. Yu

**Associate Professor,
 Computer Engineering**

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Prof. Yu brings to the College 18 years of industry experience as a Distinguished Member of Technical Staff and senior



manager for Bell Laboratories (now Lucent Technologies), where he did extensive work in broad software engineering areas for advanced communications software. In 2000,

he was named an outstanding Asian American at Bell Labs for his significant contributions to the company.

While at Bell Labs, Dr. Yu also taught as an adjunct associate professor in the Department of Electrical Engineering and Computer Science at the University of Illinois-Chicago.

Yu received an M.S. in Computer Science from the State University at Albany, New York, and a Ph.D. in Electrical Engineering and Computer Science from Northwestern University. He also attended the M.B.A. program at the University of Chicago. His current research areas include distributed software engineering, experimental software engineering on centralized/distributed systems, advanced software design and implementation techniques for wireless mobile computing and Web-based systems, Web-based information security, real-time and embedded software systems, quality and reliability engineering process, and systems performance.

Yu has also published numerous papers on various software engineering topics in *Bell Labs Technical Journal*, *AT&T Technical Journal*, *IEEE Journal on Selected Areas in Communications*, and at various international IEEE conferences. He is a senior member of the IEEE and an active member in the IEEE Computer and Communications Societies.

At San José State, he teaches courses in systems software, mobile and wireless software engineering, distributed systems, advanced software systems, software engineering processes, and information engineering. ■

Obituaries

Julia Yasin, instructor, College of Engineering, and creator of the Engineering Writing Clinic, died on March 14, 2004, at the age of 60. Yasin joined the SJSU faculty in 1990 as an instructor in technical writing. She taught in the College for 14 years. Yasin will be remembered by students and colleagues for her enthusiasm and commitment to her teaching. She served as a role model for students and faculty alike. "With a strong motivation to truly help her students, Julia was 'above and beyond' in the classroom," says longtime friend and colleague Jeanne Linsdell. Yasin is survived by three children and three grandchildren.

Steven Arnold (B.S. '68, M.S. '71 Civil Engineering), professor of Civil and Environmental Engineering, died on May 26, 2004, at the age of 59. Prof. Arnold was a dedicated member of the faculty and a strong supporter of the College for 20 years. For many of those years, he served as faculty advisor to the ASCE, championed the College's Concrete Canoe Teams and participated in a number of races himself. Prof. Arnold was also a practicing civil engineer at his own firm,

which he founded in 1977. He is survived by his mother Caroline Arnold, his sons Andrew and Jeffrey and his daughter Lisa. The SJSU Steven Arnold Student Scholarship Fund has been created by Prof. Arnold's family in his memory. For information about contributing to the scholarship fund, contact Prof. Akthem Al-Manaseer, chair of the Department of Civil and Environmental Engineering at akthem@email.sjsu.edu or 408-924-3860.

Don Myronuk, retired professor of Mechanical and Aerospace Engineering, died on September 10, 2004, at the age of 65. Prof. Myronuk served on the SJSU faculty from 1969 to 1992 and also served as Associate Dean of the College under Dean Jay Pinson. As a forensic engineer, Prof. Myronuk's investigations led him from Eskimo villages in Alaska to a mountaintop observatory in Hawaii. His enthusiasm for teaching, science, problem solving and entertaining others with stories touched many lives. Prof. Myronuk is survived by his wife Barbara, his three daughters, one granddaughter and his mother. ■

Banta and Gahrahmat Named Distinguished Alumni

The College of Engineering was pleased to recognize Anthony J. "Tony" Banta (B.S. '70 Aeronautics), Vice President of Worldwide Operations for Cisco Systems, and Mahmoud "Max" Gahrahmat (B.S. '69, M.S. '76 Civil Engineering), Partner in GEOMAX, with Awards of Distinction for their professional achievements and their support of the College at last May's Engineering Awards Banquet.

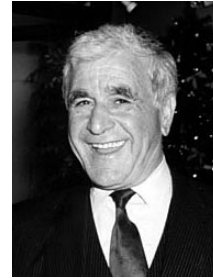
Banta joined Cisco Systems in 1995 as part of the Grand Junction Networks acquisition where he had been the Vice President of Manufacturing. Prior to his work at Grand Junction,



Banta

he held various positions at Internet-working equipment company Vitalink Communications and at communications products manufacturer Teledyne MEC. In 1970, Banta was commissioned as a Second Lieutenant in the U.S. Air Force. He spent 10 years in the Air Force, flying and testing fighter aircraft as a Stability, Control Engineering and Flight Test Engineer. Today, in his spare time, Banta enjoys restoring and flying World War II fighter aircraft, including P-51, P-40, Spitfire and T-6 planes.

Gahrahmat founded United Soil Engineering, Inc. in 1972 and served as its president and CEO for more than 25 years. United Soil Engineering specializes in site soil investigation and testing of soils during grading. Before founding the company,



Gahrahmat

Gahrahmat utilized his expertise in soil mechanics and engineering in Europe, Asia, the United Kingdom and the Middle East. In addition to his work at United Soil Engineering, he remains involved in several real estate partnerships that purchase, develop and manage retail, research and development, and industrial and commercial properties in California. Gahrahmat is a registered professional engineer in California, Arizona, Washington and Oregon, and is a member of several professional societies. ■

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