CONTRACTOR OF Spring 2020 Contractor of the spring 2020 Contractor

Nurturing Student Success A Look at the Growth of ESSC and MEP

Laura Sullivan-Green

What is Possible on the Path to Teaching

Legacy for Public Good

Challenging Registration Experience Leads to Endowing Advising Center **Seeking Photos**

Celebrating the College's 75th Anniversary



IN JANUARY 2021 WE WILL LAUNCH

a year-long celebration of the Davidson College of Engineering's 75th anniversary and of course, that is a celebration of you, the college's students, alumni, and friends.

I invite you to share your story with us as we prepare a historic double issue of the magazine for next spring. We want to know your best memories of your college time, your favorite faculty members, and how SJSU shaped your engineering career journey.

Photographs are especially welcome! Whether you have a black & white snapshot from the 50's, a Polaroid from the 80's, or a digital photo from two years ago, if you think it shows off our college (and some of the fashions from yesterday), please send us a scan or drop us a note. You can reach our communications director by email at engineering-comm@sjsu.edu.

We've come a long way since the Department of Engineering began in a temporary Quonset hut in 1946. You'll read further in this issue about the robust programs we have grown that are focused on student success, while a cursory tour of our building turns up a Makerspace with 3D printers, a microscale process engineering lab where students can process their own wafers, an open computing lab for all students, and a virtual reality lab.

I look forward to meeting many of you at upcoming events, as we look back and also plan ahead for the next 75 years.

Go Spartans!

Dean Sheryl Ehrman

Don Beall Dean of Engineering, Charles W. Davidson College of Engineering at San José State University

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COLLEGE NEWS: RIGHT ENGINEERS, RIGHT PLACE, RIGHT TIME



CommUniverCity celebrates 15 years! Mayor Sam Liccardo said the CommUniverCity provides a model for many other cities because of its student and faculty engagement. This semester approximately 250 engineering students were involved, along with nine Engineering Faculty members. \otimes



The Silicon Valley Engineers Council (SVEC) gave its Hall of Fame Award to **Fred Barez**, Mechanical Engineer and Chair of the Aviation/Technology Department. In this photo (L to R) are Dean Sheryl Ehrman, SVEC President Yllka Masada, Fred Barez, and Stan Myers who runs the Hall of Fame induction process.

Spartan Racing Facebook post: "We pay homage to our longest running car to date. SR-11 will always have a special place in our hearts." (20)



Holiday card: Spartan Spirit logo etched in 1 µm silicon dioxide. 🛇



INNOVATION IN FLOOD PREDICTION

In partnership with the City of San José and the Santa Clara Valley Water District, "Unleash Your Geek" teams from Santa Clara University and SJSU collaborated to build lowcost advance-detection flood sensors that could be deployed in the city's vulnerable river areas. Guided by faculty leads **Dr. Winncy Du** (Mechanical Engineering) and Dr. Dezfouli from Santa Clara, the teams of undergraduate and graduate students designed, prototyped, tested, and deployed sensor units and accompanying solar power devices at locations along Coyote Creek.

Raul Gonzalez, an SJSU undergraduate student, recalled that some of his teammates lived in houses located right next to the flooding areas. "We all put our hearts into this project," said Gonzalez, who met Dr. Du as a student when he took her class on sensors. "When Dr. Du expressed her ideas about creating a detector system, all four of [the participating students] knew that we wanted to be a part of that project with her." This early-stage project informed the set of flood monitoring solutions that the Santa Clara Valley Water District is now pursuing longer-term.

Aviation students participated in the Regional **SAFECON** competition in Prescott, AZ and placed 2nd. \otimes

Chi Epsilon, the Civil & Environmental Engineering honors society, placed 1st with their Chapter Project and 2nd overall at the 2019 Pacific District Conference! (20)

FACULTY EMERITUS UPDATE

Ralph Parkman

(Materials Engineering)

Parkman was a professor and department chair at SJSU 1954-1985 and one of the



founders of Stanford's Materials Engineering department. At the age of 99, he is still attending all-day technical workshops, and even spoke at a recent Chemical and Materials Engineering alumni event! Parkman was one of the creators of an interdisciplinary course, "Cybernation and Man," which examined the effects of the emerging information technologies on society. He wrote a textbook for the course, entitled The Cybernetic Society. The course was popular and out of it grew the interdisciplinary Cybernetic System Master's program. Parkman earned the Chancellor's Distinguished Teaching Award, 1970; the Tau Beta Pi Engineering Professor of the Year Award, Fall-Spring, 1983-84; and was Founding Chairman of the Santa Clara Valley Chapter of the American Society for Materials International.

CURRENT GO PROGRAM SUPERSTARS

Dawei Wang is finishing his B.S. in Industrial and Systems Engineering, Fall of 2020. He codes in data science languages including Python, R, and he wants to find an internship as soon as possible in the Bay Area in finance. Dawei has earned **985 GO points**, in part by completing an astounding 148 Linked-In Learning

online video classes.

We also applaud **Charlie Nino**, Mechanical Engineering freshman, for the next-highest score of 190 points.

FACULTY RESEARCH & DISTINCTIONS

"Mathematical models of political districting for more representative governments" by Industrial & Systems Engineering Assistant Professor **Hongrui Liu**, Professor **Ayca Erdogan**, Royce Lin (a SJSU MS-ISE student), and Professor **Jacob Tsao**, was published in *Computers & Industrial Engineering*, an Elsevier publication. Volume 140, February 2020, 106265. "Hopefully, this is a timely paper for the political redistricting work to occur across the United States in response to the ongoing 2020 US Census and in preparation for the 2022 election and beyond," said Tsao.

Aerospace Engineering Assistant Professor **Fabrizio Vergine**'s paper on turbulence dynamics was recently chosen as the 2018 Hypersonics Best Paper from the 2018 International Space Planes and Hypersonic Systems and Technologies Conference in Orlando, Florida.

Chemical and Materials Engineering Professor Anand Ramasubramanian and Associate Professor Katy Kao were co-authors on "CgSTE11 mediates cross tolerance to multiple environmental stressors in *Candida glabrata*," published in *Scientific Reports*.

Biomedical Engineering undergraduate students A. Johnson, N. Singh, and A. Villa are working with Assistant Professor **Matthew Leineweber** to create a Silicone Infant Hand Prosthesis via 3D Printed Mold.

Computer Engineering graduate student L. Tomasz is working with Assistant Professor **Kaikai Liu** on Fire Detection in Aerial Images using Deep Learning.

Industrial Technology Assistant Professor **Fatemeh Davoudi** received an appreciation award for her three-year service as an Accreditation Board Member at the Association of Technology, Management and Applied Engineering.



Meet Laura Sullivan-Green

A Profile of Our Civil & Environmental Engineering Chair

SHE IS A PROFESSOR,

mother, soil lover, forensic engineering geek, full-time faculty member and SJSU's Civil and Environmental Engineering Chair. As the first in her family to become an engineer, from a young age, Laura Sullivan-Green always knew she wanted to follow that dream.

"I come from a very blue-collar background: My dad was a fireman, my mom was a secretary, my grandparents included a police officer and a truck driver," Sullivan-Green said. "I knew I wanted to be an engineer in middle school; I was very good at math and science, and I was in a talented and gifted program." However, she had trouble explaining how she arrived at solutions because she saw things differently from her peers and teachers. It turns out, the way she arrived at solutions has more in common with how engineering is taught now.

In her teens, Sullivan-Green excelled in high school and took classes at Cleveland State University, graduating with all the math she needed to begin her career in Engineering. Looking back, Sullivan-Green identified a watershed moment: "I passed up a full-ride scholarship to Cleveland State in order to go to the University of Dayton School of Engineering because I needed to be more independent and away from my parents. In order to go to Dayton, I took out loans and my parents helped out some. This was a big decision and it turned out to set me up for my current work," she said.

At Dayton, Sulliven-Green met and worked with Dr. Manoochehr Zoghi, who counted landslide failures among his specialties. Unlike steel and concrete, which are very hard, dense and durable materials, soils vary widely from place to place. She realized that she loved geotechnical engineering.

Then, a great opportunity was presented to her: Dr. Zoghi encouraged Sullivan-Green to attend a geotechnical conference in Switzerland, where she met her future graduate school advisor. That meeting started a chain of events that landed Sullivan-Green in Chicago, at Northwestern University. Here, she earned a full scholarship for her master's and doctorate degrees. While Sullivan-Green had supportive parents, other members of her extended family tried to dissuade her from pursuing higher education. "That kind of chatter can come from a lot of different places in your life," she said. "It's a matter of staying true to yourself. Fortunately, I found a few voices along the way, especially as I became a mom in graduate school. These people did not tell me what to do; they told me what was possible."

After an internship at an international geo-environmental firm, Sullivan-Green felt really prepared to teach. "I could look my students in the eye and say, here's how to be a good engineer," she said.

Eleven years in as a professor, she still loves it. She is moved by her students who remind her of the very possibilities that many voices told her throughout her journey. "I love being a model for my students; one of them graduated recently," Sullivan-Green said. "When she arrived as a firstgeneration immigrant, she did not speak any English. She just earned a National Science Foundation fellowship to go to grad school at Stanford. That's why I do this." So

Come Speak at a Dean's Career Conversation

A great way for alumni to interact with SJSU Engineering students

Since 2017, industry professionals and students have been joining Dean Sheryl Ehrman for an afternoon of conversation over pizza or snacks. After listening to the career journey of the guest speaker, students have a chance to ask questions, gain industry insights, and discuss their career development. In order to keep the conversations small, participation is limited to 20 students at each event. Many of the students who attend one session turn around and apply for the rest of the sessions.

Everyone benefits from the connection. If you are interested in being a Dean's Career Conversations speaker, please contact Lisa Francesca, Communications Director, at lisa.francesca@sjsu.edu.

"Get comfortable with being uncomfortable. Try things you are not good at, and you'll meet new groups of people."

-Sonu Ratra, Co-founder and President, Akraya Inc.

"Here's a tip. When a job interviewer asks you something you don't know, say, 'I don't know. Here is how I would find out."

-Dennis Frezzo, Learning Scientist & Consulting Engineer at CISCO "What helped me get through school and all those activities was building a good support group both within and inside my major to further push me to do my best, vent, and connect with. My support group definitely kept me going and fighting imposter syndrome, and it helps me even today."

-Cynthia Ouandji ('16 Biomedical Engineering), former intern at NASA, currently at Boston Scientific.



Nexis Thoen





<u>Ta</u>nita J_{ha}



Sonu Ratra



Carlos Silva



Turning Difficult Memories into a Legacy for Public Good

Challenging registration experience leads to endowing advising center



DAVE LOOMIS GRADUATED AS

an industrial engineer in 1963 from San José State. But when he started as a freshman in 1958, just registering for classes was an ordeal. "I'd be in a long, long line, and by the time I got to the front, my classes would be closed," he recalled. "Several days a week I'd be in classes from 7 a.m. to 9 p.m. And I met people who had had the same bitter experience."

Loomis saw fellow students drop out from engineering, not even choosing another major. He also saw how thin the professors' time was stretched. There were few counselors available to suggest either another major or to encourage students to stay with the program.

After graduation, Loomis worked for several aerospace corporations during the day, while pursuing his MBA in finance at Santa Clara University at night. Loomis's business degree ultimately turned his interest to corporate investment, catapulting him "The bottom line is, I couldn't have done what I did in investment without having gotten my undergraduate engineering degree."

8

into a successful career in investment banking and financial planning.

He married Bette Bryan Loomis, who also graduated from San José State ('67 Social Sciences). While working full time as a teacher and reading specialist, Bette pursued graduate studies at night, earning an MA degree. She is now a member of the Saratoga Foothill Club and very active in their community.

In 2008, the Loomis's visited then-Dean Belle Wei, who shared her vision of a peer mentoring program for the engineering students. Loomis knew from experience that engineering students needed both professional advisors, to help them select classes, and also peer advisors to talk with as they walked through their school experience. "It clicked for me, then," he said. "Dean Wei's vision aligned with our values. This would be our part, and it felt like just the right thing to do."

They established the Bette and Dave Loomis Engineering Student Leadership Endowment in order to provide long-term sustaining support to the Charles W. Davidson College of Engineering's Student Success Center (ESSC). That year saw the establishment of the ESSC's Peer Mentor Program, and leadership training for student organization officers. (Read more about the ESSC on page 10).

Loomis reflected on why he and his wife chose to establish their endowment at that time. "The bottom line is, I couldn't have done what I did in investment without having gotten my undergraduate engineering degree," he said. "I credit the discipline I learned as an engineer, which enabled me to work with successful engineers as we established their financial and estate plans. I don't know how many students we have helped with that endowment, but it was an important step in a good direction, and it felt like the right response."

The Loomis family has now contributed more than a million dollars to various causes in San José State in the form of endowments and donations. "More engineers should be thinking about this, and hopefully consider including San José State in their Estate Plan," he added. "There is much to be done. And we feel so good about what we do." 😔





How the College Nurtures Student Success

A Look at the Growth of ESSC and MEP

THE ENGINEERING STUDENT SUCCESS CENTER

(ESSC) was established to support and empower engineering students so they can become engaged members of the college's learning community. The center promotes academic and professional development and success from the time of entrance to college through students' graduation and beyond. Industrial & Systems Engineering alumnus Dave and his wife, SJSU alumna Bette Loomis, created a family foundation endowment to support the ESSC (Read more about the Loomis' story on page 8).

Comprehensive advising

The center has grown by leaps and bounds in just the past four years. In 2016 there was only one full-time advisor. Now the center boasts a director, Sarah Gordon, three full-time undergraduate advisors, a graduate and international student advisor, three part-time Guided Pathway advisors, an administrative analyst and a larger office on the ground floor. Five peer advisors and 1 graduate advisor intern round out the crew to 15 personnel. The expanded staff is able to provide expanded services such as new advising for disqualified students with reentry plans, a graduation specialist, and major advising for both the Industrial & Systems Engineering and Electrical Engineering departments. Probation and major probation advising have been added, and there are workshops for students who want to change their major or change focus within their major. Students can still meet with faculty to ask what electives might be best for their career path or for grad school.

In 2016 the ESSC served 1,755 students out of the undergraduate population of 4,757. Last year the ESSC served 2,119 students (out of a slightly smaller undergraduate group of 4,643), as well as offering a variety of new student success workshops. Introduction to Engineering guides students through the roadmap to graduation and helps them to envision a career path after college.

Working from their new space in room 116 on the San Fernando side of the College of Engineering, Gordon said, "We're excited to be finally all together, undergraduate and graduate advisors, where we can really be a team. Students will have better appointment privacy and quality time with their advisors. We also have a conference room with modular furniture so we can create different workshop spaces and thus offer more workshops."

Guided Pathways

Associate Dean Jinny Rhee is especially excited about the Guided Pathways advising program which she and Advisor Jack Warecki started in 2016. Guided Pathways is a required program for all freshmen done typically when they take the course, Introduction to Engineering. "The research is showing that the Guided Pathways model is more effective than the traditional advising programs for student retention and completion of coursework," said Rhee. Introduction to Engineering guides students through the roadmap to graduation and helps them to envision a career path after college. Assignments include building their online course planner, researching material at the Career Center, and meeting with an advisor for 30 minutes. "This helps students to be more intentional about managing their time at San José State," said Rhee. "Sarah has done an amazing job of streamlining our process. It really does allow us to serve our students better."

The MESA Engineering Program

Blanca Sanchez-Cruz directs Student Support Programs and the MESA* Engineering Program (MEP) at SJSU. "The MEP provides its members, who are undergraduate underrepresented minority students, with individualized peer mentoring, community, access to industry partners, and additional resources," explained Sanchez-Cruz. "At SJSU, MEP predated our ESSC by at least two decades."

This year, student programs (including MEP) that were formerly part of ESSC now move to Engagement and Access Services for Engineering (EASE). Sanchez-Cruz's vision for EASE is that it will serve as a centralized "one stop shop" making it easier for students to connect to most available student programs. Programs currently directly managed under the EASE umbrella include: MEP, EAP, Student Organizations Support, NACME Scholars, Your Journey to Career Readiness, Conference for Engineering Diversity and Google CSSI - Extension.

Sanchez-Cruz also directs leadership training for officers of academic student organizations such as the Institute of Electrical & Electronic Engineers, Tau Beta Pi (Engineering Honor Society), and the Society of Women Engineers. In 2008, there were about 20 student organizations in the College of Engineering, and support was provided to them by one of the ESSC staff. Now, students run more than 60 clubs and organizations in the College of Engineering that are recognized by SJSU Office of Student Involvement. Student Engagement Advisor for MESA Engineering, Jesus "Chuy" Villacana, teams with Career Advisor Rich Trocio III and other staff to present comprehensive training days for the officers every semester. This helps the officers build critical professional skills and strengthens the organizations as learning communities, while slowing the "brain drain" that occurs in any student club when officers graduate. The leadership training program emphasizes, among other things, the role of student leaders in academic advising as peer mentors to support first year students.

The expanded ESSC also provides professional development for staff: advisors can now go to conferences such as NACADA, a professional organization for academic advisors. The advising team just had a conference proposal accepted for the California Collaborative Advising and Counseling Conference. The title of the presentation, a strengths-based approach to academic probation, is "Spartan Reboot: Resiliency in Action."

*Mathematics, Engineering & Science Achievement

Alumni Notes







LARRY BOYCE HELMANDOLLAR

1964 BS Mechanical Engineering

Larry earned his MS Mechanical Engineering from Santa Clara University and was employed with Aerojet General, then Lockheed Missiles and Space Corporation until 1993. Larry worked on many high-level security projects primarily in the structural analysis group. He is enjoying retirement in the Portland, Oregon area.

WEIMING LI

1992 MS Mechanical Engineering, Systems Control

Li is now President and CEO of Source Photonics, a company that makes optical transceivers used in telecommunication systems. He was formerly VP Operations at Auxora Networks, VP Manufacturing of Photop Group of Photop Koncent, and VP of Business Development at Oplink. Li has a BS in Mechanical Engineering from Chong Qing University in China.

TODD PETERS

1992 BS Civil Engineering

Peters was recently appointed the Chief Engineering Officer for the California Water Service Group (CWT) and its subsidiary California Water Service Company (Cal Water). He has held many roles at CWT, including Manager of Distribution, Manager of Design, and Hawaii Transition Manager. Peters is a certified Professional Engineer in civil engineering through the State of California, holding a Grade 4 certification in Water Treatment, and a Grade 3 certification in Water Distribution.

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Seeking: Photos for 75th Anniversary

We will be celebrating the college's 75th anniversary in 2021. No celebration would be complete without your stories and photos. Do you have any swag or souvenirs from when you attended the college? Please send us a photo of the item! Share your memories with us, especially any images. Email your image and a 2-3 sentence caption (including your name, major, and graduation year) to engineering-comm@sjsu.edu, or mail it to:

Lisa Francesca

Charles W. Davidson College of Engineering One Washington Square San José, CA 95192-0080 Your photo might appear in the pages of this magazine, on our web page, or on social media. If you remember who took the photo, you and your photographer will be credited.





It also features prominent leaders who discuss broader societal and political issues that shape society.

GreenTalk Speaker Series Wednesdays at noon | ENG 189

Practicing engineers, scientists, and technical experts deliver up-to-date briefings on how engineers deal with environmental issues.

Dean's Career Conversations Days and times vary | ENG 494

Dean Sheryl Ehrman and select students enjoy conversation and refreshments with alumni and other mentors from a variety of engineering fields. Engineering Awards Banquet Thursday May 7th, 2020 | Online Presence: Details to Come

Spring Commencement Ceremonies Canceled due to Sheltering in Place

Connect With Us!





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In Memoriam

LAVERNE LOUISE BARLING (1930 - 2019)

1952 BS Engineering

Laverne Louise Barling was born in Rush Springs, Oklahoma to farmers William and Susie Martin who immigrated to Mountain View, California during the Dust Bowl. Laverne was **the first woman to attend Engineering classes** at San José State University. She was a mathematician employed by NASA at Ames Research Center, where she worked on early supersonic flight. Her three children are also alumni of SJSU.

DONALD THOMAS COMER (1937-2020)

1959 BS Electrical Engineering

Don got a Masters degree at UC Berkeley and a PhD at Santa Clara University. He taught for many years at San José State, Penn State, and Brigham Young University, while he researched and published extensively. Don started many companies both in California and in Utah and held more than 20 US patents. Developing forms of renewable energy was his passion in his retirement years.

MARK GUIDRY (1937-2020)

taught at Louisiana State University, where he conducted research in semiconductor technology, laser technology and radio wave propagation. His wife, Carolyn Guidry (1937-2009) earned her Master's degree in Computer Engineering from SJSU in 1979. She joined Hewlett Packard and was directly responsible for the development of a new flexible interconnect cable and the micro code for a new computer.

At that time, Mark worked at Fairchild Semiconductor in Palo Alto, a small San Diego company, and Texas Instruments in Houston. Together, Mark and Carolyn founded two successful companies in semiconductor design software and semiconductor product development. They founded the **Mark and Carolyn Guidry Foundation**, which established a permanent endowment to support the Carolyn Guidry Chair in Engineering Education and Innovative Learning, currently held by former College of Engineering Dean Belle Wei. The foundation's ongoing support of both the annual conference and year-round activities, make the Silicon Valley Women in Engineering program a model of success for educating new woman innovators regionally and nationally.

Carolyn received an Award of Distinction from SJSU Davidson College of Engineering in 2006. Both she and Mark were inducted into the LSU College of Engineering Hall of Distinction in 2001. All three of Carolyn and Mark's children graduated with degrees in engineering.

PATRICK PIZZO (1944 - 2020)

1966 BS Materials Engineering and Faculty Emeritus in Materials Engineering

After graduation Pat served as an officer in the Air Force. He received a MS and a PhD in Materials Engineering from Stanford, and worked at the NASA Ames Research Center in Mountain View and the GE Plant in San José. He was a Professor of Materials Engineering and served as a Department Chair while on faculty during his 20 years of employment at SJSU. Professor Stacy Gleixner said, "He cared deeply about our students, really a model professor in terms of thinking about teaching, research, and student support all being intertwined."

ARNOLD T. RAAYMAKERS (1930 - 2019) 1953 Engineering

After serving in the Army, Arnie worked as a surveyor for the City of Sunnyvale and then as a survey party chief for Caltrans. Arnie was a longtime member of the Knights of Columbus and served as the Grand Knight of the Fr. Schweizer Council #12420 in Lynden. He enjoyed traveling and reading, and was an avid Notre Dame football fan.

ALBERT M. SAENZ (1960 - 2019) 1982 BS Mechanical Engineering

Albert Morales Saenz was born in El Paso, Texas and his family moved to San José, California soon after he was born. He co-authored several patents and worked on ground-breaking technologies and later moved to Texas and started R.O.I. Windows and Doors.



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Joe Thomas: The Gift of Flight

When Joe Thomas, '90 Aviation Maintenance Management, attended San José State, he was surrounded by people who were motivated to succeed. Since pursuing a successful career in aerospace, Thomas decided to create a bequest in his living trust that will afford students campus life experience. Through scholarships and support of student needs in aviation and technology, his bequest will give students opportunities for exciting careers and ensures the continuation of the aviation program.

"Getting reconnected to San José State as a donor has exceeded my expectations," he says. "I only wish I had done this years ago."

You can join Joe and help San José State's nationally ranked Charles W. Davidson College of Engineering prepare the next generation of engineers with a gift in your will or a gift that pays you income. Learn more at **legacy.sjsu.edu.**"

