Your Link to the Department of Civil Engineering

CE CONNECTION

FALL 2020 | ISSUE 33

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SACRAMENTO STATE
Department of Civil Engineering

CHAIR'S MESSAGE

Dear alumni, colleagues, and friends,

I hope this finds you well in the New Year, rested and ready for the assured challenges, yet hopeful celebrations, of 2021.

It is with mixed emotions that this issue of CE Connection is my last as the Department Chair of Civil Engineering. This semester, I will assume the role of Interim Director, College to Learner and Academic Programs in the College of Continuing Education (CCE) at Sacramento State. I am pleased to announce the faculty have voted on my successor, and beginning this semester, Dr. Khan will be appointed as the 12th chair of the Department of Civil Engineering at Sacramento State.

I am proud of the many things the department has accomplished during the last 5 ½ years, including significant curriculum changes to our degree programs, a substantial increase in fundraising to support or program and students, a new national ranking by US News & World Report (#11 for non-PhD granting institutions), increased graduation rates, and many more successes by our faculty, staff and students. It has been an honor to serve as the chair of a department that provides such fantastic educational experiences for our students.

It has been a pleasure to meet and interact with many of you, and I hope to see you at future civil engineering events as I hope to stay as connected with the department as much as possible.

Ben Fell
Chair, Department of Civil Engineering

If you would like to make a donation to support students who have been impacted by the COVID-19 pandemic you can support our Sac State CARES fund by visiting https://bit.ly/SacStateCares-2020. During this time of uncertainty and evolving needs, the Sac State CARES fund allows the flexibility to provide support to the programs with greatest need as identified and determined by the Vice President of Student Affairs.

SACRAMENTO STATE
Department of Civil Engineering

THE 13TH ANNUAL

KEN KERRI Endowment Fund

LUNCHEON

We regret that we will not be hosting the spring 2021 Ken Kerri Endowment Fund Luncheon in-person this year. However, we are excited to host a virtual lecture in its place, so we can gather as a community and learn about an important topic in the water resources or environmental engineering discipline. More details will be shared, including the date and time, later in the month.

In light of guidelines and recommendations by regional health officials and the university, the Department of Civil Engineering has decided to augment our annual event.

"It saddens me that we will not be hosting the luncheon this year in-person," notes Department Chair, Dr. Benjamin Fell, "but the pandemic is still at a point that prevents us from safely gathering in large groups. The event is a great time to connect with friends, alumni and colleagues.

While the luncheon may not be taking place this year, donations can still be made to the Department of Civil Engineering and the Ken Kerri Endowment Fund. During these difficult times, your monetary gifts can help close the budgetary gaps that are affecting California, and thus the California State University system.

"The university is facing a difficult budget situation as one time funding sources are being cut amid significant state budgetary concerns," continues Dr. Fell. "The most immediate impact of budget reductions are always a decrease of funds for equipment and software, and support for faculty and student projects. The donations we receive allow us to maintain and improve our current programs and capabilities."

For more information on how to give to the department, or on how your donations will positively impact the lives of our students, please contact Nebrisa Fish, Director of Development for Engineering (nebrisa.fish@csus.edu).

For more information on how to give to the department, or on how your donations will positively impact the lives of our students, please contact Nebrisa Fish, Director of Development for Engineering (nebrisa.fish@csus.edu). Interested in supporting the department? Visit http://bit.ly/KenKerriEndowment to learn more about our funding needs.

Support the Department

Looking for a way to support the Civil Engineering Department? We have four different funds that enhance our ability to educate students:

- **The Ken Kerri Endowment Fund** — Provides support for faculty and student enrichment activities.
- **The CE Freshman Scholarship Fund** — Scholarships to outstanding first-year student.
- **The Graduate Environmental/Water Resources Scholarship Fund** — Scholarships to deserving graduate students in the environmental or water resources engineering areas.
- **The Department Trust Fund** — These resources support student attendance and participation at conferences and competitions, senior design project team expenses, and equipment for labs when other funds are not available.

To donate to any of these funds, go to **http://bit.ly/ceonlinedonate** and follow the directions for online donations.

- Or mail a check made out to the appropriate fund to:

  Attn: Ashley Mihok
  California State University, Sacramento
  Department of Civil Engineering
  6000 J Street, MS 6029
  Sacramento, CA 95819

- For additional questions on how to give, contact:

  Nebrisa Fish '05
  Director of Development
  (916) 278-2453
  nebrisa.fish@csus.edu

Upcoming Events

October 8, 2021:

9th Annual Civil Engineering Golf Tournament
(location TBD)

November 9, 2021:

An Evening with Industry
(date tentative) at the Sacramento State Alumni Center, 5:30-8:30 pm

Please consider supporting the Department of Civil Engineering.

As we transition back to our in-person traditional events during the year, and on-campus classes, your dollars will be incredibly important to support the department.

http://bit.ly/ceonlinedonate

www.csus.edu/ecs/ce

Like us, and follow us to stay up to date on current CE News and Events!

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Evening with Industry

Goes Virtual

Event RECAP

The 2020 Evening with Industry, usually held on campus during the fall semester, went virtual this year. The department utilized all of the capabilities Zoom has to offer, including break-out rooms where small groups of students were able to interact with other peers and industry professionals from the safety of their own homes.

Dr. Benjamin Fell, Department Chair of Civil Engineering, opened the evening by commenting on the uniqueness of the night's situation. He expressed his gratitude to those that worked tirelessly to ensure the event would still take place, and especially thanked the staff, faculty and industry representatives that volunteered their time to meet with students.

Marco Palilla, P.E. of HDR and alumni of Sac State, has attended many Evening with Industry events in and took time to praise the work of the department to continue the event this year. "I have participated in Sac State's Evening with Industry for many, many years," he states. "Sac State Civil Engineering has refined and improved this event over the years – it is a great opportunity for students and Sacramento area engineers to network and share experiences."

The keynote speakers this year included Jesse Gothan, Noel Shambly, and Ty Lin, civil engineers working on the new I Street bridge project that is expected to begin construction in 2023. Each discussed the phases of the bridge's genesis: from its initial design, to specifications required by the US Coast Guard, and to precautions taken by the team to ensure the least amount of environmental impact. It was a unique opportunity for students to understand the thought process behind the design of a bridge that will, in the not-too-distant-future, affect many of them as they continue to live and work in the Sacramento region.

After the main presentation, four panelists held a moderated Q & A session with attendees, answering questions ranging from networking, to class recommendations, and information on how COVID-19 has changed engineering in the professional world.

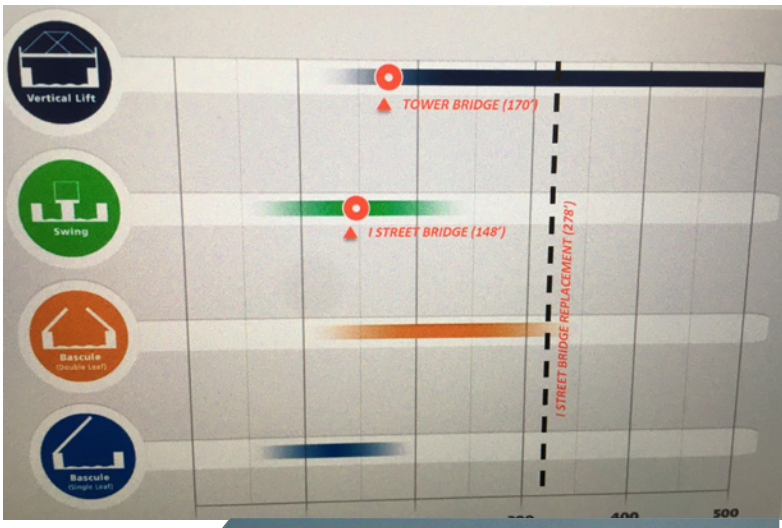
"I've been into the office once since COVID," observed Linda Newton, alumni of the Class of '87. "90% of what I do is now teleworking."

On the other side of the spectrum, Brandon Cruz, Class of '07, noted that, "My job hasn't changed at all," and stated it was, "business as usual, except one day a week when I write reports from home."

Steven Lynch, also part of the Class of '07, welcomed the questions students asked via the moderators. "There are a lot of different career opportunities for those that earn a civil engineering degree," he shared. "This event gives students exposure to some of those careers and real-world advice from folks that have been in their shoes."

At the end of the panelist section, students were randomly assigned to several different Zoom breakout rooms. Industry professionals were rotated to each room to answer questions and network with students. There were representatives from several major local engineering firms present, including Kleinfelder, HDR Engineering, Dokken Engineering, MacKay & Somps, and Brown & Caldwell.

> *"Sac State Civil Engineering has refined and improved this event over the years – it is a great opportunity for students and Sacramento area engineers to network and share experiences."*
>
> **—MARCO PALILLA, P.E. (HDR)**



Michael Hendry, with Dokken Engineering, enjoyed being able to connect with the event's attendees. "One thing I enjoyed about my interaction with the students is being able to relate to them with my struggles that I had in becoming a civil engineer. I felt that they really appreciated those conversations because it is something that we all have to face in our academic and professional careers."

Nelson Tejada, '15, took great pride in being able to participate as both a panelist and a professional in the meet-and-greet with students. "I have great memories of Evening with Industry as an undergrad at Sac State. In fact, it is this event where I made a connection and ultimately landed a job with MacKay & Somps. Now I'm excited that years later to get the opportunity to return as a professional myself and connect with students."

Undergraduates were just as eager to talk to industry leaders as firm representatives were about meeting them. Tyler Crane, a transfer student attending his first Evening With Industry, was highly impressed. "You could tell the representatives from these companies just love meeting and connecting with students."

Julia Carey, a senior graduating in the spring, hopes to become a marketing engineer. She attended this year's event in the hopes of networking more with peers and other professionals. "While conversations were less natural online, the eight-minute format allowed each student to speak directly with all professionals and others, Carey notes. "In my breakout room, I was able to reconnect with a previous lab partner and meet a new acquaintance from CSUS. I also spoke with an engineer who had worked with my father in the early 2000s."

Victor Ramos, a junior, shared similar sentiments. "Although the one-on-one connection was missing, I very much enjoyed seeing some classmates in my breakout room and meeting new people."

Not all attendees were upper classmen. Julia Shibko, a Freshman, attended her first event and was "very impressed" with the overall experience. "Evening with Industry was a great event to attend for me as a first-year student because it really exposed me to a wide-variety of civil engineering companies, and professional engineers who were former interns, once in the same shoes as I am now. Hearing them share their experience and give thoughtful advice was very interesting and informative, especially for someone like me who is still discovering different career paths."

Such responses demonstrate how Evening with Industry has grown in importance over the years. It is reassuring to know for the students that come rain, shine, or a pandemic, Evening with Industry will be able to engage students no matter what future challenge may arise.

Sac State's Concrete Canoe

Forges their Way Through the Pandemic

Student organizations are often the cornerstones of undergraduate extracurricular activities on college campuses. In light of the COVID-19 pandemic, many of these groups have reshaped their meetings and tailored their functions to fit a world where social distancing is both the norm and a necessary precaution.

1 Tell me about the Concrete Canoe student organization.

Concrete Canoe is a project design club that is part of a national student competition. It is one of the competitions under ASCE. Our goal each year is to give students a hands-on experience testing and constructing a canoe made of reinforced concrete. We also encourage new students to civil engineering to take on leadership positions to learn and practice new skills.

2 What happened to the organization immediately after the school shut down? Did it continue, or did it end prematurely for the semester (spring 2020)?

Once the university shut down in March 2020, our club had to cancel all of our plans for the rest of the semester. We could no longer access the concrete lab on campus. Our competition was cancelled, as well as the rest of our funding. We couldn't even practice our paddling at the aquatic center.

3 What were some changes that were implemented to make sure students could still participate in some capacity?

Our entire club is based on the physical competition, making a canoe, so it was difficult finding alternatives that we have never tried before. Since we have moved online, we have tried to keep up club participation by hosting some general club information meetings as well as some social events.

4 What were the challenges/setbacks your organization faced?

Since the start of the pandemic, a lot of clubs have noticed a significant decrease in attendance and club events. At our last event, we had two members attend for a couple of minutes and two attend for the entire time. Before this, it would have been at least 10 at every meeting for the entire time. It's also been hard trying to find virtual event ideas.

5 What does the Concrete Canoe team look like for the fall 2020 semester?

For Fall 2020, our organization looks like three project managers working on the "hypothetical" design report and possibly making a video for the members to help with and view.

6 Are any activities, virtual or otherwise, planned for the remainder of the year? What are some of the projects/events the students hope to be part of when restrictions are lifted?

Our competition this spring has been made virtual, so all we are required to bring to the competition is a design report of a canoe that we didn't make. We will be giving a presentation at the competition. Normally, we would have an entire day to display our canoe on a stand in front of other schools and competition clubs and race it on the water against other schools. Mostly, we are trying to keep spirits high and prepare for the 2021-2022 academic year.

7 What are some things you are looking forward to as the ASCE President in the coming year, and what are some goals you would like to achieve with the organization despite the limits Covid has put on normal operations?

In spring 2021, I will be President of ASCE, and I am currently one of the project managers of Concrete Canoe. As a project manager, it is similar to being President but on a smaller scale. I've been involved with many of the engineering clubs on campus. In my sophomore year, I was one of the events coordinators for ASCE. When Mark Westbook (previous ASCE president) contacted me at the end of the summer and asked me to step up, I was excited. Of course, I had to consider the workload and my schedule. In the end, I knew it would be worth it, and I wanted to make an impact on our students.

I plan to give students the opportunity to have leadership roles in the club as it will prepare them for their careers. I will also encourage peer interaction and participation by holding social events and study sessions to make students feel like they are still on campus. This past year has been challenging for many of us due to COVID-19, and my goal is to set an example and be optimistic in hopes that it will bring a sense of optimism to the student club members.

NSF Grant

to Fund Peer Assisted Learning and Leadership Training for Students

Civil engineering professor Dr. Julie Fogarty, along with mechanical engineering professor Dr. Troy Topping, and Drs. Robin Altman and Jennifer Lundmark from the College of Natural Sciences & Mathematics (NSM), received a $1.8M grant from the National Science Foundation earlier this year. The funds will go to support the Peer Assisted Learning Program (PAL) in two ways. First, the funds will help extend PAL into the College of Engineering & Computer Science based on the model established in NSM by Dr. Lundmark. Second, the funds will help develop a STEM program that is intended to connect both colleges in an interdisciplinary way through leadership experiences.

The PAL program was originally considered by Fogarty who approached her colleagues about developing the curriculum to assist struggling students. "A common term used in education is 'achievement gap' meaning there is a difference in the overall GPA or course grade for certain groups of students on average compared to the overall student body, and we can see this gap in the data for the students at our campus at both the course and program level," she explains. "A better term that is beginning to replace this language is 'opportunity gap.' Our students aren't performing differently because of innate ability, they're performing differently because they haven't had access to the same opportunities or resources as their peers before they stepped foot on our campus."

These "missed opportunities" range from graduating from a disadvantaged high school, to an inability to access mainstream technology, even as a college student.

"We can't do much about what happened before they got here," Fogarty laments, "but we can meet them where they are and give them the opportunity and platform to use their own voice to tell us what they need."

The project is currently on track to offer PAL-centered classes in the College of Engineering & Computer Science beginning spring 2021. Unlike other college courses, the PAL curriculum is not overseen by an assigned faculty/staff member. Instead, classes are observed by peer facilitators, with curriculum developed by the faculty specific to the PAL program. Fogarty elaborates: "If they [the students] get stuck, peer facilitators are on hand to help guide them. The facilitators do not provide answers and will not tell students if their solution is correct. Facilitators will ask students to walk them through their problem-solving process and at points where they're stuck or made an error, the facilitator might ask the student things like. 'Why did you make this decision? What did you do in a similar problem at this point? Does it make sense to do that here?'"

The long-term effect that PAL programs and courses will offer students is more than just a step up in their engineering and science coursework. The overall goal is to encourage students to develop their critical thinking and problem-solving skills. Since many Sac State graduates stay local after graduating, the potential impact to the Sacramento region is extensive. Fogarty goes on to say, "The goal is to get the students to have their own 'aha' moments to help figure out what went wrong or what they can do to move forward [and] improve their problem-solving skills."

The leadership component consists of the "STEM Leadership Academy" that will provide opportunities for students to make a positive impact on campus and within the community. Participants will have access to seminars and workshops, and be able to take part in a 1-unit leadership course offered by the university.
For a more immersive leadership experience, the grant will establish a cohort of Leadership Scholars, expected to begin summer 2021. Says Fogarty, "Scholars will receive a stipend to propose, vet, and potentially lead the implementation of a student success intervention that positively impacts their peers and/or the local community." These interventions may include working in the community with veterans or minorities, or gathering costly lab materials to donating them to students who would otherwise not have access.

Since both the PAL program and the STEM leadership academy will be ready for implementation within the coming year, Fogarty is hoping to build a strong foundation of mentors that aren't afraid to hit the ground running – "we're looking for professionals in the community and on campus to serve as mentors for these students as they develop their leadership skills through an experiential activity".

Fogarty continues – "The PAL program benefits all students by pushing them to think more deeply and further develop their technical skills, leading to better comprehension (and consequently better grades, even for already high-achieving students), [and] complementing those improved technical skills with excellent communication, self-initiative, and teamwork abilities through the STEM Leadership Academy. [This] will open more doors for our students as they go on to apply for advanced degrees or their dream job."

For more information on either of these programs, Dr. Fogarty can be reached directly: fogarty@csus.edu

Alumni Spotlight: Focusing on Student Success

Deanna Arrigo

was born to be a teacher.

"I always knew that was what I was meant to do," she recalls of finding her passion early in life. Arrigo, a graduate of the class of 2013 from Sac state's civil engineering program, is currently a part-time faculty member in the Department of Civil Engineering.

"It truly is unbelievable to be where I am today," Arrigo continues. "I cannot express how grateful I am to be teaching at Sac state. I absolutely love the students, and I find great purpose in teaching engineering fundamentals."

Long before embarking on her career at Sac state, Arrigo founded her own company, Apex Tutoring, to offer assistance to those students struggling with mathematics and science courses. "Mentorship and education are true passions of mine," she states. "I find great satisfaction helping my students reach greater depths of understanding and higher levels of confidence." Arrigo began tutoring in 2005, and continued to do throughout her undergraduate studies, and even while working an internship with Caltrop Corporation. She only recently hired another tutor – also a Sac state alumnus – to help with the growing workload of students. Arrigo is not daunted by this growth, saying, "It makes me so happy to see my business grow, and to know that even more students can be reached."

After graduation, and at the conclusion of her internship, Arrigo worked for several major engineering firms, including Dokken Engineering, CALTROP, and Ghiradelli and Associates.

"I started at CALTROP as an intern while I was still a student at Sac state. I did office engineering, field inspection, and assisted with contract management on city, county, and state public works projects. Then I went to Dokken as an intern, and I was also hired on full-time after I graduated. There, I worked on stormwater design. After Dokken, I went back to CALTROP to further my construction management experience. Then I went to Ghirardelli and helped Caltrans manage their North Region construction stormwater program."

In addition to tutoring and her part-time employment with Sac state, Arrigo also works for Psomas as a Construction Stormwater Coordinator. As Arrigo puts it, her position is, "…managing thirty to fifty jobs for stormwater compliance." She goes on to say, "I help Caltrans District 3 stay in compliance with the Construction General Permit. This involves advising Resident Engineers, and coordinating with the Regional Water Quality Control Boards, to protect the water quality of receiving water bodies in the North Region of California."

Like the rest of the university, Arrigo faced many challenges with the transition from in-person education to distance learning in the wake of the COVID-19 outbreak. "I was worried I would not be able to deliver as good of service over the computer as I could in person," she recalls. "I'm happy to report that I was able to very closely simulate in-person lectures. My students gave me great feedback that they had been worried as well, but were pleasantly surprised how smooth the transition was, and how they were still able to learn and thrive."

Arrigo gives special credit to the Department of Civil Engineering for making the transition as easy as possible for her and her students. However, she understands the day-to-day difficulties many of her students are still experiencing as the lockdown drags on. "Some students have struggled with structuring their day. Because they are not required to get up, drive to campus, walk to class, etc., they have expressed to me they've had trouble holding themselves accountable. I tell them to structure their days the best they can. Now is the time to learn self-discipline, and to learn how personal choices affect the outcomes."

"In terms of distance teaching, I have advised my students to have compassion for themselves and others. Everyone is struggling one way or another. I encourage exercise, good eating habits, down time, meditation, and the like. Students need to take care of themselves as much as possible so they can keep their minds and bodies in the best possible shape."

In these difficult times, Arrigo has a special message of gratitude she would like to share: "Thank you to the Sac state community and all the support I have felt from day one. I am very proud to tell people I graduated from Sacramento state with my civil engineering degree, and that I work there now. I could not ask for a better community to be a part of."

> *"I cannot express how grateful I am to be teaching at Sac State. I absolutely love the students, and I find great purpose in teaching engineering fundamentals."*

Student Connections: An Interview with Graduating senior

Jesus Gregorio Avila

Jesus Gregorio Avila is one of many engineering students who completed the majority of his senior year off-campus in virtual classrooms. Like his peers, the final two semesters of his undergraduate journey contained many unexpected hurdles and challenges. In our interview, Avila discusses his personal growth and lessons learned during the past year.

Where you a transfer student or did you start at Sac State?

I started at Sac State after high school as a first-year college student.

What inspired you to pursue an engineering career?

I wanted to impact society…I had a desire to make communities a better place to live by designing environmentally friendly infrastructure.

Tell me about how your senior year at Sac State has been shaped by the current health crisis.

Senior year was unique. I hadn't' experienced any online classes before the spring 2020 semester, but I saw it as just another challenge to overcome. In fact, I found that virtual learning allowed students to build a better personal connection with the professors. The difficulty was grasping complex concepts when we did not have hands on experience in the labs and lectures.

What have you learned about yourself, both as a student and as a professional, during this time?

I learned that I could still pursue my academic goals even in times of distress. As a professional, I learned that communication is key when it comes to projects done via Zoom.

What does it mean to you to be part of the student body at Sac State, even though you are currently physically apart from your professors and peers?

It's important to interact with other students and faculty to develop a greater connection. During study sessions, I'd get together with other classmates via Zoom and still maintain a connection as if we were together in person. Events such as Evening with Industry allowed me to connect with other students and professionals virtually.

What are your current academic and career goals?

My current academic goal is to finish the semester strong and obtain my Bachelor of Science degree. My career goal is to secure a profession in water resource because I believe water is one of the most fundamental human supplies and it's my duty to protect it.

Did you happen to complete an internship during your time at Sac State, or were you part of any groups/organizations?

During my time at Sac State I was fortunate to intern with Pankow Builders and with Sacramento County. I was a part of organizations such as ASCE, MEP, and SHPE.

Were there any memorable experiences you had, or projects you worked on? Did you make a connection with any of your professors?

I'll never forget the time where I worked with the Water Treatment team and competed against other schools in the MidPac conference. I developed a great connection with Professor Poindexter – she is a fantastic professor and a great educator. I took a couple of her elective courses and she gave me guidance when I worked on my senior project.

Finally, what advice would you give incoming first-year or transfer students looking to major in engineering?

Get involved with the engineering clubs and get to know the faculty and staff. The engineering clubs expose you to realistic engineering applications and you'll develop some of the best connections within them. Getting to know the faculty will help guide your education in civil engineering.

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