

ECC College and EECE Department 2020 Highlights

College of Engineering, Computer Science & Construction Management Highlights

- The College of ECC is ranked number three in the 50 Best Value Engineering Schools. See how we stack up against the competition: <https://www.bestvalueschools.com/rankings/engineering-schools/> All ECC degree programs provide students with multiple opportunities for hands-on learning, developing practical skills that employers consistently value more than the robots; HPE and Aruba, networking companies that started as part of Hewlett-Packard; AJA Video, a small company in Grass Valley that designs excellent image process systems for major TV companies and others; NAVAIR, an organization that supports the US Navy. As you might expect given our students' excellent hands-on design skills, our students are actively recruited for internships and permanent positions.
 - Thanks to a multi-year Hispanic Serving Institute (HSI) STEM Grant, more than a dozen ECC students participate in [summer undergraduate research projects](#). Many second- and third-year students gain experience academic research for the first time through this program. That kind of opportunity often doesn't happen until graduate school. Examples include two students who worked with Dr. Alavi to develop a new technique to detect toxins in agricultural products and two students who worked with Dr. Meehan on a robotic knee brace that was designed to decrease the time required to recover from an ACL injury.
 - [The Engineering Student Success Center](#) serves all majors in the College of ECC with tailored academic advising and professional development opportunities. This center is a key to ensuring first- and second- year students successfully complete math and science requirements and are on track for timely graduation.
- Most departments provide free tutoring to support students as they begin their studies in their majors. The EECE department provides drop-in tutoring almost every day of the week (online these days). This support is in addition to the time when faculty hold office hours and supplements the University tutoring offered by the Writing Center, the Math Tutoring Center, and the ESL Support Services Center.
- The College of ECC is in the midst of a comprehensive renovation of its laboratory facilities, which will transform the spaces into cutting-edge facilities designed for hands-on learning, mirroring working environments students will encounter in their careers. A great example is the [Omron Mechatronics Co-Lab](#), which EECE students use in some circuits and controls courses. These recent laboratory renovations enable the EECE department to implement innovative techniques to support student learning and to increase the use of portable electronics, which students run using their laptops.
- Our ECC faculty and students are using the robots located in the new Omron Co-Lab along with 3D printers from the Meriam Library and the 3D Print club in collaboration with others in the University and in the surrounding communities [to fabricate PPE for healthcare workers](#).
- Throughout the College of ECC, there are [30+ student clubs](#) that provide opportunities for tutoring, networking, professional development, design competitions, and community service.



Department of Electrical and Computer Engineering

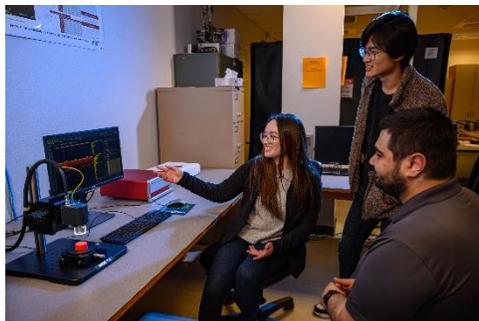


Micromouse Competition Team (winner of the UCLA All-American Micromouse competition and the Region 6 Central Area

- The Bachelor of Science in [Computer Engineering](#) and in [Electrical/Electronic Engineering](#) programs are accredited by the [EAC of ABET](#), the national engineering accreditation organization. EECE faculty constantly review the two programs and implement improvements to better support student learning; to ensure that courses cover relevant material, given the rapidly developing technologies in our fields; and to integrate the latest equipment into our labs and activity sections so that our students have hands-on experience with the tools and techniques used by engineers in the field.
- [The IEEE Student Chapter](#) (Institute of Electrical and Electronic Engineers) is extremely active. It has hosted talks by industrial leaders, workshops on soldering and PCB fabrication, and advanced circuit simulation techniques. It is home to our

Micromouse Competitions last year) and our Drone Racing Team that plans to attend its first competition next academic year. The [IEEE-HKN Honor Society](#) was selected as an Outstanding Chapter by the national organization this year.

- Prof. Kurtis Kredo, with Dr. Hadil Mustafa and Dr. Zahra Alavi, leads a major Office of Naval Research (ONR) grant. Dr. Kredo also serves as the director of the Chico State chapter of the [McLeod Institution for Simulation Science](#), an international organization of more than 25 university and national research institutes. In 2019, Dr. Kredo received the CSU Chico Outstanding New Project Investigator Award in recognition for his research with ONR. The research, which has funded several EECE undergraduate research assistantships each year, supports the US Navy's Electric Ship research thrust.
- Majd Barchini presented his research, conducted under the supervision of Dr. Hassan Salehi, at the [MIT Undergraduate Research Technology Conference](#) in October 2019 and at the California Plant and Soil Conference in February 2020. He is one of five undergraduate students in Dr. Salehi's research group. In addition to Dr. Salehi, these students are collaborating with Dr. Chen, a visiting faculty member from Hangzhou Dianzi University. They are studying noninvasive techniques including optical



tomography and photoacoustic imaging to detect dental caries (cavities in teeth) so that treatments can be applied to stop the decay before a filling is required.

- [EECE faculty](#) have led or participated on three National Science Foundation Major Research Instrumentation grants. These successful NSF awards are supporting the on-going innovative research conducted by EECE faculty and students, who are gaining hands-on experience with some of the latest technological applications in our field. Dr. Salehi's research group has purchased an optical tomography system and a deep learning workstation that he and five undergraduate student use to collect and analyze biological and biomedical imaging. Dr. Alavi led a proposal to purchase a state-of-the-art Fourier transform infrared microscope, which she and her undergraduate researchers employ to

identify trace chemicals in agricultural products. Dr. Alavi and Dr. Meehan participated on a grant led by Dr. Yasser (MMEM) that enabled the purchase a Raman spectroscopic microscope, which Drs. Alavi and Meehan will use to characterize the properties of nanomaterials for photovoltaic and biomedical applications.

- Other areas of research that our students and faculty are actively pursuing cover topics that include cybersecurity in embedded systems and the electric grid, imaging processing techniques to detect the presence of nanomaterials in water samples, and a solar energy power system for a medical clinic in Nigeria that was funded by the CSU Chico School of Nursing.
- During two of the last three years, the ECC Outstanding Student Leader have been an EECE student. [Jackson Ryan](#), who was the IEEE Student Chapter president, was chosen in 2018 and James Bernhard, who is currently the IEEE-HKN Honor Society president, is the 2020 Outstanding Student Leader. Both students transferred to CSU Chico from a community college. Clearly, transfer students are integrated into campus and department life and their contributions are valued at CSU Chico.
- Giving back to the North State is a key part of Chico State's mission. The [CSU Chico Society of Women Engineers](#) hosts an annual [Imagineer Day](#). Over 50 EECE engineering students work to help about 275 elementary and middle school girls engage in a number of science and engineering projects during a day-long workshop. Also, students from our IEEE-HKN chapter serve as judges in local high school science fairs, tutor students in our college on circuits and microprocessors, and serve as lab assistants in a number of our circuits and digital electronics activity sections.



- What's more, our faculty are leading, with three other ECC faculty members, a three-week online [engineering and math bootcamp](#) this summer for incoming students. The bootcamp is designed to give students a firm grasp of the mathematics used in engineering and computer science and provide a strong foundation for first-year mathematics courses. You will be able to participate in engineering projects while at home and see (virtually) some of the equipment that you will use when you are on campus. Plus, you will get to know some of your teachers before you are in

their classes. The boot camp will run from July 20th – August 7th and it's free! There is information and an application on the [EECE website!](#)