



The Bourns College of Engineering, Center for Environmental Research and Technology (CE-CERT) partnered with Bourns, Inc. & the Science Technology Engineering Partnership (STEP) to host the 20th annual STEPCon event. 2019 marks the 9th year of CE-CERT's involvement with STEPCON. This year we welcomed over 200 high school students from Riverside and San Bernardino County into our laboratories to learn about sustainable technologies and research conducted at our facility. Our focus is to spark an interest in under-served student groups in pursuing education and careers in STEM (science, technology, engineering, mathematics) fields.

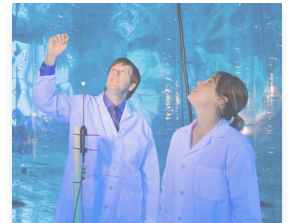


The Learning Labs included:

- ◆ Understanding Air Quality
- ◆ Eco-Driving Simulator
- ◆ Measuring Vehicle Emissions
- ◆ Electromagnet Spectrum (Solar Energy)

This year CE-CERT added 11 exhibits to the high school portion of STEPCON, consisting of 9 UCR College of Engineering student organizations, North High School, and an outside company called SEI (Strategic Energy Innovations). Students were able to see these exhibits in addition to the in laboratory sessions. Students were able to try out our student built race car, make and launch rockets, and see how air quality monitors can detect diesel emissions. They also toured our new vehicle to grid charging system as part of our Sustainable Integrated Grid Initiative (SIGI).

Graduate Student Chen Le gave a presentation on how secondary aerosols are studied in the world's largest indoor atmospheric chamber. While in the chamber students learned about the different types of elements, (temperature, light, etc.) that can be controlled and how these elements are used to study air pollution.



- ◆ Basics of Bioenergy (Biofuel)
- ◆ Motor Operation (SIGI)
- ◆ Drones & Robotics

The Transportation Systems Research team trained students how to use the Eco Drive Simulator designed to model heavy-duty trucks driving under various conditions and provide ways to improve driving techniques to cut fuel and emissions. Students were able to observe the outcome of how speed and acceleration affects fuel economy while the simulator generated energy-saving driving recommendations delivered to the driver in real time.

Other students learned about our engine dynamometer designed for certification of alternative diesel fuels (aka biodiesel), that meet State and Federal regulations. Here students were able to see a heavy-duty diesel engine hooked to the dynamometer and see the technology used to certify the emissions.

Students also learned about biofuels, and how a bioreactor works. Graduate students May Ling Lu, Priya Sengupta, Christian Alcaraz, and Priyanka Singh introduced students to the concept of deriving usable fuels from biomass such as switchgrass and other plant waste, and guided them through the steps used in the conversion process.

We hope all the students and teachers enjoyed the hands on experiences at CE-CERT's STEPCON 2019. Don't miss STEPCON 2020!! Our goal is make each year a bigger success! Look forward to seeing you next year!

