

Making Spaces: EMCC's STEAM Engine

TJ Gibson, for Estrella Mountain Community College Published 1:03 p.m. MT Aug. 4, 2017



(Photo: Estrella Mountain Community College)

Imagine a space with the latest technology, an unlimited knowledge base, eager minds and creative surroundings. Estrella Mountain Community College's (https://www.estrellamountain.edu/?utm_source=Republic-Media&utm_medium=AZCentral&utm_content=article&utm_campaign=Branded-Content) latest leap forward is a learning and fabrication lab, affectionately called the STEAM Engine. Science, technology, engineering, art and mathematics all come together with imagination in a makerspace on EMCC's main campus in Avondale.

Originally designed for manufacturing students to gain advanced skills, the STEAM Engine room soon embraced a wide variety of disciplines across the college – from medical technology and physics to engineering and fashion design. Developed by physics faculty emeritus, David Weaver, the addition of this creative center on campus gives students new ways to learn and interact, as well as teach and help one another.

The space houses impressive equipment including the latest in large-format 3-D printing technology ([video \(https://www.youtube.com/watch?v=TCjjBku7v44&feature=youtu.be?utm_source=Republic-Media&utm_medium=AZCentral&utm_content=article&utm_campaign=Branded-Content\)](https://www.youtube.com/watch?v=TCjjBku7v44&feature=youtu.be?utm_source=Republic-Media&utm_medium=AZCentral&utm_content=article&utm_campaign=Branded-Content)), digital laser cutter and etcher, and digitally programmed routers that can cut wood, metal and glass. Even the lab's digital sewing machines are the stuff of the future.

"We've 3-D printed the instrument packages for the college's Engineering ASCEND program. Other faculty who use the space have had their students design and build rocket parts, wind generation parts and speaker components. I trained a BIO 100 class to do simple 3-D design and the students printed their own cells to use as manipulatives," said Weaver.



Originally designed for manufacturing students to gain advanced skills, the STEAM Engine room soon embraced a wide variety of disciplines across the college – from medical technology and physics to engineering and fashion design. *(Photo: Estrella Mountain Community College)*

EMCC Student, Sharleen Brightwell, is a part-time seamstress planning to go into the medical field. She says the space allows for art and creativity to become part of something extremely functional. "The 3-D printing going on right now in the biomedical field is really, really impressive." She plans to learn to use all the pieces of technological manufacturing equipment in the STEAM Engine lab to enhance her skills.

The Engine was funded by the [AZ Ramp Up \(http://rampupaz.com/?utm_source=Republic-Media&utm_medium=AZCentral&utm_content=article&utm_campaign=Branded-Content\)](http://rampupaz.com/?utm_source=Republic-Media&utm_medium=AZCentral&utm_content=article&utm_campaign=Branded-Content) grant, awarded under the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grants, as implemented by the U.S. Department of Labor's Employment and Training Administration. While makerspaces have been growing in popularity at universities and colleges across the country, there weren't any in the West Valley. Until now. These centers provide an assemblage of tools and technology-driven equipment that help designers bring ideas to life.

As community college continue to support workforce development, but also succeed financially, EMCC's STEAM Engine can potentially be an income source for students through selling products students have made during their course of learning such as name tags, trophies and plaques.

Weaver sees the STEAM Engine being used for projects large and small, for students and the community. "We've made dog tags, name tags and 3-D prints for various groups of middle school visitors, local science organizations and more. We will be running several Saturday classes through EMCC's community education program to build wooden pencil/pen sets," he said. Other products include stainless steel etchings for EMCC's recent 25th anniversary celebration such as bookmarks and a time capsule.



The space houses impressive equipment including the latest in large-format 3-D printing technology, digital laser cutter and etcher, and digitally programmed routers that can cut wood, metal and glass. (Photo: Estrella Mountain Community College)

In just one example of technology meeting art, students in Weaver's class recently studied then developed a prosthetic hand for a local 9-year-old boy named Noah. Not only did the EMCC students get hands-on practical engineering, physics and aesthetic experience, they got to witness first-hand the emotional impact of their work when changing a child's life ([video \(https://www.youtube.com/watch?v=cp2xj3WeuHU&feature=youtu.be?utm_source=Republic-Media&utm_medium=AZCentral&utm_content=article&utm_campaign=Branded-Content\)](https://www.youtube.com/watch?v=cp2xj3WeuHU&feature=youtu.be?utm_source=Republic-Media&utm_medium=AZCentral&utm_content=article&utm_campaign=Branded-Content)).

EMCC student, Anthony Holman said, "This is the first project that I've gotten to be involved in as an engineering student where I've gotten to put my skills to use. Not only do I get to do that, but I also get to help someone and it feels pretty great."

The prosthetics work EMCC is doing is part of a pilot program in "Engineering Projects In Community Service (EPICS)." EMCC is the first community college in the nation to do so. EPICS has, at its heart, Human-Centered Design, which requires excellent industrial design, and of course, requires the artistic eye.

Weaver said students who use the lab frequently should be setting themselves up to be more attractive to employers, as they bring more of these hands-on skill sets to the workplace.

"We hope to finish a model of prosthetic finger for a sister of an EMCC faculty next week and then spend the rest of the summer working on a prosthetic leg for a 15-year-old whose mom heard about what we were doing with Noah. If you look at the corpus of our work so far, it is beyond what I thought might be possible and students, faculty and staff are doing amazing things."

Members of the editorial and news staff of the USA TODAY Network were not involved in the creation of this content.

Read or Share this story: <http://azc.cc/2u9cjhm>

