“If you can think it, you can make it,” said Katie Ruhm, a junior mechanical engineering major talking about the Student Fabrication Lab called the Mustang ‘60 on the ground floor of the Bonderson Projects Center. Part of the Mechanical Engineering Department, the shop is a creative bastion for hands-on projects, open to anyone on campus including faculty, staff and students from any major.

If you think of yourself as a tinkerer, as one student put it, the machines and equipment will make your eyes light up. But even more impressive are the opportunities the shop affords students to discover new interests, unleash their creative potential and develop as leaders.

Open Door Policy
Ruhm originally came to Cal Poly as an education major. Both of her parents are teachers, and everyone assumed she would teach kindergarten. But during her first quarter at Cal Poly, friends got her involved constructing the Cal Poly Rose Parade float. She said, “I thought welding was the coolest thing I’d ever done.” From that experience, she caught the bug to build and told her parents she wanted to change majors to mechanical engineering. She mastered the calculus, physics and chemistry required and transferred majors by the end of her freshman year. Now she’s a shop technician, sponsored by Solar Turbines to teach others how to use the equipment.

“I love the hands-on part of it,” she said, and the comprehensive perspective she gains by making things she envisions. Because of her firsthand experience, she understands the trade-offs in the manufacturing process. “Just because a computer can make it doesn’t mean a machine can do it or do it efficiently,” she said. “There are costs to every design decision.”

Donations from Alumni and Industry Helped Make the Mustang ‘60 Lab a Reality

“Cal Poly is one of the few campuses to have a shop like this,” she said. “If other schools do have one, you have to be associated with a class to use it, and you have to pay to use it. Here, you can be any major and use it for any project and there’s no charge. It’s mind-boggling.”

Specifications
The Mustang ‘60 shop has two main rooms. One is outfitted for wood with a table saw, compound sliding miter saw, routers, planers, sanders and a band saw. The other is for metal, with lathes, mills, drill presses, welding equipment and three state-of-the-art CNC machines (computer-controlled machining devices).

While many of the projects are sponsored by industry and cloaked by non-disclosure agreements, the projects they can talk about include an electronically actuated prosthetic hand that was fabricated and assembled by students on the QL+ team, and a closed-loop coolant simulator that PG&E uses at Diablo Canyon power plant to train nuclear engineers.

Graduates have gone on to companies including Apple, General Atomics, and SpaceX (PayPal founder Elon Musk’s start-up now contracted by NASA to deliver payload to the International Space Station).

Forging a New Future
The Mustang ‘60 shop was just a big empty space before John Nielsen (B.S., Mechanical Engineering, 1964) and his wife, Connie, made a gift that provided funds to equip the shop. Senior technician George Leone tapped former student Eric Pulse (B.S., Mechanical Engineering, 2005) to outfit and manage the facility. The Nielsens also funded an endowment that will pay the manager’s salary into perpetuity. “The Nielsens basically changed everything for us,” said Leone. “We realized if we could have a sponsored staff position, we could have sponsored student tech positions, too. For $5,000, someone can pay a student’s employment for the year.”

Solar Turbines took it a step further and set up an en-

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Mary McNally | Photography by Brittany App

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Mechanical Engineering student Katie Ruhm at work in the Mustang ’60 Lab.

Building New Leaders

Robby Nielsen (no relation) was a mechanical engineering major before his experiences in the shop helped him find a fit in a more systems- or process-oriented major: industrial and manufacturing engineering. He worked as a shop technician for about a year before asking if he could redesign the shop for greater efficiency and presented his plan to management. Leone said he considered it for about a second before agreeing. “If they’re up for the challenge, we’re willing to support them in any way we can,” he said, explaining that those opportunities foster initiative and entrepreneurialism. “We want them to be adaptable and have exposure to different things so when they are out in the workforce, they have a bigger toolbox in their brain.”

For his outstanding contributions, he was recognized – founders of ESAero Inc. – in a series on entrepreneurship concept development, aircraft more complex space to house them. The concept for the new facility – adjacent to its website, the company provides the video demos, military and commercial systems, research and development, hybrid propulsion system research and development, and niche engineering support. Foster (B.S./M.S., Aerospace Engineering, 2008), Gibson (B.S., Aerospace Engineering, 2004) and Schiltgen (B.S., Aerospace Engineering, 2004) launched the company in 2003 out of a garage in Arroyo Grande, The Tribune reported. The company is now based at the Oceano Airport.

Russell Fenton receives his Bronze Star.

Civil Engineering Grad Earns Bronze Star in Afghanistan

Army 1st Lt. Russell Fenton (B.S., Civil Engineering, 2008) received the bronze star for his work overseeing construction of combat bases in Afghanistan, the Modesto Bee reported. Fenton lives in Modesto and works as a project manager at Disneyland Resorts as a civilian. He served on the ASI Board of Directors and Poly Reps while on campus. According to the Bee, he earned his medal serving as construction section officer in charge with the Army’s 57thth Engineer Battalion, Joint Task Force Empire, managing the largest construction effort in theater and in Regional Command East history. The bronze star is awarded for acts of heroism, merit or meritorious service in a combat zone.

RPTA Grad Honored as State Tourism Leader

Krista Rupp (B.S., Recreation, Parks and Tourism Administration, 2008) was named a “new leader” in tourism by the California Travel Association, the San Luis Obispo Tribune reported. Rupp is the sales and marketing manager for the Santa Cruz County Conference and Visitors Council. She received her honor at the association’s annual California Travel Summit in Sacramento in summer 2012.

Aerospace Engineering Grads Profiled for Business Success

The San Luis Obispo Tribune in September highlighted grads Trevor Foster, Andrew Gibson and Benjamin Schiltgen – founders of EAero Inc. – in a series on the county’s high-tech firms. According to its website, the company provides the engineering community with cutting-edge system designs, development, testing and demonstration solutions through entrepreneurial concept development, aircraft modifications, military and commercial conceptual air vehicle designs, sub-scale technology demonstrations, hybrid propulsion system research and development, and niche engineering support. Foster (B.S./M.S., Aerospace Engineering, 2008), Gibson (B.S., Aerospace Engineering, 2004) and Schiltgen (B.S., Aerospace Engineering, 2004) launched the company in 2003 out of a garage in Arroyo Grande, The Tribune reported. The company is now based at the Oceano Airport.

Col. Kelly Fisher (B.S., Home Economics, 1989, M.S., Architecture, 1996), was named the first female commander of the California National Guard’s 49th Military Police Brigade in September, the Fairfield Daily Republic reported. The brigade serves as the headquarters for FEMA Region’s IX Homeland Response Force and represents the Western U.S. and territories ready to support civil authorities in chemical, biological, radiological and nuclear events. Fisher served in ROTT at Cal Poly and was a member of the ASI Board of Directors in 1987-88.

Alumna is First Female Commander of 49th Military Police Brigade

The Salinas Californian reported that Jeff Pereira (B.S., Agricultural Management, 1990) has been elected president of the Monterey County Farm Bureau for a two-year term. According to the newspaper, Pereira manages the King City Nursery, serving the vegetable industry with starter plants. He is a native of King City and has served as mayor and councilman there in the past.