Sierra College's "Sierra STEM (Science Technology Engineering & Math) Collaborative" project serves the Sierra Jt. Community College District

- **Provides career exploration**, emphasizing STEM careers and Sierra College technical education pathways, for middle and high school students.
- **Strengthens high school CTE programs** in two career pathways: manufacturing & product development and engineering & design, and links them to Sierra College's Mechatronics, Engineering, Drafting & Engineering Support, Energy Technology, and Welding programs.
- **Strengthens Sierra College CTE programs** through equipment acquisition, cross-sector collaborative activities, industry connections and technical support in adopting and integrating new technologies and instructional methodologies.
- **Builds teacher and faculty instructional capacity** through professional development & externship opportunities.

Over the past five years, the **Sierra STEM** project has been a partner with Placer and Nevada County feeder schools to transform technical education that aligns with Sierra College CTE programs including:

- Colfax High School – Tech Essentials and Project Lead The Way with CAD/CAM emphasis (A-G)
- Placer High School – Advanced Mechatronics and Welding
- Del Oro High School – Tech Essentials, Mechatronics and Welding
- Oakmont High School – Design Tech International Baccalaureate, CAD (Skills USA), Intro to Shop
- Roseville High School – Geometry in Construction
- Rocklin High School – Engineering Support Technology (Skills USA)
- Lincoln High School –Project Lead The Way with CAD/CAM emphasis (A-G)
- Nevada Union High School – Pre-Engineering with product design/development emphasis (A-G)
- Chicago Park Charter School – CACT Tech-Explorer (catapult) lab imbedded into new technology lab

These schools have leveraged more than $429,500 in additional resources to:

- Improve or develop CTE laboratories - $255,000
- Purchase new equipment - $121,500
- Train teachers in new technologies/delivery systems/develop curriculum - $53,000

Key accomplishments:

- **41,850** students explored careers & STEM pathways and Sierra College CTE programs at 11 high schools and three middle schools using Career Cruising software and customized lesson plans.
- **5,600** high school and middle school students attended presentations highlighting manufacturing & product development and engineering & design career pathways and Sierra College CTE programs.

- Transportation was provided for **2,400** high school students to Sierra College's Career and Technical Education Day in 2009 and 2010; coordination and transportation was provided for **75** students from Roseville High School and North Tahoe High School on a Sierra College CTE program tour and tour at Telefunken in 2012.
- **74** high school students participated in four 2012 Manufacturing Day industry tours.
- **3,300** high school students participated in strengthened CTE programs of study which included applied mathematics.
- **650** middle and high school students participated in a manufacturing simulation project using the NSF Tech-Explorer catapult project.
- **510** elementary, middle and high school students piloted new applied mathematics instructional activities.
- **550** teachers and faculty participated in 41 professional development events.
- Teachers and faculty completed **426** hours of externships with business & industry partners.

Additional benefits to Sierra College CTE programs of study:

- Lab equipment was purchased for the Applied Art & Design, Drafting & Engineering Support, Welding and Mechatronics programs.
- Lab equipment was purchased and support was provided for curriculum development for the Energy Technology program (ESS).
- Equipment and materials for a mobile welding lab (one of >10 in the country) were purchased in partnership with Perkins 1C and CACT.
- Faculty release time was provided for the Engineering & Applied Art and Design programs.
- Faculty were certified in national skills training (OSHA 510, Building Performance Institute, and NCCER) in partnership with the Perkins 1B statewide Industrial & Tech Ed Collaborative and CACT.
- Welding and Math faculty collaborated to integrate mathematics into WT10 and WT15 curriculum as part of a NSF funded project under the University of West Virginia at Parkersburg.
- In partnership with CACT, a Mechatronics promotional DVD was produced and distributed to attract employers and future students.
- Assistance to the Tahoe Truckee Campus Mechatronics program populated under-enrolled classes and strengthened connections with regional employers.

- Planning and facilitation support to the BAAPE Division resulted in a cross-disciplinary "Built Environment Science and Technology" program concept and the development of a funding proposal in partnership with the Sierra College Foundation.

"It made me rethink what Sierra College has to offer."
"It was inspirational to know there are many jobs out there that can be fun."
"I'm thinking about going into a career in welding."
"It got me thinking about what I'm going to do to get better at math."
"I was borderline on Mechatronics but now I'm very interested."

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