



PLAN. INVEST. TRACK.

Fund: SWP Regional Share (40%), Year: 2017-18 Produced: Apr 4, 2018, 2:13 PM PDT



IEDRC P01 Mechatronics Technician Training Pathway

Description

DESCRIPTION: APPROVED-WILL BE FUNDED IN ALLOCATION YEAR BEGINNING 2018/19. While the demand for skilled Mechatronics Technicians is growing rapidly there are generally only a few Technicians required at each industry site. Therefore, developing training programs for incumbent workers is a challenge. There is also a need to establish education to career pathways for entry-level workers. Limited facilities exist within the region which has the resources to provide a full curriculum for Mechatronics training.

INDUSTRY SECTORS: Advanced Manufacturing;

START DATE: Wed Aug 01 2018

END DATE: Wed Dec 30 2020

LEAD INSTITUTION: Chaffey College

READ THE SWP LEGISLATION: Yes

MEETS REQUIREMENTS OF SWP LEGISLATION: Yes

WHAT NEEDS MOTIVATE THIS PROJECT AND HOW WILL THE PROJECT ADDRESS THESE NEEDS?

This program aligns with the Mechatronics Technician standards developed under Round One funding. This funding will allow for the development of noncredit and credit curriculum, high school partnerships and "Learn and Earn" program throughout the region as well as staffing requirements. This pathway will increase enrollment at the regional colleges that are providing credit-based programs in these areas. Currently, there are limited or no options for industry to obtain training for their incumbent workers. By developing a Mechatronics Technician Training Pathway in various locations within the region, large and small employers have more options to meet the need for a skilled workforce in their respect locations. Working with the industry, a flexible schedule can be developed and implemented to meet established goals.

Contacts

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Labor Market Information

Mechatronics Technician

OCCUPATIONS:

49-2094 Electrical and Electronics Repairers, Commercial and Industrial Equipment
17-3024 Electro-Mechanical Technicians
49-9041 Industrial Machinery Mechanics
49-9043 Maintenance Workers, Machinery

REGION: Inland Empire/Desert

COUNTY: San Bernardino

PROGRAMS:

Chaffey College - Electro-Mechanical Technology (093500)
Barstow College - Industrial Systems Technology and Maintenance (094500)
Barstow College - Welding Technology (095650)
Barstow College - Electronics and Electric Technology (093400)
San Bernardino Valley College - Machining and Machine Tools (095630)
San Bernardino Valley College - Electronics and Electric Technology (093400)
Norco College - Manufacturing and Industrial Technology (095600)
Chaffey College - Electrical Systems and Power Transmission (093440)

LIVING WAGE ATTAINMENT: Robotics Mechatronics_Oct2017.pdf

Outcomes

Investment Plan

Chaffey: The Program Manager will oversee the development and maintenance of the Mechatronic's Program. This individual will also ascertain that the students are meeting the industry standards.

Occupational Clusters

Chaffey College - Electro-Mechanical Technology (093500)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	23	2015-16

Barstow College - Industrial Systems Technology And Maintenance (094500)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	255	2015-16

Barstow College - Welding Technology (095650)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	287	2015-16
Number of Students Who Got a Degree or Certificate	7	2015-16

Barstow College - Electronics And Electric Technology (093400)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	121	2015-16

San Bernardino Valley College - Machining And Machine Tools (095630)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	110	2015-16
Number of Students Who Got a Degree or Certificate	4	2015-16

San Bernardino Valley College - Electronics And Electric Technology (093400)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	467	2015-16
Number of Students Who Got a Degree or Certificate	21	2015-16

Norco College - Manufacturing And Industrial Technology (095600)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	148	2015-16
Number of Students Who Got a Degree or Certificate	10	2015-16

Chaffey College - Electrical Systems And Power Transmission (093440)

METRIC	BASELINE	BASELINE YEAR
Number of Enrollments	615	2015-16

Task Force Recommendations

Student Success

1. Broaden and enhance career exploration and planning, work-based learning opportunities, and other supports for students.
2. Improve CTE student progress and outcomes.

Career Pathway

3. Develop and broadly publicize industry-informed career pathways that prepare students for jobs needed within the regional labor market.

Curriculum

7. Evaluate, strengthen, and revise the curriculum development process to ensure alignment from education to employment.
10. Facilitate curricular portability across institutions.

CTE Faculty

13. Increase the pool of qualified CTE instructors by addressing CTE faculty recruitment and hiring practices.
15. Enhance professional development opportunities for CTE faculty to maintain industry and program relevance.

Regional Coordination

17. Strengthen communication, coordination, and decision-making between regional CTE efforts and the colleges to meet regional labor market needs.

Funding

21. Create a sustained, public outreach campaign to industry, high school students, counselors, parents, faculty, staff, and the community at large to promote career development and attainment and the value of career technical education.
22. Establish a sustained funding source to increase community colleges' capacity to create, adapt, and maintain quality CTE courses and programs that are responsive to regional labor market needs.

Workplan

Risks

Chaffey College: 1) Time requirement for curriculum approval; 2) Difficulty in recruiting and hiring industry professionals as adjunct instructors due to the inability to meet minimum qualifications; Barstow College: As a rural community college enrollment may be a challenge; however, we have established related programs. We feel this is something that can improve once awareness of the program is established. Marketing efforts on which the region is concentrating will help to increase enrollment in our programs. Infrastructure and facilities may be a risk since we are growing rapidly, but this is something our district is looking to resolve for our current needs and growth. San Bernardino Valley College: Good job opportunities are expected to arise in the coming years. If we do not offer this project, our students will not learn these competencies; therefore, they will not be prepared. Norco: Industry engagement is critical to the success of Mechatronics programs. Because skills, employment, and workforce practices change so quickly, it is important to build strong relationships with employers to aid in job placement, work-based learning opportunities, and other forms of engagement.

RESPONSIBLE PERSON: Vanessa Thomas (vanessa.thomas@chaffey.edu)

LEAD INSTITUTION OR PARTNER: Chaffey College

PARTICIPATING INSTITUTIONS: Chaffey College, San Bernardino Valley College, Norco College, Barstow College

ACTIVITY TIMEFRAME: Year 3

MAJOR ACTIVITIES: Chaffey: 1) Work with Inland Empire/Desert Regional industry to align and develop curriculum for the Mechatronics program. The region will align meetings with existing MCIE quarterly meetings as well as the regional advisory quarterly meetings. Participating colleges must attend at least four meetings per year—at least one meeting outside of their respective local program area. 2) Participate in program alignment across the region with regional colleges with similar programs to explore sharing curriculum. College representatives will be reimbursed for travel (mileage) to the curriculum alignment meetings. 3) Expand the number of program offerings within the region that provide a nationally recognized certification. 4) Increase the number of industry professional instructors throughout the region by offering "Tech-to-Teacher" training sessions. These two-day, eight-hour sessions will teach new instructors how to manage the classroom environment. 5) Increase the number of participating colleges. The colleges participating in Round 1 funding were Chaffey College, San Bernardino College, and Norco College. In addition to the Round 1 participating colleges, and Barstow College will participate in Round 2. 6) Students are expected to earn a certificate and/or associate's degree in Mechatronics. By obtaining the aforementioned certificate/degree, students have an opportunity to earn a living wage. Barstow: Initially we will need to identify the gaps from our current offerings to identify what additional mechatronic curriculum and pathways we will need to develop. Once we identify what curriculum and pathways we need to establish, we will need to develop the curriculum and programs through the curriculum process. While the curriculum is being developed, we can identify equipment and supplies needed for the program. We will need to identify any third party certifications available such as NCCER to provide students another advantage in transitioning into the workforce or promoting. Professional development may be required for faculty and other staff to ensure we stay current with industry trends and any training on equipment, curriculum, etc. San Bernardino Valley College: Develop the appropriate curriculum and align it with the needs of the industry and employers. Procure the necessary equipment needed in the laboratories. Provide professional development to the faculty in order to enhance their knowledge in the use of the equipment. Create pathways with the high schools. Promote and offer the Mechatronics Certificate program to the community targeting the minorities, underserved and the unemployed. Norco: Norco College will continue to expand curriculum and program offerings in mechatronics. In addition, Norco College will focus heavily on employer engagement in Mechatronics. This includes, but is not limited to, expanded work-based learning opportunities, enhanced industry advisory activities, joint partnerships with workforce stakeholders and regional high schools.

MAJOR OUTCOMES: Chaffey: 1) The “Techs-to-Teachers” workshop will be packaged for use in all CTE disciplines. Best practices will be disseminated throughout the region in order to make it available to all colleges. 2) The Mechatronics Technician program is ideal for regional collaboration in that it includes four colleges from four distinct districts—Chaffey College, San Bernardino Valley College, Norco College, and Barstow College. 3) LMI data shows that there will be 2,063 job openings from 2016-2021 (a 12% increase). The Mechatronics Technician program will be the catalyst to bridge the employment gap within the mechatronics engineering cluster of occupations. 4) The Mechatronics Technician program will have the most significant impact on the following Strong Workforce Metrics: a] Number of course enrollments b] Number of students who earn a degree or certificate c] Job closely related to field of study. Students have the potential to impact the following metrics: a] Become employed in the second fiscal quarter after exit b] Become employed in the fourth fiscal quarter after exit c] Increase median earnings in the second fiscal quarter after exit. d] Increase percentage change in earnings for exiting students, one year before and one year after earning their degree or certificate. 5) In order to create viable long term pathways, the Mechatronics Technician program will do the following: a] Generate FTES, b] Meet industry demand, c] Create a packaged “Tech-to-Teacher” process guide to be used in multiple disciplines, d] Develop articulation agreements with high schools within the participating college’s respective areas, e] Develop articulation agreements with local four-year institutions in order to create transfer opportunities for students. f] Provide students with a nationally recognized industry certification. 6) High school partners that can lead into the Mechatronics Technician program: Chaffey College Fontana Unified High School Upland Unified High School District Chaffey Joint Unified High School District 7) Faculty and administrative support for each college are listed below. 1. Chaffey College- a. Faculty: Elmano Alves b. Administrative Support: Dr. Meridith Randall 2. Barstow College- a. Faculty: Todd Bartholow b. Administrative Support: Sandi Thomas 3. San Bernardino Valley College- a. Faculty: Anthony Ababat b. Administrative Support: Albert Maniaol Barstow: Adding additional curriculum and pathways to our existing related mechatronics programs will help to fill the area and regional shortage of skilled workers. We have had advisory input for the need to expand our programs to meet industry needs and this funding along with previous funding we have received to build our industrial maintenance/electrical instrumentation/welding technology programs will be a great asset to our students and our region. While we are a smaller rural community college with a headcount between 4,500 and 5,500 annually (including a large online program) and since we have an existing related programs, we anticipate having a significant impact on the strong workforce programs metrics including enrollment based on the size of our college and annual enrollments. We have already developed and implemented related programs including industrial maintenance/industrial electrical and instrumentation/welding and have taken the same steps in the proposed additional mechatronics pathways. Many of the processes can be duplicated, which provides Barstow Community College an advantage in this area. This includes: curriculum development processes, infrastructure/supplies/equipment already purchased, NCCER approved Accredited Training and Education Facility, qualified and NCCER approved master/craft instructors, etc. We have an advantage in improving high school partnerships since we have already established partnerships with our feeder schools including our “College Career Pathways” program, concurrent enrollment, working on articulation and other K12 activities. High School Partners: None of our current feeder high schools have an Electrical Technician, Mechanical Technician, and/or Robotics program. Although, we do have a partnership with Barstow High School for a “College Career Pathways” program in which we bus high school juniors and seniors to our off-campus facility to participate in our Industrial Maintenance & Technology program under concurrent enrollment exemption. They are looking at options of developing feeder programs to accompany their welding technology program. San Bernardino Valley College: A certified Mechatronics Technician will function as a well-rounded skilled individual to work in a complex Industrial Automation Systems or to various manufacturing companies. He or she will be able to: 1. Localize, identify causes and sources, correct where possible and/or document malfunctions to be passed on to the appropriate experts for resolution, or (where appropriate) exchange or replace defective components. 2. Recognize potential or impending malfunctions and contact expert assistance to keep the production line functioning and to prevent production loss. 3. Perform routine, preventive maintenance. 4. Understand and explain the principal operations of the mechatronic subsystems in a complex system. 5. Understand and explain how these subsystems work together. 6. Read and understand the technical documents, reports and outlines specific to the system and subsystems, and will be able to consult with experts. 7. Work effectively as a team-member and coordinate the activities with upstream and downstream operations. 8. Understand and implement safety regulations required for operation of the system. San Bernardino Valley College Mechatronics Training Pathway will have an immediate and significant impact on Strong Workforce metrics in that an integrated set of Automation career pathways map to industry priorities for high wage, high skill, high income jobs, offering entry points into multiple certificate programs aligned with building automation and industrial automation occupations. We plan to create a long-term pathways and demonstrate the potential for sustainability by expanding Mechatronics project to encompass Building Automation and Industrial Automation opens opportunities for student advancement along clear career pathways. Norco: Develop technician, mechanic, and maintenance programs in industrial automation, facilities maintenance, electro-mechanical, and other needed skillsets. Combine educational

programs with work-based learning opportunities. Host Industrial Automation, Mechatronics, etc. advisory meetings.

Budget Breakdown

Chaffey College	SWP Regional Share (40%)	1000 - Instructional Salaries	\$7,100
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08/2018-6/2019. Salary for Faculty member on a special assignment to write and create the curriculum for the Mechatronics Technician program. Our expectations is 120 hours for the 15 courses at the rate of \$59.00.

Chaffey College	SWP Regional Share (40%)	1000 - Instructional Salaries	\$5,000
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08/2018-12/2020. Stipends for industry professionals to attend "Tech-to-Teacher" sessions. Ten stipends are offered at the rate of \$500 per person for two 8-hour sessions. Beginning fall 2018 we will recruit 2 faculty members to attend the training sessions. 2019/20 and 2020 there will be 4 faculty members who will attend the training session per academic year.

Chaffey College	SWP Regional Share (40%)	3000 - Employee Benefits	\$90,045
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08/2018-12/2020. Benefits for the Mechatronics Program Manager.

Chaffey College	SWP Regional Share (40%)	2000 - Non-Instructional Salaries	\$118,259
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08/2018-12/2020. Mechatronics Program Manager (professional expert) who will ensure the students are receiving their certificate of completion and managing the program. The Professional Expert is expected to work 16 hours per week for 54 weeks at the rate of \$53.68.

Chaffey College	SWP Regional Share (40%)	4000 - Supplies and Materials	\$3,000
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08/2018-12/2020. Training supplies such as Career readiness Instructional materials.

Chaffey College	SWP Regional Share (40%)	4000 - Supplies and Materials	\$1,845
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Supplies/Materials (\$615 x 3 years = \$1,845)

Chaffey College	SWP Regional Share (40%)	5000 - Other Operating Expenses and Services	\$1,500
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Travel & Conference (\$500 x 3 years = \$1,500)

Chaffey College	SWP Regional Share (40%)	5000 - Other Operating Expenses and Services	\$750
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Mileage (\$250 x 3 years = \$750)

Chaffey College	SWP Regional Share (40%)	4000 - Supplies and Materials	\$22,500
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ICTP training supplies (\$7,500 x 3 years = \$22,500)

Norco College	SWP Regional Share (40%)	1000 - Instructional Salaries	\$7,100
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Curriculum Alignment (\$59.00 x 120 hrs = \$7,080 rounded up)

Norco College	SWP Regional Share (40%)	1000 - Instructional Salaries	\$5,000
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08/2018-12/2020. Stipends for industry professionals to attend "train-the-trainer" sessions. Ten stipends are offered at the rate of \$500 per person for two 8-hour sessions. Beginning fall 2018 we will recruit 2 faculty members to attend the training sessions. 2019/20 and 2020 there will be 4 faculty members who will attend the training session per academic year.

Norco College	SWP Regional Share (40%)	2000 - Non-Instructional Salaries	\$179,707
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08/2018-12/2020. To pay for the Mechatronics Program Manager (professional expert) who will ensure the students are receiving their certificate of completion and managing the program. The Professional Expert is expected to work 20 hours per week for 54 weeks at the rate of \$53.68.

Norco College	SWP Regional Share (40%)	4000 - Supplies and Materials	\$3,000
Training supplies (\$1,000 x 3 years = \$3,000)			
Norco College	SWP Regional Share (40%)	4000 - Supplies and Materials	\$693
Office supplies (\$693 x 1 year = \$693)			
Norco College	SWP Regional Share (40%)	5000 - Other Operating Expenses and Services	\$50,000
Industry Outreach/Engagement (\$25,000 x 2 year = \$50,000)			
Norco College	SWP Regional Share (40%)	5000 - Other Operating Expenses and Services	\$3,000
Travel & Conference (\$1,000 x 3 year = \$3,000)			
Barstow College	SWP Regional Share (40%)	1000 - Instructional Salaries	\$60,000
Instructional Salaries (\$20,000 x 3 year = \$60,000)			
Barstow College	SWP Regional Share (40%)	2000 - Non-Instructional Salaries	\$39,999
Non-Instructional Salaries (\$13,333 x 3 year = \$39,999)			
Barstow College	SWP Regional Share (40%)	3000 - Employee Benefits	\$39,999
Employee Benefits (\$13,333 x 3 year = \$39,999)			
Barstow College	SWP Regional Share (40%)	4000 - Supplies and Materials	\$22,500
Supplies and Materials (\$7,500 x 3 year = \$22,500)			
Barstow College	SWP Regional Share (40%)	5000 - Other Operating Expenses and Services	\$15,000
Other Operating Expenses and Services (\$5,000 x 3 year = \$15,000)			
Barstow College	SWP Regional Share (40%)	6000 - Capital Outlay	\$72,000
Equipment (\$24,000 x 3 year = \$72,000)			
San Bernardino Valley College	SWP Regional Share (40%)	1000 - Instructional Salaries	\$61,200
Adjunct Salaries			
San Bernardino Valley College	SWP Regional Share (40%)	1000 - Instructional Salaries	\$17,640
Non-Instructional Salaries (\$5,880 x 3 year = \$17,640)			
San Bernardino Valley College	SWP Regional Share (40%)	3000 - Employee Benefits	\$17,946
Benefits for Adjunct			
San Bernardino Valley College	SWP Regional Share (40%)	4000 - Supplies and Materials	\$20,205
Instructional Supplies			
San Bernardino Valley College	SWP Regional Share (40%)	5000 - Other Operating Expenses and Services	\$9,000
Curriculum Assessment -3rd Party Field Expert (\$3,000 x 3 year = \$9,000)			

San Bernardino Valley College	SWP Regional Share (40%)	6000 - Capital Outlay	\$64,518
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Lab equipment (Amatrol/Allen Bradley) -\$64,518 x 1 yrs = 64,518

San Bernardino Valley College	SWP Regional Share (40%)	6000 - Capital Outlay	\$59,492
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Lab equipment (Amatrol/Siemens) (\$59,492 x 1 year = 59,492)

Norco College	SWP Regional Share (40%)	5000 - Other Operating Expenses and Services	\$1,500
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Mileage (\$500 x 3 year = \$1,500)

Budget Totals

INSTITUTION	CODE	TOTAL
Barstow College	1000 - Instructional Salaries	\$60,000
Barstow College	2000 - Non-Instructional Salaries	\$39,999
Barstow College	3000 - Employee Benefits	\$39,999
Barstow College	4000 - Supplies and Materials	\$22,500
Barstow College	5000 - Other Operating Expenses and Services	\$15,000
Barstow College	6000 - Capital Outlay	\$72,000
	Barstow College Total:	\$249,498
Chaffey College	1000 - Instructional Salaries	\$7,100
Chaffey College	1000 - Instructional Salaries	\$5,000
Chaffey College	3000 - Employee Benefits	\$90,045
Chaffey College	2000 - Non-Instructional Salaries	\$118,259
Chaffey College	4000 - Supplies and Materials	\$3,000
Chaffey College	4000 - Supplies and Materials	\$1,845
Chaffey College	5000 - Other Operating Expenses and Services	\$1,500
Chaffey College	5000 - Other Operating Expenses and Services	\$750
Chaffey College	4000 - Supplies and Materials	\$22,500
	Chaffey College Total:	\$249,999
Norco College	1000 - Instructional Salaries	\$7,100
Norco College	1000 - Instructional Salaries	\$5,000
Norco College	2000 - Non-Instructional Salaries	\$179,707
Norco College	4000 - Supplies and Materials	\$3,000
Norco College	4000 - Supplies and Materials	\$693
Norco College	5000 - Other Operating Expenses and Services	\$50,000
Norco College	5000 - Other Operating Expenses and Services	\$3,000
Norco College	5000 - Other Operating Expenses and Services	\$1,500
	Norco College Total:	\$250,000
San Bernardino Valley College	1000 - Instructional Salaries	\$61,200
San Bernardino Valley College	1000 - Instructional Salaries	\$17,640
San Bernardino Valley College	3000 - Employee Benefits	\$17,946
San Bernardino Valley College	4000 - Supplies and Materials	\$20,205
San Bernardino Valley College	5000 - Other Operating Expenses and Services	\$9,000
San Bernardino Valley College	6000 - Capital Outlay	\$64,518
San Bernardino Valley College	6000 - Capital Outlay	\$59,492
	San Bernardino Valley College Total:	\$250,001
	TOTAL PROJECT COST:	\$999,498



