

# Form: "PSR 2021 INSTRUCTIONAL Comprehensive Cohort B"

Participating Area: Industrial Electrical Technology Cohort-B 934 I-CTE

Show All Possible Responses

**\* Response is required**

## 1. PROGRAM OVERVIEW

### \* Program Title & Code

#### Program Title

Industrial Electrical Technology / Mechatronics  
(Max chars: 100)

#### Program Code

934 I-CTE  
(Max chars: 100)

### \* 1a. Select the Chaffey Goals that directly relate and are MOST relevant to your program.

Goals are numbered for the purpose of making reference points so that PSR writers can identify and locate which Chaffey Goals relate to their program. Goal numbers do not represent priority numbers.

- Goal 1: Equity and Success--Chaffey College will be an equity-driven college that fosters success for all students.
- Goal 2: Learning and Completion--Chaffey College will ensure learning and timely completion of students' educational goals.
- Goal 3: Community Opportunities and Needs--Chaffey College will develop and maintain programs and services that maximize students' opportunities and reflect community needs.
- Goal 4: Technology--Chaffey College will optimize the use of technological tools and infrastructure to advance institutional efficiency and student learning.
- Goal 5: Efficiency--Chaffey College will efficiently and effectively manage systems, processes, and resources to maximize capacity.
- Goal 6: Agility--Chaffey College will responsively adapt to changes in students' academic and career needs.
- Goal 7: Professional Learning--Chaffey College will prioritize and align professional learning for all employees to support the achievement of Chaffey Goals.

### \* 1b. Describe how your program aligns with the Chaffey Goals. Please provide supporting statements and/or examples.

Refer back to the Chaffey Goals marked above (e.g., Goal 4: supporting statements of how program aligns with this goal).

Goal 1: Equity and Success - The strategic plan for the IET department along with the Chaffey community specifies measurable outcomes for equitable education, with a focus on equity for all students, and progress towards achievement can be evaluated and shared with the campus community. Recognizing the "knowledge-gap", the IET department is putting the educational resources in place to cultivate the next generation of graduates among the different age, gender, race, and ethnic groups classified as entrants into the labor force and those exiting. In preparation for career success, affordability (distance education and non-credit curricular design focus, and providing low cost and no-cost textbooks), hands-on real-world learning opportunities (internships), and supportiveness has been the dominant theme in making program courses more attractive to students. To further promote support for the program's female students, our goal is to reach a larger number of female students and to share career advice in the industrial technology. Promoting diversity goes well beyond improving gender equality and must include enabling opportunities for underrepresented minority students. To close an identified gap, effort is being made by the program to attract more women and underrepresented minorities with expanded outreach to the community.

As a department, this was a call for action and an opportunity to demonstrate inclusion. Recruitment of faculty has yielded well-rounded professionals that are reflective of the race, ethnic, gender imbalance, and cultural backgrounds with which students can identify and recognize as examples of occupational achievement.

Goal 2: Learning and Completion - Ensuring learning and timely completion of students' educational goals, we continue to offer short term and late start classes. Also, we maintain morning and evening classes which fit into students' schedules. We have added Hybrid classes, as well as online classes to the program for students' flexibility. Students can earn their level 1 certificate within two semesters, and their level 3 within two years. We also have stackable certificates between IET, Electromechanical, and Mechatronics.

Goal 3: Community Opportunities and Needs - The IET program continues to develop and maintain programs and services that maximize students' opportunities and reflects community needs. The IET, Electromechanical & Mechatronic programs are key in fulfilling needs within the Inland Empire. The opportunities for students' in the electromechanical / robotic fields are currently growing. Many

of the companies are automating their processes and are in need of maintenance personnel to repair, install, and maintain their systems. The IET/Mechatronics program achieved the ability to teach [Fanuc robot CERT for Handling Tool Operations and Programming](#) in 2020. This will align with Chaffey's goal to develop and maintain programs and services that maximize students' opportunities within our community. Moreover, with the electrification of the State of California's new regulations, Title 24, Zero-Net Energy (ZNE) along with reducing greenhouse gases (GHG) through AB 32, continues to drive opportunities for the students in the IET programs. ([Evidence document](#))

Goal 4: Technology - The IET program must optimize the use of technological tools and infrastructure to advance institutional efficiency and student learning. Technological tools and infrastructure are key to [Industry 4.0 and automation](#), which is aligned with our programs. Ever changing and advancing technology is ingrained in our student learning and reflected in the program outcomes. The IET program must continually adapt the program meeting students' learning needs. One example of this is readying the Mechatronic program for robotics with introductory programming and hardware. Also, in getting an instructor CERT from Fanuc, the leader in industrial robots, we have the opportunity to offer our students a level 1 Fanuc certificate (Handling Tool Operations and Programming) which is industry recognized. We can now expand the Mechatronics / Electromechanical programs with these technologies.

Note to PSR readers, any underlined phrase will have a file attachment giving much more details or examples.

## PRIOR VIP GOALS STATUS/PROGRESS

### **1c. Please list the program's VIP Goals from the last PSR cycle, and report on the progress (complete, ongoing, etc.).**

VIP goal 1 - Align with industry's needs by enhancing curriculum and student outcomes, by providing our diverse students with a safe, engaging environment, through expanding current technologies that facilitate student learning and success.

Ongoing- Over the last PSR cycle we have completed key parts of our VIP goal 1 by modifying, adding and enhancing safer equipment wiring to our labs. We have also made changes to the curriculum introducing Solar into the level 1 certificate, replacing IET-409 static devices with IET-420 fundamentals of control systems technology into our level 2 certificate. We also updated the software and hardware to align with industry for the Programmable Logic Controllers (PLC) classes. This was a key first step in advancing the program to meet the current and future needs of Industrial Automation. There is still some ongoing work in this area to improve student success.

VIP Goal 2 - Review curriculum and lab equipment interfaces to support manufacturing needed for communication 'Industry 4.0' automation programming and robotics.

Ongoing- during the last PSR cycle we were able to add basic robotics incorporating it into the existing Mechatronics classes. We have set our program up to expand within this area, qualifying Chaffey College as a Fanuc CERT school, one of only a few in the State. Now as a CERT school, we can develop classes and curriculum for a robotics program as our next steps.

VIP Goal 3 - Work to reduce the cost of books for students and expand enrollment in the IET program fitting our diverse students need by offering DE courses, hybrid courses, Fast track I and fast track II, and morning and evening classes to serve larger number of our students.

Ongoing- during the last PSR cycle we were able to reduce the cost of textbooks for students in 6 classes and as we continue to update our programs and can depend on the LMS systems that we have incorporated to offset the textbooks we had been using. We hope to expand in this area decreasing the classes that require books to be purchased.

## OTHER RESOURCES REQUESTS

### **1d.1 At any point during the past PSR cycle (last three years), did you have "other resources requests" that were funded by the Resource Allocation Committee?**

If yes, proceed to questions 1d.2. If no, skip to section 2.

If you have items that were funded by Strong Workforce and Perkins, please mark "yes."

Yes

No

### **1d.2 If yes, did those purchases meet the program's intended purpose. Please explain.**

Industrial Electrical Technology (IET) / Mechatronics Programs did receive other resources funded by RAC, Strong Workforce and Perkins.

The program received hardware and software used to update the IET/Electromechanical programs to the latest version used within the industry. The program had been using outdated hardware / software that ran on Windows 7 devices that were no longer supported. Our intended purpose is to expose students to the most relevant equipment and software which aligns with industry. We have been able to update the computers to Windows 10 running the latest operating systems, meeting the program's intended purpose. We were also able to conduct courses online that would have had to be canceled.

Additionally the Mechatronics program is a new program within IET. Equipment had been received to enhance that program as we were able to deliver classes for the first time, Mechatronics leads to certificates and a degree. The intended purpose was to have materials and equipment to support and offer these classes to students. The items purchased met this need and we are expecting more Mechatronics certificates and degrees being applied for. As of this 2019-2020 data report we have only 1 certificate awarded. However classes required for Mechatronics certificate/degree are scheduled for this spring 2021, giving students the opportunity to complete the program. Overall, without the items supplied we would not have been able to offer all the classes in Mechatronics. All the items funded met our program's intended purposes.

## 2. EVIDENCE--EQUITY

The evidence section comprises of the following three distinct subsections: equity, program data (includes CTE data), and learning outcomes.

"Equity" represents the first element of the EVIDENCE component of the PSR evaluation. Please reference the Equity Data file to evaluate the following areas.

### 2a.1 Concerning GENDER/IDENTITY, identify important EQUITY developments and trends.

Review data over the last six years.

<b>Response Legend:</b> 1 = Increase 2 = Decrease 3 = No Change (plus or minus 2%) 4 = No or Insufficient Data Available				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Number of enrollments by males	✓			
Number of enrollments by females	✓			
Success rate by males		✓		
Success rate by females	✓			
Retention rate by males		✓		
Retention rate by females			✓	

### 2a.2 Concerning RACE/ETHNICITY, identify important EQUITY developments and trends.

Review data over the last six years.

<b>Response Legend:</b> 1 = Increase 2 = Decrease 3 = No Change (plus or minus 2%) 4 = No or Insufficient Data Available				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Number of enrollments by African American	✓			
Number of enrollments by Asian	✓			
Number of enrollments by Caucasian		✓		
Number of enrollments by Hispanic	✓			
Number of enrollments by other race/ethnicity	✓			
Success rate by African American		✓		
Success rate by Asian		✓		
Success rate by Caucasian		✓		
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

Success rate by Hispanic		✓		
Success rate by other race/ethnicity				✓
Retention rate by African American			✓	
Retention rate by Caucasian		✓		
Retention rate by Asian		✓		
Retention rate by Hispanic		✓		
Retention rate by other race/ethnicity				✓

**2a.3 Concerning AGE GROUP, identify important EQUITY developments and trends.**

Review data over the last six years.

<b>Response Legend:</b> 1 = Increase   2 = Decrease   3 = No Change (plus or minus 2%)   4 = No or Insufficient Data Available				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Number of enrollments by age group, 19 or younger	✓			
Number of enrollments by age group, 20-24			✓	
Number of enrollments by age group, 25-29	✓			
Number of enrollments by age group, 30-39	✓			
Number of enrollments by age group, 40-49	✓			
Number of enrollments by age group, 50 or older	✓			
Success rate by age group, 19 or younger		✓		
Success rate by age group, 20-24		✓		
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Success rate by age group, 25-29		✓		
Success rate by age group, 30-39		✓		
Success rate by age group, 40-49		✓		
Success rate by age group, 50 or older				✓
Retention rate by age group, 19 or younger		✓		
Retention rate by age group, 20-24		✓		
Retention rate by age group, 25-29		✓		
Retention rate by age group, 30-39		✓		
Retention rate by age group, 40-49			✓	
Retention rate by age group, 50 or older				✓

**2a.4 Concerning OTHER CHARACTERISTICS, identify important EQUITY developments and trends.**

Review data over the last six years.

<b>Response Legend:</b> 1 = Increase 2 = Decrease 3 = No Change (plus or minus 2%) 4 = No or Insufficient Data Available				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Number of enrollments by students with disabilities		✓		
Number of enrollments by first generation		✓		
Number of enrollments by economically disadvantage	✓			
Success rate by students with disabilities				✓
Success rate by first generation		✓		
Success rate by economically disadvantage		✓		
Retention rate by students with disabilities				✓
Retention rate by first generation		✓		
Retention rate by economically disadvantage		✓		

**2a.5 Over the last three years, has the number of course sections offering zero-cost textbooks increased, decreased, or remained the same?**

<b>Response Legend:</b> 1 = Increase 2 = Decrease 3 = No Change			
	<b>1</b>	<b>2</b>	<b>3</b>
Number of sections with zero-cost textbooks	✓		

**2b. Considering the evidence provided, elaborate on how the program is providing equity in educational opportunities or support to students and/or identify disparities in equity. Provide specific data that supports your answer.**

If there is a disparity in equity, do not discuss responsive strategies in this section. This is addressed in the STRATEGIC PLANNING section (item 7d).

Industrial Electrical Technology is an equity-driven program that stimulates our student's success.

Considering the evidence provided, the IET program has had an increase in female enrollment of 68.8 percent (1 year change) in a male dominated field. The Female retention rate over the last year has also increased. Enrollment is up over the last six years for African American, Asian, Hispanic and other race/ethnicity.

A few key areas I would like to highlight:

Enrollment is up 22 percent, while success and retention rates are down 10 and 3 percent respectively. Over the past few years the economy has been very good, I have lost several students who were hired and or promoted in this field to meet the ever growing demand for Electrical Technicians, reducing our success and retention rates. However, you also see growth in enrollment. Many students who enter the IET programs are looking to promote into maintenance as a Technician or advance their position to the next level. You can see from the LMI data that a degree in this field is not required; however, without the skills and knowledge gained with the IET programs, advancement is not possible. ([example when one class was asked about job placement or advancement](#)). [LMI data](#) shows an increase in employment by 3% that is 117 annual job openings in the Inland Empire/Desert region. With demand for Robotics skills also increasing, there were 269 job postings just between 2018 - 2019 according to the LMI data.

We also have [data on solar](#). Solar / Energy is also part of our IET program. LMI data predicts solar photovoltaic installers to increase by 28% between 2019 and 2024.

With this information it is easy to see why students are leaving the program early to pursue employment opportunities.

I would also like to point out how the IET programs help to provide equity to our students and community. Many of the class subjects we teach can be taken through the equipment manufactures and other specific industry course offerings. Many of the single subject classes (32 to 36 hours) would cost a student between \$1,500.00 to \$2,000.00 per class. Our program provides hands-on experience with the same equipment and materials as the original equipment manufacturers (OEM) but at a fraction of the cost. ([Links to class costs here](#))([Other training we offer](#)) The equity our courses provide give our diverse students a safe, engaging environment through which they can expand on current technologies that facilitate student learning and success.

Note to PSR readers, any underlined phrase will have a file attachment giving much more details or examples.

### 3. EVIDENCE--PROGRAM DATA

"Program Data" represents the second element of the EVIDENCE component of the PSR evaluation. Please reference the Program Data file to evaluate the following areas.

**3a. Identify important PROGRAM developments and trends.**

Review data over the last six years.

<b>Response Legend:</b> 1 = Increase 2 = Decrease 3 = No Change (plus or minus 2%) 4 = N/A 5 = No or Insufficient Data Available					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Overall Enrollment	✓				
Overall Retention		✓			
Overall Course Success		✓			
FTES	✓				
All ADT degrees awarded					✓
All AA degrees awarded					✓
All AS degrees awarded			✓		
All degrees awarded	✓				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
All Certificate Completion	✓				
Average units earned, ADT degree					✓
Average units earned, AA degree					✓
Average units earned, AS degree	✓				
Average units earned, all degrees	✓				
Average units earned by certificate(s)	✓				
Overall average # of semesters to award degree(s)			✓		
Overall average # of semesters to award certificate(s)			✓		

**3b. Considering the evidence provided, explicitly identify specific program strengths and provide data/evidence that supports your answer.**

This is an assessment of your program's health. Be sure to address any items marked "increase" and/or "no change," if "no change" is a positive reflection of the program (e.g., provide data for stable or increased enrollment, retention, success patterns, or data for increase number of certificates/degrees).

Programs may provide additional information or data that has not been included in their IR files.

The IET/Mechatronics programs have seen a mix of results over the past few years. The data overall is looking to have positive trends.

While our enrollment is up due to the demand of these skills in the workforce, retention and success are slightly lower. As explained in (2b above) many students find employment opportunities before completing their certificates or are taking classes to gain the skills required for a promotion in their workplace (some of our students come into the program with undergraduate degrees already). The IET program was updated within the last six year period making some of the data harder to interpret. Whereas [FTEF](#) and all awards granted certificates and degrees are clearly increasing in the IET program, average units earned requires greater analysis and more data. If we are to average the last 5 years (2015 to 2020), the average units earned for both certificates and degrees would have

remained unchanged (+/- <1%); however, over the six year period it would be slightly lower. In the 2014/2015 school year a very high average number of units earned skewed the data with the outlier of 'average units earned' preventing me from selecting the choice of #3 'No Change (plus or minus 2%)'.

[Why Schools Should Teach Industrial Robotics & Automation](#)

Note to PSR readers, any underlined phrase will have a file attachment giving much more details or examples.

**3c. Considering the evidence provided, explicitly identify specific areas in which the program can improve over the next three years. Provide specific data/evidence that supports your answer.**

Be sure to address any items marked "decrease" and/or "no change," if "no change" reflects an area needing improvement (e.g., provide data for decreased enrollment patterns or the number of certificates/degrees earned). You are only be asked to identify areas of improvements. You will be asked to address the strategies that the program plans to implement in the STRATEGIC PLANNING section (item 7d).

Programs may provide additional information or data that has not been included in their IR files.

Considering the evidence within the [overall data file](#) provided, the IET/Mechatronics programs can improve over the next three years in the overall retention and course success rates. The success rate has dropped to near the lowest point within the 6 years of data provided. With the success rate currently sitting at 85%, this is 10% lower than our best year. The retention rate is also down 3% over the 6 years to 93.5% overall. In both areas success and retention the IET program has the ability to improve.

The Industrial Electrical Technology (IET) / Mechatronics Programs selected goals 2, 3, and 4. We are developing our program around Chaffey's goals of learning and completion, community opportunities, along with [technology](#) which are directly aligned with our programs. Industrial electrical technology and mechatronics are a large part of the fourth industrial revolution, or Industry 4.0 and industrial automation in our country and local community are growing. Over the past few years our advisory meetings, whether regional or our local external companies, all have been expressing the need for student learning and timely completion of their education. The education they are referring to is technology driven, which meets the needs of our community. Electrical technicians and maintenance personnel within the Inland Empire is increasing. Many companies are turning to automation and robotics to run their operations. These companies are e-commerce like Amazon, Walmart, Chewy and Target distribution centers, food and beverage like Mission tortilla, Coke, Frito-Lay, or heavier industries like paper/ boxes, steel along with oil and gas. We hope to provide our students with an equitable outcomes across these growing industry needs.

The Industrial Electrical Technology (IET), Electromechanical / Mechatronics Programs are working to adding credit for prior learning (CPL) cross-walk to increase retention and success rates of our students. [additional information](#)

Note to PSR readers, any underlined phrase will have a file attachment giving much more details or examples.

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## 4. EVIDENCE--Career & Technical Education (CTE)

**4a. Is this a CTE program?**

If yes, proceed to questions 4b-4e. If no, skip to section 5.

Yes  No

### Labor Market Information (LMI): Regional Job Outlook (If Applicable)

**4b. Identify important CTE PROGRAM developments and trends.**

<b>Response Legend:</b> 1 = Middle Skill 2 = Above Middle Skill		
	<b>1</b>	<b>2</b>
CTE: Projected Occupational Growth		✓

**4c. Please reflect on projected occupational growth. Are entry-level and median hourly earnings 10% below or 10% above regional living wages? Please explain and provide specific data that supports your answer.**

This is an opportunity to discuss middle and above middle occupations and whether these occupations are projected to grow or decline.

Programs may provide additional information or data that has not been included in their IR files.

The LMI data shows entry-level wages for mechatronics occupations above the MIT Living Wage by greater than 25%. Mechatronics is expected to have 117 annual job opening through 2023 in the Inland Empire / Desert region. Employers will need to hire 586 workers over the 5 year period between 2018 and 2023. The demand for robotic skills over a 12 month period from August 2018 to July 2019 listed 262 job postings with a specified need for robotic skills. Per our regional and local advisory committee meetings this number is expected to grow.

Collaborative robots market sales alone is expected to grow 44.5% from 2019 to 2025 ([see link](https://www.grandviewresearch.com/industry-analysis/collaborative-robots-market)) <https://www.grandviewresearch.com/industry-analysis/collaborative-robots-market> Collaborative robots (COBOT) are only one of three robotic applications, the largest is the Industrial Robots, and lastly is the mobile robots.

The expectation is that robotic skills will be in demand for years to come. Robotics along with electromechanical skills and knowledge are the combination employers are looking for in their electrical maintenance technicians.

This however is not the only area of growth the IET program covers. Solar / Energy is also part of our IET program. LMI data expected solar photovoltaic installers to increase by 28% between 2019 and 2024.

[Governor Gavin Newsom](#) ordered by 2045 that in the State of California, all California homes and buildings will be fossil-fuel free and efficient. Two key milestones are by 2023 one hundred percent of all new construction will be all-electric construction and by 2030, 3 million buildings will be all-electric, with priority given to those sheltering low-income and disadvantaged Californians. This will open up even more opportunities for our IET students in new construction and retrofits.

Note to PSR readers, any underlined phrase will have a file attachment giving much more details or examples.

## External Oversight: Advisory Committee Information (If applicable)

Programs that have an active advisory committee must complete this section.

**4d. Does your program have an active Advisory Committee (whether on campus or external) that informs the direction and/or operations of the department? If "Yes" Advisory Committee meeting minutes within the LAST 6 MONTHS must be included as an attachment to this form.**

Yes  No

**4e.1 Has the Advisory Committee recommended changes to your program that align with a current or emerging industry?**

Yes  No

**4e.2 If yes, what are the recommendations?**

Discussions topics

Program Schedule / course offerings.

Types of position available

Technologies ' then train electrical/ mechanical need. (On the right track).

Hands on is key, need 3D printing. Robotics for safety is growing. Need of vision picking nuts and bolts from bins. Also for inspections. (Can vision be done remotely)?

Your organization needs

More Mechanical skills needed. Maintenance technicians need both skills electromechanical. (Continue learning / students need to invest in themselves). Give, students guidance to be doing something you like, not just the money.

Where can you see Chaffey's students / programs fitting in your organization?

Electrical, Mechanical, Electromechanical, Mechatronics / Industrial Automation

What student learning outcomes are you looking for

Control Logic and networking. Using PLC / PAC's smart I/O.

Supervising. PLC.

Bend conduit, basic wiring, and hands on practical skill.

Need interviewing skills, (work with Career Center).

Equipment requests and needs.

A/B Logix PLC

VFD ' PowerFlex. Software I/P connections.

CCW- to Drives. Troubleshooting.

Robotics, motion control, servo,

How have your workforce need changed in the past 5 years?

More technical operators, additional robotics equipment, Hands on experience. Basic electrical and mechanical skills needed.

When we say Electrical and Mechanical are they the same person. What are you looking for knowledge skills when they complete.

Trouble shoot electrical and mechanical issues.

agree with that!

Laura Resio Amazon - A lot of our roles include robotics and mechanical, electrical, etc. Most students have 1 but not all.

2+ years of experience with automated conveyor systems and controls

2+ years of experience in the repair of material handling equipment

2+ years of experience conducting predictive and preventative maintenance procedures

1+ years of metal and wood fabrication

1+ years of blueprint and electrical schematic reading

1+ year of knowledge with electrical and electronic principles

Procedure based maintenance experience (PM)

Ability to use and interpret statistical equipment run metrics such as OEE/Up Time to prioritize accordingly

Must prove skills.

Ladder logic, AC/DC electrical hydraulics and Pneumatics, print reading.

Being able to use a multi meter.

Safety ' to wire and use a meter, know what to look for Voltage level. Arc flash, LOTO

The one thing I would like to see is better critical thinking skills.

Soft skill learn to ask or questions critical thinking.

They should know what the career they are getting in to. (ethics also).

VFD, motors, Sensors. Programming and wiring

PLC Programmable Logic Controllers

Reading logic and troubleshooting,

Force-on and off.

Read and write logic.

Analog systems, how it works and troubleshooting.

Certifications / degree, what do you value most?

The tech (student) is more valued in their own advancement. 1 Degree.

Starting to look for certifications and degree (Makes applicant stand out)

Certifications only

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## 5. External Oversight: External Regulations (If applicable)

External regulations apply to areas with outside accrediting agencies. If you DO NOT have external regulations, answer "no" on question 5a and skip 5b.

### ✳ 5a. External Agency

Does the program have external regulations?

Yes  No

### 5b. External Agency Information

If yes, please provide the following information:

- Name of Agency
- Date of last review
- Recommendations made
- Any budgetary or institutional impacts from the recommendations
- Progress on recommendations
- Date of next review

\*Note: more than one external agency can be added in the same field if needed.

N/A

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## 6. EVIDENCE--LEARNING OUTCOMES

"Learning Outcomes" represents the third element of the EVIDENCE component of the PSR evaluation.

### ✳ 6a. Please identify which of the following MANDATORY components have been completed by checking the appropriate boxes.

The Outcomes and Assessment Committee will verify if mandatory components have been fulfilled.

If you have any questions about learning outcomes, please refer to Chaffey College's Outcomes and Assessment website or email Jo Alvarez at jo.alvarez@chaffey.edu

- Current COURSE LOs for every course have been entered into Taskstream's "Course Learning Outcomes (CLOs) Workspace" for each course.
- Current COURSE LOs have been mapped to Institutional Learning Outcomes into Taskstream's "Course Learning Outcomes (CLOs) Workspace."
- Current PROGRAM LOs have been entered into Taskstream's "Program Learning Outcomes (PLOs) Workspace."
- Current PROGRAM LOs have been mapped to Institutional Learning Outcomes in the "Program Learning Outcomes (PLOs) Workspace."

Current PROGRAM LOs have been mapped to align courses to Program LOs (Curriculum Map) in Taskstream's "Program Learning Outcomes Workspace."

**6b. Have you uploaded a current Chronological Assessment Plan (CAP) into the "Program Learning Outcomes (PLOs) Workspace?"**

A CAP is a learning outcomes assessment schedule.

"Current" is defined as two assessment cycles. This means CAPs should project out at least SIX YEARS.

Yes

No

Comment:

**6c. Three-year cycle**

Do you evaluate all courses within the three-year period?

Yes

No

Other:

**6d. Are all COURSE LO assessment results from fall 2017 through fall 2020 entered into Taskstream?**

Yes

No

Other:

## ASSESSMENT REFLECTION

Look over your learning outcomes assessment results for the various COURSES in your program(s).

**6e. Based on learning outcomes assessment results, explicitly identify program strengths. Provide specific data that supports your answer.**

Pay special attention to learning outcomes that HAVE been met.

In reviewing the course SLOs I'm proud to report that many of our learning outcomes have been met, and even exceeded by a small percent to our plan. IET- reported finding in Task Stream of 14 existing classes. Classes using the Amatrol LMS system resources have been most consistent in the evaluation assessment and reporting results, and we see this as a strength. ([See example Amatrol data set](#)). A little bit of back ground on the Amatrol LMS resource; the IET program started using this resource a couple of years ago to reduce or eliminate textbooks cost in some of our classes. Over the last two semesters this has also helped us in our move to online/hybrid learning.

Courses with rubrics for hands-on activities have been very helpful, the following course are an example of that; [IET414](#), IET415, [IET-417](#), [IETMECH-400](#), IETMECH-401 and IET-402 to name a few.

This Amatrol learning management system has helped to provide equity to our diverse student population. Providing online resources and materials that can be accessed through a wide range of devices Smart phones, tablets, computers, and chrome books.

Note to PSR readers, any underlined phrase will have a file attachment giving much more details or examples.

**6f. Based on learning outcomes assessment results, explicitly identify areas in which the program(s) can improve. Provide specific data that supports your answer.**

Pay special attention to learning outcomes that HAVE NOT been met.

Consistent reporting within courses taught by Part-Time Faculty (adjuncts) is an area identified where the program can improve. Follow-up to collect data, results of learning outcomes as well as consistent collection by Faculty is needed. The only class without this finding is IET-484 which is a new class and just offered for the first time in Fall 2020, IET-422. Due to a lack of communication and faculty follow-up, the results of one of the classes (IET-422) were missing data for the 2019/2020 school year. This has now been corrected and updated. Moreover, the program is going to require updates to SLOs due to the move to online learning. Evaluations methods data collection and assessment results need to be addressed for online classes.

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## 7. STRATEGIC PLANNING

### ✳ 7a. Do you have any plans to modify a degree or certificate in your program?

- Yes  
 No

### ✳ 7b. Are you planning to initiate a new program?

- Yes  
 No

## OVERALL IMPROVEMENT

To help answer 7c and 7d, review the following subsections:

Subsection 2: EVIDENCE--Equity

Subsection 3: EVIDENCE--Program Data

Subsection 4: EVIDENCE--Learning Outcomes

### ✳ 7c. Identify specific reasons for "why" improvement is needed. Use an evidence-based approach to support your answer.

To help guide your thinking, consider framing improvement in more tangible ways: orientations for new faculty, inefficiencies in office processes, communication gaps (with adjuncts or other departments), tracking errors, budgeting processes that are not as timely or efficient, coordination with other related areas in other educational units, resource management of supply budgets.

Our program's goals are set in pursuit of equitably outcomes for Industrial Electrical Technology/Mechatronic students. Providing our diverse students access to technology that maximizes their opportunities that will ensure learning and timely completion of their educational goals. Our program's goal is to prepare the students to obtain a viable and productive employment in the industrial automation field providing equitable opportunities for all students and to secure jobs with solid future and sustainable wage.

The improvements of the IET, Electromechanical and Mechatronics programs center around communication. We need to improve communication overall; this will translate in the improvement of the program's outcomes. These improvements are needed across the board, starting with our adjuncts. With the necessary switch to remote learning over the last couple of semesters, our interactions with part-time and full-time faculty have decreased. For example, our opportunities to communicate with one another before and in between classes are no longer there. Our ability to have regular communication face to face has diminished. We have lost program consistency and efficiency due to our lack of communication. We see this in two areas; collecting learning outcomes in a consistent way and success / retention. Our recent program enrollment has dropped off (Fall 2020 and Spring 2021) the evidence of this is within enrollment reports and even more recently with the cancellation of classes. This inequity is preventing about 45 students from completing their certificates and or degrees for the spring of 2021. In fall 2019 and spring 2020 IET programs had 23 and 22 sections respectively available to students. For fall 2020 and spring of 2021 we now only have 16 sections for fall and 11 sections for spring available. For spring, this represents half the classes we were offering just one year ago. The cancellations were not due to a lack of students, but the inability to convert courses to online. Communication, coordination and planning played a large role in this.

Communication with other departments and the InTech Center also needs to be improved. The IET program has synergies with many other programs and the InTech Center. Examples include Engineering, CIS, Auto, and Aeronautics, as well as the courses taught at InTech. We can learn, share resources and better coordinate for success and retention. Improving pathways for student's educational goals, which can include credit for prior learning.

The Industrial Electrical Technology (IET) / Mechatronics Programs selected Chaffey goals 2, 3 and 4 for the following reasons;

Collaborative robots market sales alone is expected to grow 44.5% from 2019 to 2025

Collaborative robots (COBOT) are only one of three robotic applications, the largest is the 'Industrial Robot' and lastly is the 'Mobile Robots'. These three robotic applications are used throughout all kinds of industries. This opens up opportunities for our diverse students to build a foundation for successful careers, along with improving our community.

Where Amazon goes the rest will follow;

Amazon teaming with Wake Tech to offer robotics training, jobs with e-commerce giant, to up skill their current employees. Apprenticeship is part of an Amazon pledge to offer technical training to thousands of employees in the U.S. Wake Tech is one of four schools to offer program.

[Read in News & Observer](https://apple.news/Au_RVwVAKSQaYFAG1IB5W9A): [https://apple.news/Au\\_RVwVAKSQaYFAG1IB5W9A](https://apple.news/Au_RVwVAKSQaYFAG1IB5W9A)

This, however, is not the only area of growth the IET programs cover. [Solar / Energy](#) is also part of our IET program. LMI data expected solar photovoltaic installers to increase by 28% between 2019 and 2024. Electrification of California is coming quickly, Governor Gavin Newsom's order that the State of California by 2045, all California homes and buildings will be fossil-fuel free and efficient. Two key future milestones; by 2023 100 percent of all new construction will be all-electric construction and by 2030, 3 million buildings will be all-electric, with priority given to those sheltering low-income and disadvantaged Californians.

These goals provide equity to our diverse student population by maximizing their opportunities for great careers in the electrical and maintenance fields.

Note to PSR readers, any underlined phrase will have a file attachment giving much more details or examples.

**7d. What is your program's plan to make improvements? An effective plan is descriptive and has well-defined steps. Explain your answer in order of priority; rank highest priority first, followed by second highest priority, and so on.**

If there is a disparity in equity, the strategies for implementation should be included in the plan.

The IET program plans to make improvements for better communicating with facility to improve the program's outcomes, success and retention. Our highest priority will be to schedule department meetings to build efficient consistent evaluation practices for learning outcomes. Secondly, we need to improve equity, for success and retention. Lastly, improve communication with other departments and the InTech Center, by coordinating pathways for improving student's enrollment, success and retention.

Improvement plan steps:

Schedule department meetings throughout the year (minimum 4 meetings).

Educate the department from the most recent equity data and overall data sets, focusing on success and retention rates.

Develop best practices that align with the learning outcomes chronological assessment plan for IET. Include assessing, collecting and reporting SLO's consistently. (Review SLO's for any updates as well).

Work on best practices for student equity, our communication plan to promote retention and success within all of the IET programs / courses. Include Success Center, Library resources, continue to reduce textbook cost (zero cost student resources), Career Center / Job Developer resources, and additional student opportunities, embedding employability skills into classes (micro-credentials).

Develop collaboration with other departments focused on pathways for retention and success. Explore Credit for Prior Learning (CPL). Look for opportunities to improve and develop path-ways for the programs completion of certificates / degrees. What cross function, best practices, resources, and needs are there.

## CURRICULUM IMPROVEMENT

As we move toward Guided Pathways, curriculum serves as a central catalyst for the movement. Reflect and provide information on questions 7e and 7f.

Information will be forwarded to the Curriculum Office. There is NO SCORING on curriculum improvement questions, 7e and 7f.

**7e. How does (or will) your program incorporate experiential learning components into your curriculum?**

We encourage students to take the IET-484a internship class. We also have the success Center provide presentations to our students so they understand the support services available.

(Max chars: 5,000)

**7f. How does (or will) your program incorporate career exploration into early courses in your degrees and/or certificates?**

In one of our first level II courses we have a research project where students have to report on two jobs within the maintenance / electrical field they would be interested in. We also invite the career center into the classes to talk about what they do.

(Max chars: 5,000)

**7g. Do you have any recommendations for a professional development workshop(s) that will help you or your program execute future plans?**

Type N/A in the response field if you are not making any recommendations for professional development.

Information will be forwarded to the Faculty Success Center for future professional development planning. NO SCORE is assigned.

There should be more on embedding employability skills into classes (micro-credentials).

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## 8. VIP GOALS

### 8a. What are your Three-Year Visionary Improvement Plan Goals (1-3 goals recommended)?

Perhaps the most important piece in the PSR process is the creation of the Visionary Improvement Plan (VIP). The VIP is an opportunity for all program members (not just primary writers) to get together to analyze data, discuss the overall self-study, and identify program improvement goals for the next three years.

VIP Goals should align with the Chaffey Goals, and should be clear, specific, measurable, action-oriented, realistic, and time bound.

VIP goal 1: increase the number of awards (degrees and Certificates) by 5 percent. Aligning with industry's needs, follow Advisory committee recommendations as well as, improve student outcomes in electromechanical and robotics. By providing our diverse students with a safe, engaging environment that will optimize the use of technology and tools for a timely completion of our students' education.

VIP goal 2: Increase the retention rate by 5 percent. Review curriculum, courses and labs to advance institutional efficiency and student learning. Develop and maintain programs and services that will maximize students' opportunities which align with the manufacturing community / e-commerce needs for "Industry 4.0" automation and robotics.

### 8b. Select the Chaffey Goals that directly relate and are MOST relevant to your VIP GOALS (please select all that apply):

VIP goals should relate to Chaffey Goals.

- Goal 1: Equity and Success--Chaffey College will be an equity-driven college that fosters success for all students.
- Goal 2: Learning and Completion--Chaffey College will ensure learning and timely completion of students' educational goals.
- Goal 3: Community Opportunities and Needs--Chaffey College will develop and maintain programs and services that maximize students' opportunities and reflect community needs.
- Goal 4: Technology--Chaffey College will optimize the use of technological tools and infrastructure to advance institutional efficiency and student learning.
- Goal 5: Efficiency--Chaffey College will efficiently and effectively manage systems, processes, and resources to maximize capacity.
- Goal 6: Agility--Chaffey College will responsively adapt to changes in students' academic and career needs.
- Goal 7: Professional Learning--Chaffey College will prioritize and align professional learning for all employees to support the achievement of Chaffey Goals.

### 8c. Explain the rationale that led your program to develop each VIP Goal. How does each VIP Goal align with the Chaffey Goals?

VIP Goal 1--Rationale and how it aligns with the Chaffey Goals

VIP Goal 2--Rationale and how it aligns with the Chaffey Goals

VIP Goal 3--Rationale and how it aligns with the Chaffey Goals

Our program's VIP goals are set in pursuit of equitably outcomes for Industrial Electrical Technology / Mechatronic students. Providing our diverse students access to technology that maximizes their opportunities that will ensure learning and timely completion of their educational goals.

VIP goal 1: Increase the number of awards (degrees and certificates) by 5 percent. Our goal aligns with Chaffey College goals #2, #3, and #4:

Goal #2: Learning and Completion- by improving the program and focusing on students' retention and success the increase in awards VIP goal that we have set ties in strongly with Chaffey's learning and timely completion of students' education.

Goal #3: Community Opportunities and Needs- By increasing the number of awards in Mechatronics and Industrial Electrical Technology (VIP goal 1) we will align directly with Chaffey College's Goal #3 of developing and maintaining programs and services that maximize students' opportunities and reflect community needs. Per LMI data and Advisory meetings, there is a community need for more students in this field, maximizing students' opportunities in our community for higher paying skilled jobs.

Goal #4: Technology- VIP Goal 1 increasing the number of awards, aligns with Chaffey College's goal #4, we will optimize the use of technological tools and infrastructure to advance institutional efficiency and student learning. The IET/ Electromechanical & Mechatronics programs, offer students' advancement in technology driven subjects including automation and robotics. The programs ability to expose students to these real-world technical tools and infrastructures advances their learning by increasing technology awards, certificates and degrees in this field.

VIP Goal 2: Increase the retention rate by 5 percent, this is aligned with Chaffey College's goals #2 and #3:

Goal #3: Community Opportunities and Needs- By increasing the retention rate, we are helping to fulfill the community's opportunities and needs. Developing and maintaining programs and services will maximize students' opportunities and reflect community needs. With the understanding from Advisory Committee meetings and LMI data provided to us, we developed this VIP Goal 2 to increase retention. The programs we are developing in robotics and are maintaining in the electromechanical arena continue to maximize students' opportunities. There is a need in our community for Technicians which also creates opportunities for the employment of students with the right skill sets. This leads us to Chaffey's Goal #2: Learning and Completion- learning and timely completion of students' educational goals will be better served with a higher retention of students in the Industrial Electrical Technology / Electromechanical and Mechatronics programs.