

Show All Possible Responses**\* Response is required**

## 1. PROGRAM OVERVIEW

**\* Program Title & Code****Program Title**

Drafting/Engineering Technology

(Max chars: 100)

**Program Code**

0953

(Max chars: 100)

**\* Is this a CTE program?** Yes  No**\* 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: Provide supporting statements of how the program aligns with this goal).

**WE PREPARE STUDENTS FOR JOBS AND FOR TRANSFER TO UNIVERSITY ARCHITECTURE, ENGINEERING TECH & ENGINEERING PROGRAMS AT THE SAME TIME**

In contrast to programs such as Chaffey's Engineering AS Degree program, which designed solely to prepare students only for transfer to 4-year university Engineering Programs, our prepare them with jobs skills and for transfer to 4-year Architecture, Engineering Technology at the same time.

We provide an academic pathway a BS degrees in Engineering Technology and and a Career Pathway into Engineering Careers

Our program address Equity issues encountered by many of our students such as those from disadvantaged backgrounds, poor high schools, immigrant families, and first generation college students who often receive no proper guidance while in high-school regarding what is needed to become an engineer. Students such as these may not understand the amount of math and science required simply to transfer into most university engineering programs.

CADD/EGTECH students CAN transfer directly into Engineering programs by taking take Calculus and Calculus-based physics instead of the require Trig-based physics while at Chaffey.

**ALL OF OUR STUDENTS GET HANDS ON, AUTHENTIC LEARNING EXPERIENCES USING TECHNOLOGY THEY OTHERWISE WOULD NOT HAVE ACCESS TO**

The digital divide continues to grow. While many of our students from more affluent families have their own 3D printer. Many others do not even have a printer. We make every effort we can to span that divide by providing our students with an abundance of hands-on time using the most same modern technologies used the workplace.

### **Our students Gain Skills and Knowledge that are in High-Demand and Needed for High-paying, High-Skill Jobs Immediately**

Many of these jobs can have the potential to become careers without the need for additional degrees beyond an AS. Most of our students that want to work find jobs, each month we share opportunities employers approach us trying to fill. Most of them that look find jobs paying more than \$20/hours after as few as 2-3 classes

A large majority of our students MUST work. By doing so in an Design/Engineering field they are Managers before Students Went to School only during the same time

Many of our graduates discover shortly after they start working that they are more skilled with the software tools than any of their co-workers and soon find themselves in lead, supervisor or manager positions.

### **COMMUNITY NEEDS**

We have articulation agreements with all of our feeder high schools that have pre-Engineering and CAD Design/Drafting programs.

We also have partner with local industry to provide opportunities for our students to work as paid interns and learn what is expected in the workplace. Often these internships turn into offer for permanent positions before they are completed. Input provided by Industry Advisory Groups guide how we continue to best serve their needs.

We take a great deal of pride in being able to change and adapt to the changing demands of the workplace so that our students are prepared for the best jobs with the skills employers find most difficult to find in candidates and among their current workers. Our graduates are prepared to fill those positions with those hard-to-find skills.

### **WE STRIVE TO STAY AT THE FRONT OF THE TECHNOLOGY CURVE TO PROVIDE OUR STUDENTS MORE OPPORTUNITIES AND LOCAL INDUSTRY WITH WORKERS WITH HARD-TO-FIND SKILLS**

We make every effort to be at the head of the technology curve and provide so that our students enter the workplace with skills that they can use to help their employers adopt new technologies. Companies wanting to take advantage of newest technologies find it difficult to do so because they cannot find someone to run it.

Our new 3D Printing/Additive Manufacturing Courses and coming Certificates and Degree are another example of this. The 3DP/AM industry and jobs in it are expanding by over 30% per year. These companies will need workers that understand how to use AM processes and machines. These skills have become mandatory for most engineering positions.

### **YOU CANNOT USE 3D PRINTING IF YOU DO NOT KNOW HOW TO CREATE SOLID MODELS**

The Elephant in the Room for any entity that wants to utilize 3D Printing for whatever reason is that, you must have someone that knows how to make Solid Models with CAD to be able to do so. THAT is something ALL of our graduates can do well! Without that all you can do is download files of someone else's design so that you can spend \$10 printing something you can buy at a store for 75 cents.

## **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.).**

1. Each and every action listed in 2019 specified the need for an additional full-time faculty member in order to be accomplished. Four years later, no additional faculty member and no known plans to add one.
2. Events following the March 2020 shutdown and the April 2020 switch to online-only instruction made some of the actions irrelevant and others impossible until such time that on-campus activities were not limited due to COVID guideline compliance

Below is a summary of the 2018 VIPS and Actions with specific comments describing their status following any that are not covered by the above two comments,

#### **VIP1: Guided Pathways**

Many of tasks detailed in 2018 were superseded by the campus-wide Pathways effort that we in Spring 2019. Including the following

- Action: A. Document existing pathways
- Action: B. Design pathways promotional collateral
- Action: C. Increase Outreach for Drafting programs emphasizing pathways

#### **VIP2: Increase Accessibility to Courses/Technology**

- Completed but stopped by COVID restrictions

Action: B. Modify Courses Selected for DE/Hybrid

- Curriculum updated to include Hybrid/online delivery but course remain fundamentally unchange
- Some courses totally unsuited for Hybrid or online
- Need to be replaced or re-written

Outcome: VIP3: LEARNING ENVIRONMENT, TOOLS and RESOURCES

Action: A. CONSUMABLE SUPPLIES

- completed and ongoing, 3DP/AM course(s) have created a much larger demand for consumables
- provided supply budget has been adequate but may not be for long as on-campus restrictions ease and as more use of these machines

Action: B. SOFTWARE LICENSES

- completed and ongoing
- A major issue was created by a paperwork mess-up in 2021 which remains unresolved, our Strong Workforce allocation for updating our SolidWorks subscription was mistakenly applied to the INTECH license and when sent to use IT installed it in INTECH
- OUR MONEY IS GONE AND OUR SYSTEMS REMAIN ON A TWO YEAR OLD RELEASE. WE CANNOT CONDUCT OUR CLASSES WITHOUT OUR CONTRACT BEING UPDATED
- This happened in Summer 2021 and remains unresolved. WE MUST GET OUR SOLIDWORKS UPDATED, we are now two releases behind in our labs.

Action: C. REPLACE LARGE FORMAT PLOTTER

- completed

Action: E. EVALUATE USER INTERFACE/WORKSTATION TECHNOLOGIES

- Was interrupted by COVID19 restrictions
- Shift in emphasis to online instruction makes priority of this much lower

Action: G. ADD NEW SOFTWARE

- completed and ongoing,

## 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.**

**A MAJOR PROBLEM DUE TO PAPERWORK ERROR BY OUR PURCHASING IN SP21 REMAINS UNRESOLVED THIS MUST BE FIXED BEFORE FA22**

One item funds from Strong Workforce were allocated for was to update our annual Subscription for our Solidworks license. When attempting to get our contract renewed for our labs in VSS

**Prior to SP20 all of our 'other resource requests' were funded through PERKINS, a significant portion of the 2019-2020 allocation was unspent.**

NI Hours to 'Expand Access' to our lab(s) and the technologies that cannot be accessed elsewhere on campus.

- Maintained and updated existing Technology, Software and Hardware
- Added additional technology to increase hands-on time
- Expand amount of Technology
- Added New Technologies

we have been able to secure funds through Strong Workforce that have enabled us to purchased planned-for technology during 2021-2022. Why we were instructed to pursue Stong Workforce monies and not PERKINS is remains unknown.

**We are unsure why, at this point we have not been required to apply for either PERKINS or STRONG WORKFORCE FUNDS for 20202-2023. Each year we need \$5K - \$10K to maintain current software subscriptions. Last grant applied for expires at the end of June 2022 and there are no requests in the pipeline for additional funds.**

## 2. EVIDENCE

The evidence section comprises of the following: (a) equity, (b) learning and completion, (c) CTE data if applicable, and (d) learning outcomes.

### EQUITY DATA

Please reference the "Equity" Institutional Research data file to evaluate the following areas.

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

Review data from the last six years and indicate whether the number of enrollments, success rates, and retention rates in the following categories have increased, decreased, not changed (plus or minus 2%), or there is insufficient data available.

<b>Response Legend:</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	1 = Increase   2 = Decrease   3 = No Change (plus or minus 2%)   4 = Insufficient Data Available			
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 from the last six years and indicate whether the number of enrollments, success rates, and retention rates in the following categories have increased, decreased, not changed (plus or minus 2%), or there is insufficient data available.

<b>Response Legend:</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	1 = Increase   2 = Decrease   3 = No Change (plus or minus 2%)   4 = Insufficient Data Available			
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 from the last six years and indicate whether the number of enrollments, success rates, and retention rates in the following categories have increased, decreased, not changed (plus or minus 2%), or there is insufficient data available.

<b>Response Legend:</b>				
<b>1 = Increase   2 = Decrease   3 = No Change (plus or minus 2%)   4 = Insufficient Data Available</b>				
	<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 from the last six years and indicate whether the number of enrollments, success rates, and retention rates in the following categories have increased, decreased, not changed (plus or minus 2%), or there is insufficient data available.

<b>Response Legend:</b>				
<b>1 = Increase   2 = Decrease   3 = No Change (plus or minus 2%)   4 = Insufficient Data Available</b>				
	<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				✓

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

**Response Legend:**

1 = Increase 2 = Decrease 3 = No Change

	1	2	3
Number of sections with zero-cost textbooks			✓

**\* 2b. IDENTIFY EQUITY STRENGTHS**

- First, summarize "equity" data from Institutional Research that describes your program strengths.
- Second, if applicable, summarize internal or external data/evidence/research the department has (e.g., surveys, interviews, focus groups, external assessment techniques). Programs may provide additional information or data that has not been included in their Institutional Research files.
- Considering the evidence, explicitly identify specific "equity" strengths.

**TRENDS INDICATED IN THE EQUITY DATA**

**STRENGTHS**

- ENROLLMENTS UP BY 8% over 5 years compared to Chaffey-wide -8.9%
- Serving broad range of Age Groups
- % Hispanics Greater than Chaffey-wide
- Females are larger proportion of students when compared with other Engineering & Technology programs
- Female Enrollments up by 34% over 1-year, 12.5% over 2-year and 103.2% over 5-year
- Female Retention Up 7.4% over 2-year, up 18.9% over 5 Retention increased
- Female Success up 21.9% over 2-year, up 31.2% over 5-year
- Hispanic Enrollments up 12.6% over 5-year
- Enrollments up for 30-39 age group by 213.3 % over 5-year
- Success rate for 25-29 age up by 8.7% pver 5-year
- % of students with disabilities higher that Chaffey-wide, sometimes double
- Percentage of Disadvantaged students higher that Chaffey-wide
- Success rates for students with disabilities much higher that Chaffey-wide
- Success Rates for Economically disadvantaged 10-20% higher than Chaffey-wide
- Enrollments by Race map to College Wide trends
- Success rates were trending upward until SP20-COVID

**FACTORS EXTERNAL TO THE PROGRAM THAT SUPPRESSED ENROLLMENTS**

- Our ENROLLMENTS actually grew by at least 12% if those for the SU20 are included may have actually increased by 15.8% over the 5 years. Which of these numbers is the correct one depends on whether SU20 would be added to the 2019-2020 numbers of to the 2020-2021 numbers. If the former is correct the we would add the 24 students that enroll in SU21 to the 2020-21 numbers.
- Other factors beyond our control were **cancelled sections due to cancelling on-campus instruction** as happened to EGTECH16 in SP21 and not offering sections of EGTECH12 or EGTECH14 in FA21. In the table below we show that by adding the Summer enrollments from SU20 & SU21 and 15 students each semester to adjust for the cancelled sections, Total enrollments over the 5-year period could as much as 29.7%
- During the 5-year span the number sections offered each semester and the # of seats available declined as we were allocated fewer sections and were forced to Cluster classes to avoid cancellation due to low enrollments. In 2015-16 thru 2017-2018 we offered 19, 18 and 19 sections between the two semesters. During 2018-19 and 2019-20 these numbers declined to 15 and 16. We were forced to cluster classes in order to offer them on an annual basis and to avoid cancellation due to low enrollments.

We have found that for each step through the sequence of classes for both DRAFT disciplines we needed to offer two sections its predecessor in the sequence to populate the next step. In other words, to populate one section of DRAFT51 we needed to offer at least two sections of DRAFT50 in-between. For DRAFT53 we needed 2 Sections of DRAFT51. We were given conflicting orders regarding scheduling, we were required to put Sections on the calendar more often that we could populate them as a standalone section. We were also told to stop clustering classes in 2015. We told those above use that if we wanted to make that work we would need to accept a few semesters of low enrolled sections to let cohorts of student begin to form to stabilize the enrollments. We did what we were told, and consequently a number of sections were cancelled due to low enrollments.

Since that time we have returned to clustering classes to avoid low-enrollment cancellations and still offer each course at least once each year. That has reduced the seats available based on a cap of 24 for each cluster just like individual classes are capped at 24.

In 2015-2016 we had 19 sections on the calendar over two semesters and only 1 clustered pair providing 18 total 'classes or blocks' After our peak enrollment year in 2017-2018, for some reason we were only allocated 15 sections and only 13

classes. The number of classes allocated in 2019-20 only increased by 1 to 16 however the number of class blocks remained only one over our low of 13 classes. What that means is that the number of seats available in our classes was only lower than it was in 2019-2020 one time over the previous five years. Historically a fixed number of sections were allocated to DRAFT/ENGIN/EGTECH to split up between the three programs. We somehow lost 2 or more sections each year while during the same period ENGIN added 2 sections each year.

Despite these challenges we continue to grow.

**ENROLLMENTS DATA INDICATES A STRENGTH EVEN THOUGH THE DATA IS INCOMPLETE, GROWTH WAS ACTUALLY BETWEEN 12% and 18%**

Although the data shows that our enrollments for the last two years were flat, when Summer section enrollments are added there is actually an increase. This occurred despite the fact that since that in the time after April 2020 we were forced to cancel courses that were on the calendar due to changes in the COVID situation such as EGTECH16 in SP21, and we did not put some courses on the calendar that we normally offer because they could not be effectively taught online.

As is shown in the table below, if Summer section enrollments are included, rather than growing at 8% over 5-year period our programs actually grew 12.0% or 17.6% depending on which year the summer enrollments are grouped with. The 12% comes from including SU20 enrollments with 2020-21. The 17.6% number comes by grouping SU21 with 2020-21.

These numbers could have been better if Summer Section enrollments were included and if Classes had not be Cancelled or Not Put On The Calendar Due to COVID Restrictions. The last row adds to the numbers that include Summer sections 15 students for each class that was cancelled, or not put on the calendar in 2020-21. EGTECH12 was not scheduled for FA20 and EGTECH16 in SP21 was cancelled when face-to-face instruction was cancelled due to COVID.

**% Change over 1, 2 and 5 years spans ENROLLMENTS/SEATS/With Summer/With Cancellations**

<b>ENROLLMENTS PLUS OPPORTUNITIES LOST</b>	<b>1-year</b>	<b>2-year</b>	<b>5-year</b>
<b># OF SEATS AVAILABLE AT CAP</b>	-6.75%	7.7%	-17.7%
<b>TOTAL ENROLLMENTS IN EQUITY DATA</b>	0.0%	.75%	8.0%
<b>ENROLLMENTS WITH SU20 ADDED TO 2020-2021</b>	3.7%	4.5%	12.0%
<b>WITH SU20 ADDED TO 2019-20 AND SU21 ADDED TO 2020-2021</b>	5.0%	9.7%	17.6%
<b>WITH SU20 &amp; SU21 + 20 IN AND 30 ADDED FOR CANCELL/NOT SCHED SECTIONS IN FA20/SP21</b>	15.7%	20.9%	29.6%

**CONCLUSIONS**

Before going through the detailed analysis of the EQUITY DATA we want to first state our CONCLUSIONS. These are derived from some of the EQUITY data but more so from the HUNDREDS of Hours we have spent interacting with our students online through chats and ZOOM Meetings and in the few Face-to-face classes we scheduled that were not cancelled due to COVID.

Based on the EQUITY DATA alone ENROLLMENTS have not been a negative and, when compared to the College-wide data, they are a strength. Considering the successes above we still know we can do better.

With all of that said, we agree on the three following conclusions:

- We need to increase **ENROLLMENTS** across all populations.
- We need to improve **RETENTION RATES** across all populations.
- We need to improve **SUCCESS RATES** across all populations

**STUDENTS REGISTERING FOR OUR CLASSES INCREASED SHARPLY BUT SO DID ATTRITION BOTH BEFORE AND AFTER CENSUS**

While reviewing the ENROLLMENTS data we looked at our own records and found that the number of students signing up for our classes increased sharply for FA20 and SP21. ENROLLMENTS do not reflect this however because we also experienced a large amount of attrition both pre-CENSUS and in the two - three weeks after CENSUS. This most commonly occurred in our entry level course EGTECH10 and DRAFT20 which we offer two sections each every semester. With a cap of 24 per section these sections account for roughly one-half of our enrollments each semester. Because they are pre-requisites for our more advanced courses there is a cascading effect if the number of students successfully completing those courses decline. The reasons for this are discussed in depth below and in 2c.

**WHILE ENROLLMENTS ARE AN INDICATOR OF PROGRAM STRENGTH THEY ARE ALSO AN AREA WITH ROOM FOR A LARGE AMOUNT OF IMPROVEMENT**

For this reason we will continue this discussion in 2c

## 2c. IDENTIFY DISPARITIES IN EQUITY

- First, summarize "equity" data from Institutional Research that describes areas of improvement.
  - Second, if applicable, summarize internal or external data/evidence/research the department has (e.g., surveys, interviews, focus groups, external assessment techniques). Programs may provide additional information or data that has not been included in their Institutional Research files.
  - Third, considering the evidence, identify disparities in equity.
- If there is a disparity in equity, DO NOT discuss responsive strategies in this section. You will be able to address responsive strategies in the STRATEGIC PLANNING section (item 4d).

\*If the data shows favorable results for equity, answer the following question instead: How will the program maintain excellence in equity?

### EQUITY DATA

All groups, other than Females, showed sharp large drops in both RETENTION and SUCCESS, especially during the period following the initial COVID Shutdown.

It is quite obvious that this area needs a great deal of attention. Most significant of the causes of the decline in RETENTION are:

- Technology Issues
- Lack of Support
- The Choice of Work over School
- Policy Changes made mid-semester

### WHEN WE SWITCHED TO ONLINE INSTRUCTION IN APRIL 2020 WE IMMEDIATELY LOST A LARGE NUMBER OF STUDENTS

#### Technology Issues Resulted In Immediate Fallout

In Spring 2020, after switching to online instruction for EGTECH16 we lost a far greater number of students that we would have under normal conditions. The reasons were primarily technology issues:

- They did not have the needed technology to run our CAD/CAM applications
- many lacked the computer systems knowledge to install and configure the software.

The first two weeks of April were entirely consumed by this issue. I was doing ZOOM meetings with students often well past midnight attempting to help them get the CAD application used in their class running on their computers. This went on for at least two weeks, 7-days a week. by mid-April this had calmed down somewhat but helping students with technology issues that were not related to actually running the CAD application was swallowing up at least 10 hours a week for the remainder of the semester.

While giving out loaner Chromebooks to students sounded like a great idea, it was not a great solution for our students. Especially the technology illiterate ones that had received a Chromebook with apparently no training to show them how to use it. Students in our classes were attempting to sign in to a Windows 10 computer through a remote terminal and there was nothing except a 1/2 page sheet that listed the steps to log-in to the virtual lab and nothing more.

To this day there is no support to help them use the virtual lab. Most of their questions do not involve Solidworks. Common questions:

- "How do I access my personal file from the VLAB"
- "I saved my work to the Desktop in the VLAB and now I can't find my files"
- "How do I make my microphone work from the VLAB for ZOOM Meetings"
- "I try to sign in and it crashes"
- and on and on

Our IT department has done an amazing job getting the Virtual Lab to where it is now. It is far and away faster when running CAD than any other platform we run it on. Our more technology literate students are able to use it effectively except when it gets balky. Our less savvy students still struggle with it. Most of them still do not fully grasp the idea that when they are signed in to the virtual lab, they are effectively signed in to a desktop computer, running desktop applications, with its own file system.

The lack of support remains an obstacle. Being the only form of support they are able to find that can answer questions about using the virtual lab, I have yet to even see a chromebook, much less, get my hands on one. I submitted the paperwork



months ago.

When students have a problem signing in to the Virtual lab through a Chromebook, or with an Apple, if they ask me for help, I have to tell them I have not been provided the tools to help them and, in fact, have never seen a Chromebook and have not used an Apple for almost 20 years.

The Virtual lab was in its infancy, was limited, unreliable and not a viable tool for students to use until close to the end of the SP20 Semester. Then, as now, there was no support whatsoever available from anyone other than myself if they did try to use the Virtual Lab and encountered problems or simply needed help figuring out how to function in that environment.

### **Policies, Cancellations, Vaccine Mandates Decimated Some Course Rosters**

We have been unable to conduct EGTECH12 since FA19 because of the amount of technology used and the fact the the entire course was built around the concept of learning through hands-on activities. Without this course no-one earns an EGTECH Certificate or degree.

EGTECH16 is required for CAD/CAM Operator Certificate, CAD Drafting/Mechanical and EGTECH Certificate and AS degrees. In Spring 2021, EGTECH16 was a casualty of the decision to cancel all classes with on-campus meetings.

In April of 2020, there were 17 students on the roster prior at the end of March. After switching to online instruction five drop and before semester end another five had gone AWOL and become non-participants. A majority of them dropped because of technology issues. AT semester end of the 12 remaining on the roster, there were 6 A+, 1 B and 5 FW.

Due to those classes not being offered or being cancelled, no-one could earn 2 out of 3 of our certificates or 1 out of 2 AS Degrees.

### **SEVERE ATTRITION MADE EXPERIENCED IN SP21**

In Spring 2021 the technology barrier had become such an issue that one EGTECH10 Section only had two students successfully complete the class. We normally start in using the CAD Software at the beginning of Week 3. We had spent the entire weeks one and two tryinh to get everyone up and running so that they could start working in SolidWorks. When I checked their quizzes and portfolio submissions two weeks later I discovered that only 2 students out of 15 had submitted and assignments that required them to use SolidWorks.

A similar pattern had show up in my advanced DRAFT43 section. I was forced to perform and intervention requiring every student to do a face-to-face zoom meeting with me once every two weeks for the remainder of the semester. I was also doing 6-8 hours of ZOOM Office hours each week as well as at least two hours of recorded ZOOM meetings for each class that students could optionally attend.

I was able to rescue all but one of the DRAFT43 students who all passed the class. EGTECH10 was not as successful. Only four students were still on the roster at semester end. Of those only 1 passed.

### **OVERCOMMITMENT WAS A COMMON PROBLEM**

Without being limited by scheduling conflicts students were reporting that one class was taking up all their time and they did not have any left for my class. In a recent internal Survey we did 40% of our students reported that they had overcommitted and 30% said that they had to drop a course as a result.

From the regular face-to-face meetings I regularly heard from students that they overcommitted their time by enrolling in the maximum classes permitted because they were not limited by scheduling conflicts but had failed to consider the time each class would require to be successful in.

### **IN OUR ADVANCED CLASSES ATTRITION WAS MOST COMMONLY DUE TO CHANGES IN WORK HOURS, SCHEDULE OR GETTING A NEW JOB**

In my advanced classes, students that had gone AWOL and I was getting back on track cited changes in the hours at work that made doing their coursework almost impossible. I worked out deals with those students allowing them extra time for assignments. The students citing work obligations as the cause of their inconsistent participation were all working at jobs that they we able to qualify for due to skill learned in our classes.

In our most recent internal survey over 60% of our student indicated that working was not optional for them. A similar number indicated that their priorities had shifted from school to employment since Spring 2020.

### **MALE HISPANICS, IN OUR ADVANCE COURSES WERE THE MOST LIKELY TO BECOME NON-PARTICIPANTS (Go AWOL)**

Male Hispanics students, which make up a large majority of our students, were the most likely to become non-participants without dropping. Generally, once a student has one of the entry level classes, DRAFT20 or EGTECH10, under their belt, the have bought in to the program and have some committment to completing, at the very minimum, the CAD/CAM Operator Certificate. If they are working, they are better able to recognize benefits in completing additional classes and getting the certificates. Consequently they do not drop even when they get behind because they figure they can knuckle down over a weekend and get caught up. That is true unless they wait too long.

## OUR CHALLENGE IS TO CATCH THEM FALLING INTO A PATTERN HEADING TOWARDS GOING AWOL BEFORE IT IS TOO LATE

If we were able to be more proactive about keeping students on-track and engaged we would significantly improve both Retention and Success rates. All but a very few students that do not pass our classes fail because of non-participation for an extended period of time, typically at the end, of the semester. Over the past 3 years I have been dropping AWOL students from my rosters prior to the W deadline with the intention of increasing success rates. I have since learned that that practice was not affecting Success rates and was lowering retention rates. I had also instructed some of our adjuncts to do the same at some point since 2018. That practice alone could account for a large amount of the reduction in RETENTION and the erratic ups and downs of the plots.

- ZTC Courses

While we have not adopted any Zero-cost textbooks, for some classes such as EGTECH12 and EGTECH30 we do not require students to purchase a textbook favoring free-online resources as an alternative. Seeking out, assessing and using free online resources for learning and utilizing the software and hardware technologies is an essential skill that they need to develop for success in jobs/careers that depend on them.

## LEARNING AND COMPLETION DATA

Please reference the "Learning and Completion" Institutional Research data file to evaluate the following areas.

### \* 2d.1 Identify important LEARNING and COMPLETION 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 = Insufficient Data Available					
	1	2	3	4	5
Overall Enrollment	✓				
Overall Retention		✓			
Overall Course Success		✓			
FTES		✓			
All ADT degrees awarded					✓
All AA degrees awarded					✓
All AS degrees awarded		✓			
All degrees awarded		✓			
	1	2	3	4	5
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)	✓				

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

### OCCUPATIONAL GROWTH

### 2d.2 Identify important CTE PROGRAM developments and trends.

For the most up-to-date data about projected occupational growth, please visit the Center for Excellence Labor Market Demand data. The CoE Labor Market Demand data is available at: COE - Supply and Demand | Centers of Excellence (coecc.net)

<b>Response Legend:</b>	
1 = Middle Skill	2 = Above Middle Skill

**2e. IDENTIFY LEARNING AND COMPLETION STRENGTHS--ASSESSMENT OF PROGRAM HEALTH**

- a. First, summarize "learning and completion" data from Institutional Research that describes your program strengths. 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 increased number of certificates/degrees). If applicable, summarize data related to program strengths for "projected occupational growth."
- b. Second, if applicable, summarize internal or external data/evidence/research the department has (e.g., surveys, interviews, focus groups, external assessment techniques). Programs may provide additional information or data that has not been included in their Institutional Research files.
- c. Third, considering the evidence, explicitly identify specific "learning and completion" strengths.

Our students are getting High-skill, high-paying jobs in growing industries because of the skills they learn in our courses.

**CAD/CAM OPERATOR CERTIFICATE IS A SUCCESS STORY AND SHOULD BE THE BOILERPLATE FOR ADDITIONAL WORKPLACE ROLE SPECIFIC CERTIFICATES AND DEGREES**

The number of CAD/CAM Operator certificates earned is a success story and should be a model for packaging other courses, both within our program and in combination with courses from other programs, to produce additional certificated that have easily tangible benefits in terms of workplace roles and workplace advancement.

**NUMBER OF INDUSTRY CERTIFICATES EARNED IS ANOTHER SUCCESS STORY**

In our DRAFT43, DRAFT78 and EGTECH30 classes students are given the opportunity to earn industry standard certifications from SolidWorks. These include the SolidWorks Certified Associate (CSWA), SolidWorks Certified Professional (CSWP) and the SolidWorks Certified Associate-Additive Manufacturing (CSWA-AM.) These are all useful for gaining employment, advancement or getting a new, higher paying job.

Since we started offering the first of our 3D Printing/Additive Manufacturing Courses, EGTECH30 in FA20, 17 students have earned the SolidWorks CSWA-AM certificate. Since 2015, 53 students have earned the CSWA Certification as part of their DRAFT43 class and during the same time 6 DRAFT78 Students have earned the very difficult CSWP Certification. These all help them qualify for jobs, get better jobs or completely new jobs. They also can be used to overcome the issue of no experience when trying to get their first job.

**OUR STUDENTS ARE GETTING JOBS**

We are very proud of the fact that our students are learning skills that qualify them for jobs in local industry after taking as few as 3 courses in our program. The pay for these jobs is substantially higher than reported in most of the statistics on government and private career sites.

Currently, SolidWorks operators with little or no industry experience are getting jobs that start at around \$20/hour. With 6-12 months work experience the pay increases to \$25/hour or higher. With less than 2-years experience \$30/hour is typical. Due to the demand for people with these skills, certificates and degrees are not a priority. One example of this is a student that got hired 2 years ago with no work experience and no degree from us. During that time since being hired, he has completed the CAD/CAM operator certificate and earned the SolidWorks CSWA certificate in DRAFT43 but not a 2-year certificate or AS degree. He is now the CAD Manager at his company and has hired two more of our students this Spring.

The Equity data shows that greater than 60% of our students are economically disadvantaged. In our own internal surveys over 60% of our students indicated that they must work to survive and/or in order to go to school. Almost 30% have dependents. Based on the demographics of students in our programs, they are far more likely to choose work over school and experience much greater pressures to bring in income that the general Chaffey Student population.

A large proportion of college students work in the food services industry. Many of these jobs were wiped out during the lockdowns following the start of the COVID pandemic and only now are starting to come back. This may explain to some extent why Male enrollments, retention and success declined over the last two years while those same statistics rose for female students. Many of our female students worked as food servers and found themselves unemployed. Due to the increased unemployment compensation, they may not have experienced the same pressure to go back to work and consequently had more time to take classes. Male students on the other hand were more likely to have to go to work full-time to make up for reductions in their partner's income.

For students that, prior to taking our classes, were making little more than minimum wage, the opportunity to work for significantly more than that in a position that can become a career without additional education, the need to continue their formal education is diminished and goals that they may have had get put on the back burner.

The fact is that people employed in positions in CAD Design and Drafting may realize the same, or greater, income levels as do their co-workers with Engineering Degrees. This is due to the fact that engineering jobs are 'professional' jobs and are typically salaried whereas CAD Designers/Drafters are normally paid hourly and paid a higher rate for overtime and weekend. People working in both types of positions normally work much more than 40-hours per week. For CAD Designers that results in a big boost to their paychecks. For engineers, working more than 40-hours per week, often determines if you keep your job.

The fact that they are getting good jobs, often without completing our 2-year certificates and degrees is a good problem for use to have. Our challenge is to provide them with reasons to complete our 2-year certificate/AS degrees that they can see have clear workplace benefits with each additional step.

### **CAD SKILLS ARE ESSENTIAL FOR A WIDE RANGE OF CAREERS**

It has long been our contention that what we teach is essential to most technical jobs today. Go onto any of the popular jobs sites and search for jobs using only the keywords AutoCad or SolidWorks. Most people will be surprised at the variety and range of job listing that include knowledge of CAD as either a requirement or a desirable skill. ON OneNet.org Dassault SolidWorks, the primary Mechanical CAD application we teach, is listed as one of their 'Hot Technologies.' One the page at this line lists 56 occupations that typically list knowledge and the ability to use SolidWorks as a requirement of the jobs. <https://www.onetonline.org/search/tech/example?e=Dassault%20Systemes%20SolidWorks> These include occupations in their Job Zone 2 through 5. Surprisingly to some, Electrical Engineers are ranked #5 on that list.

### **\* 2f. LEARNING AND COMPLETION AREAS OF IMPROVEMENT**

- a. First, summarize "learning and completion" data from Institutional Research that describes areas of improvement. 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). If applicable, summarize data related to areas of improvement for "projected occupational growth."
- b. Second, if applicable, summarize internal or external data/evidence/research the department has (e.g., surveys, interviews, focus groups, external assessment techniques). Programs may provide additional information or data that has not been included in their Institutional Research files.
- c. Third, considering the evidence, explicitly identify specific areas in which the program can improve over the next three years.

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 4d).

\*If the data shows favorable results for learning and completion, answer the following question instead: How will the program maintain excellence in learning and completion?

### **COVID HAS PREVENTEND COMPLETION OF CERTIFICATES AND DEGREES**

Due to the major disruptions produce as a result of the COVID Crisis we have been unable to conduct required courses for both our CAD/CAM Operator Cert, EGTECH Degree/Cert and CAD DRAFTING MECHANICAL Cert/AS.

EGTECH12 cannot be taught in an online delivery mode due to the wide variety of technology used and its emphasis on hands-on and group activities. We have schedule it for FA22 and are planning to create new courses that can be delivered online to replace it.

EGTECH16 and EGTECH30 are both almost entirely designed around hands-on activities involving a variety of expensive and complex technologies including CNC Machines and a wide range of 3D Printers. A major strength of these classes is that they provide underprivileged students and opportunity to develop skills and gain experience using these technologies that are not available to them otherwise as may be the case for their more affluent classmates.

No one has ever explained FTES to me so I have no knowledge from which to comment other than than our numbers have been declining and are better than the Chaffey-wide numbers.

### **OUR SUCCESS IS ALSO OUR OWN WORST ENEMY**

We are very proud of the fact that our students are learning skills that qualify them for jobs in local industry after taking as few as 3 courses in our program. The pay for these jobs is substantially higher than reported in most of the statistics on government and private career sites.

Currently, SolidWorks operators with little or no industry experience are getting jobs that start at around \$20/hour. With 6-12 months work experience the pay increases to \$25/hour or higher. With less than 2-years experience \$30/hour is typical. Due to the demand for people with these skills, certificates and degrees are not a priority. One example of this is a student that got hired 2 years ago with no work experience and no degree from us. During that time since being hired, he has completed the

CAD/CAM operator certificate and earned the SolidWorks CSWA certificate in DRAFT43 but not a 2-year certificate or AS degree. He is now the CAD Manager at his company and has hired two more of our students this Spring.

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For students that, prior to taking our classes, were making little more than minimum wage, the opportunity to work for significantly more than that in a position that can become a career without additional education, the need to continue their formal education is diminished and goals that they may have had get put on the back burner.

The fact is that people employed in positions in CAD Design and Drafting may realize the same, or greater, income levels as do their co-workers with Engineering Degrees. This is due to the fact that engineering jobs are 'professional' jobs and are typically salaried whereas CAD Designers/Drafters are normally paid hourly and paid a higher rate for overtime and weekend. People working in both types of positions normally work much more than 40-hours per week. For CAD Designers that results in a big boost to their paychecks. For engineers, working more than 40-hours per week, often determines if you keep your job.

### 3. EVIDENCE--LEARNING OUTCOMES

Learning Outcomes represents the third element of the EVIDENCE component of the PSR evaluation. If you have questions about the learning outcomes requirements in section 3, please contact Shannon Jessen at shannon.jessen@chaffey.edu or Laura Picklesimer at laura.picklesimer@chaffey.edu.

**\* 3a. MANDATORY COMPONENTS: 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.

- COURSE LOs (CLOs) have been revised/updated as needed and entered in the course SLO Taskstream workspace.
- COURSE LOs (CLOs) have been mapped to Program or Institutional Learning Outcomes in each course's Taskstream workspace.
- PROGRAM LOs (PLOs) for each degree/certificate have been revised/updated as needed, and entered in the Program Learning Outcomes (PLO) Workspace.
- PROGRAM LOs (PLOs) for each degree/certificate have been mapped to Institutional Learning Outcomes in the Program Learning Outcomes (PLO) Workspace.
- Each Degree and Certificate has a Curriculum Map that aligns Courses to PROGRAM LOs in Taskstream's Program Learning Outcomes (PLO) Workspace.

### Three Year Cycle

**3b.1 List any courses from your department that were not offered during the previous three-year cycle (from fall 2018 through fall 2021). Enter NONE if all courses were offered.**

There is NO SCORING for element 3b.1

EGTECH14

**\* 3b.2 Did you evaluate learning outcomes for all courses other than those listed in 3b.1 within the previous three-year period? Note: evaluating courses for ACES-ILO (formerly New World of Work, or NWOW) counts for this component.**

- Yes
- No

# Assessment Results and Reflection

## 3c.1 Is there ACES-ILOs assessment data (formerly known as NWOW employability skills) for courses in your department?

There is NO SCORING for element 3c.1.

- Yes  
 No

## \* 3c.2 Are all COURSE LO assessment results (other than ACES-ILO/NWOW data) from fall 2018 through fall 2021 entered into Taskstream?

- Yes  
 No

## \* 3c.3 Mark all applicable approaches to illustrate how your department currently uses course learning outcome (CLO) results. Mark all that apply.

- Review & share results as a department  
 Revise CLOs  
 Change instructional strategies  
 Attend professional development  
 Change methods of assessment  
 Modify criteria for measuring success  
 Other:

## \* 3c.4 PROGRAM STRENGTHS

Describe how your department is using CLO assessment results to draw thoughtful conclusions regarding the strengths of your program(s). Use data from course learning outcomes assessments to support your answer. If applicable, include data for ACES (formerly NWOW) employability skills that have been assessed in your program.

**After reviewing the data from virtually all of your course I feel comfortable making this statement: Students that participate regularly, do a majority of the required coursework, and take course exams, successfully complete our courses and accomplish the CLOs to beyond the minimum required level.**

The statement above has been proven to be true by every review and assessment of evidence showing course completion and achievement of CLOs we have done. All evidence shows that students who are active participants in a course throughout a semester, meet, and often surpass, the minimum requirements for passing the course and exceed the minimum level of mastery of CLOs. Exceptions to this are extremely rare and difficult to find.

### I. What indicates if a student is participating regularly and doing required coursework?

The amount of participation and level of effort an individual student puts into a specific course is can be determined and measured by a combination of some, or all of the following indicators:

- regular attendance for in-person courses
- regular (typically daily) access to the CLT
- timely (if not *on-time*) completion and submission of short term assignments such as quizzes, web research, graded discussions and similar activities and assignments.
- timely (if not *on-time*) completion and submission of long term assignments such as portfolios and projectof portfolio work
- attempt midterm, final
- for some courses, industry certification exams

Students that do all of the above successfully complete the course and accomplish the CLOs.

### II. Indicators of CLO accomplishment the level of mastery of them

The level to which a student has accomplished the CLOs can be measured by demonstrated by one, all, or a combination of the following:

- Midterm/Final Exams
- Capstone or Semester Projects/Portfolios
- Industry Certification Exams such as the Certified SolidWorks Associate (CSWA) and Certified SolidWorks Professional (CSWP)
- Documented Work experience or Internships

Accomplishing CLOs is possible even if one or more of the following is not successfully completed. Failure to complete *any* of the above required for a specific course would prevent a student from passing most of our courses.

### **III. Successful Completion is largely a function of retention**

## **B. Success Rates and CLO accomplishment were trending upward prior to COVID**

### **I. Efforts to increase student access to lab technology was beginning to show results, especially for disadvantaged students**

#### **3c.5 PROGRAM AREAS OF IMPROVEMENT**

Describe how your department is using CLO assessment results to draw thoughtful conclusions to address areas for improvement in your program(s). Use data from course learning outcomes assessments to support your answer. If applicable, include data for ACES (formerly NWOW) employability skills that have been assessed in your program.

#### **THE NUMBER OF STUDENTS SIGNING UP FOR OUR CLASSES IS HIGH, WE NEED TO HANG ON TO MORE OF THEM**

If we can reduce significantly the number of students that we lose pre-census and in the 2-3 weeks following we will significantly boost ENROLLMENTS and RETENTION.

If we can come up with create ways to keep students engaged and in-the loop while still accomodation their ability to take care of other, often higher priority, committments we should see a large boost in SUCCESS.

Because employment is the most important thing for most of our students, we need to update, rename, restructure and replace our courses and degrees with names and content that can easily be understood to have benefits to the students in the workplace. The CAD/CAM Operator Certificate is very successful example of this.

The bottom line is that we are potentially our own worst enemy. They are learning valuable skills that employers need. When a student that still has courses to complete in our program and is has been promototed to CAD Manager less and can make \$25-\$30/hr, when 2 years earlier he was getting minimum wage the are pretty happy.

#### **STUDENTS ARE ACHIEVING THE CLOs AS LONG AS THEY REMAIN ACTIVE PARTICIPANTS THROUGHOUT THE SEMESTER**

What our CLO data tells us is that the primary obstacle standing between student Success and acheivement of the CLOs is challenge of keeping students involved, engaged and actively participating for the entire duration of the semester. We need to re-examine our course activities, assignments and pacing and explore way in which to motivate students to not lose interest or become bored at some point during each course.

At the same time we need to find ways to monitor their participation and spot tell-tale signs of waning engagement so that we can give those students a little nudge to help get them back on track. One thought is to create small teams or cohorts of student that are required to interact, keep and eye on and support each other.

In a face-to-face teaching environment this happens naturally to some extent. The ability to walk around and look over students' should as they work provides a great deal of informal assessment that many of us take for granted.

#### **STUDENTS NEED, AND MISS, THE INTERPERSONAL INTERACTIONS THAT ARE AN IMPORTANT PART OF THE COLLEGE EXPERIENCE THAT ARE MISSING IN ONLINE LEARNING**

One of the most important aspects of a college education is are the peer relationships that are a natural result of traditional learning environments. These are sorely missing in online learning for the most part. We need to seek out techniques and tools to help foster those types of experiences for the students in our classes. Those relationships often help students remain engaged and get past bumps in the road.

#### **3c.6 Identify next steps that will help address gaps in achievement of the Program Learning Outcomes.**

- Revise program learning outcomes
- Embed ACES-ILOs outcomes and assessments into the curriculum
- Attend professional development/training in embedding ACES-ILO (formerly New World of Work/NWOW) outcomes and assessments into the curriculum
- Develop a department Canvas shell to share discipline-specific ACES-ILO resources
- Schedule a department meeting with members of the OAC and/or the ACES-ILO team for Q&A and coaching
- Implement changes to course assignments and/or curriculum
- Other (please specify):

## Institutional Learning Outcomes ACES-ILO Assessment Plan

In previous PSR cycles, courses were mapped (aligned) to Program Learning Outcomes (PLO, introduced/practiced/mastered), which were also mapped (aligned) with Institutional Learning Outcomes (ILO). Academic, Career/Community, & Employability Skills (ACES, formerly New World of Work/NWOW) were subsequently introduced to connect college coursework to skills valued by employers and advanced programs of study. The ACES skills have been aligned with ILOs, creating opportunities to directly assess ILOs and measure student progress longitudinally.

Develop a three-year plan that identifies one or more ACES-ILO skills and provides opportunities for students to demonstrate their level of competency in at least THREE (of the 40 possible) ACES-ILO (formerly New World of Work/NWOW) outcomes in Canvas. For statistically valid results, a good goal is to obtain assessment data for at least 50% of all sections for each course over the three year PSR cycle. Please specify one or more specific objectives and action items for each of the next three years.

### **\* 3d.1 Identify the ACES-ILO skill(s) for which your department will assess outcomes over the next three years.**

If it is helpful, refer to the ACES-at-a-Glance document, located at <https://tinyurl.com/za9b3kps>, or refer to the Top 3 ACES by Academic & Career Community, located at <https://www.chaffey.edu/outcomes/digital-badges.php>.

- Adaptability
- Analysis / Solutions Mindset
- Collaboration
- Communication
- Digital Fluency
- Empathy
- Entrepreneurial Mindset
- Resilience
- Self Awareness
- Social / Diversity Awareness

### **\* 3d.2 What specific objectives or actions will be taken each year to ensure at least three of the 40 possible ACES-ILO outcomes are assessed in all courses (at least 50% of sections) for the next three years? NOTE: During the three year cycle, a minimum of three different outcomes MUST be assessed.**

#### **ACES-ILO YEAR 1 ACTIONS**

#### **\* ACES-ILO YEAR 2 ACTIONS**

#### **\* ACES-ILO YEAR 3 ACTIONS**



## 4. STRATEGIC PLANNING

Perhaps the most important piece in the PSR process is strategic planning. Here you will create your Visionary Improvement Plan (VIP) Goals. VIP Goals is an opportunity for all faculty (not just primary writers) to get together to analyze data, discuss the overall self-study, and identify area improvement goals for the next three years. You will then develop an action plan, which outlines how your area plans to achieve your VIP Goals.

### \* 4a. Do you have any plans to modify a degree or certificate in your program?

Yes

No

### \* 4b. Are you planning to initiate a new program?

Yes

No

### \* 4c. Please identify specific factors that have contributed to or have influenced program areas of improvement?

Refer to the following elements to help you answer this question:

2c. Identify disparities in equity

2f. Learning and completion areas of improvement

3c.3. Learning Outcomes Areas of Improvement

Primary factors negatively impacting all EQUITY RESULTS include

- Using Virtual lab tool as the primary vehicle to run CAD applications for Online Classes is not an adequate solution and adds unnecessary layers of complexity to an already complex technology increasing the levels of stress, frustration that often lead to new students giving up and quitting before Census or shortly thereafter.
  - Lack of support resources other than their instructor to answer questions about using the virtual lab add to these frustrations
  - New students with little to no computer skills magnify these problems by monopolizing instructor time preventing them from proactively helping students having difficulties
  - All incoming students must be tested for necessary computer skills and prevented from enrolling until passing fast-track or bootstrap training to learn needed skills
  - Courses or training must be provided for those identified needing additional training in the assessment
  - Technology support in the form of an on-campus CAD Success Center and an Online CAD Success Center are desperately needed by students for assistance and to free up faculty to proactively identify and rescue AWOL or non-participating students and create and monitor a rescue plan for them.
  - Advance students that must work easily get good paying jobs in local industry based on skills they learned in our program. Currently only the CAD/CAM Operator Certificate is identifiable in that manner. Draft45 includes the Solidworks CSWA exam which has a tangible benefit in the job market. Changing their priority to school from work is unlikely, Changing the perceived value of our courses, certificates and degrees into workplace advancement would help motivate them to complete course and degree.
  - Technology leading to higher levels of stress and frustration felt by new students in particular
1. Reducing ATTRITION resulting in drops before CENSUS especially in our entry classes DRAFT20 and EGTECH10 has potential to significantly increase all of the EQUITY numbers
  2. Students that DROP or go AWOL after CENSUS often for the same reason some students DROP before CENSUS
  3. Advanced Students that go AWOL or become non-participants at some point during the semester do want to pass the class both before and after CENSUS. A large proportion of the students that go AWOL before CENSUS and BEFORE WDate RETENTION number of technology-illiterate students enrolling in our courses
  4. The absence of any useful support at the college level for our students
  5. The need for on-campus open-lab support
  6. The need for online support
  7. The need for computer skills bootstrap training
  8. Factors that contribute to reducing ENROLLMENTS due to drops either by students, or instructors
  9. Factors that contribute to reducing RETENTION
  - 10.

## DEVELOP AN ACTION PLAN

### **\* 4d. What is your program's action plan to make improvements?**

An effective action plan is descriptive and has well-defined steps. Within the three-year plan, an action plan may include yearly milestones or incremental deadlines that help the program to achieve their VIP goal(s).

#### YEAR 1

- Identify, evaluate and pilot test available Cloud-based CAD applications for use our online courses
- Resume/revive efforts to increase student access to VSS102/103 labs during times course not using
- Contact Chaffey entities responsible for Success Centers to explore feasibility of adding CAD support to existing or create new Technology support center that includes CAD support
- Define Computer Technology skills and skill level needed for success in DRAFT/EGTECH courses
- Create tool for assessing incoming students' technology-literacy
- Contact other programs that may be experiencing similar issues with low-technology literacy
- Explore available courses for use for that purpose
- If nothing available, develop internally or in partnership with other programs course or workshop for students needing supplemental technology learning
- Contact all existing Secondary School partners with Articulation agreements to update agreement
- Contact individuals at CPP to update agreements with DRAFT/EGTECH
- Complete and submit for approval second 3DP/AM course EGTECH33
- Add 3D Printing Operator Mini certificate
- Investigate need and demand for adding Civil Engineering and/or Construction Technology Coursework or course

#### YEAR 2

- Add 2nd 3DP course EGTECH33 to Calendar
- Write curriculum for and submit for approval EGTECH31 Reverse Engineering
- Begin not allowing students failing technology assessment admission into courses without supplemental training
- Implement Cloud-based CAD in online courses
- Begin assessing incoming students for Technology literacy
- Provide workshop to boost technology literacy to fill need until more permanent solution is available
- Evaluate the need for new courses specifically designed for online delivery
- Work with Chaffey Entities to configure loaner Chromebooks for running Cloud-based CAD applications
- Support student efforts to initiate a 3D Printing Student Club
- Divide EGTECH12 into two courses separating the portion that can be delivered online into one and the in-person only portion into another
- Add new Mini certificate for Architecture
- Add CAD Specialist Certificate
- Contact Engineering Departments at CSU Fullerton & CSU LA about articulating courses
- Add EGTECH 3D Printing/Additive Manufacturing Certificate and Degree

#### YEAR 3

- Move to Cloud-based applications for all courses
- Add Reverse Engineering Course EGTECH31 to Calendar
- Complete and submit for approval Design for Additive Manufacturing Course EGTECH 32
- Explore potential articulation CSU programs offering online CAD courses

## CURRICULUM

### **4e. How does (or will) your department's degree and certificate programs incorporate opportunities for students to explore careers?**

Information will be forwarded to the Curriculum Office. There is NO SCORING for curriculum question, 4e.

All of our course provide students with skills that are in high-demand in the workplace.

- We provide opportunities to explore careers through internships
- We have learning modules where teach how to find the best jobs
- How to get their foot in the door
- How to overcome issues such as lack of experience

- in some courses we give them the opportunity to earn industry certifications such as SolidWorks\
- We require them to create online portfolios that can be used for finding jobs
- in some classes we teach 'the method of referral' that is used to find the best jobs
- We require them to create a linkinIn Account and explore opportunities there
- We regularly share job opportunities with them that are provided by local employers
- In some classes we practice interviewing skills using role playing
- Discuss topics such as how to answer those same questions everyone gets asked in an interview like "Tell me about yourself" or the big ones like, "Well, that's all the questions I have for you, do you have any questions for me?", "How much do you need to make?/What do we need to pay you?"
- 
- Specific course activities.
- Participation in Industry conferences/events.
- Jobs searches.
- LinkedIn Accounts.
- Share Job Opportunities
- Internships.

## PROFESSIONAL DEVELOPMENT SUGGESTIONS

### 4f. What topics, skills or types of professional learning would help you or your program execute future plans?

Information will be forwarded to the Faculty Success Center, Distance Education, Classified Success Network, and the Professional Development Committee to inform future professional development planning.

There is NO SCORING for item 4f.

1. Training and tools focused on creative techniques to increase and maintain student engagement in online technology courses.
2. Training or tools to help learn and discover tools and techniques to foster peer-peer interaction in an online course. Training and/or training resources for learning to the Cloud-based applications we choose to as alternatives to desktop-based SolidWorks. In each case, the Cloud-based versions of their software bear little resemblance to their desktop applications making it necessary to develop the high-level of skill in using it that is required to teach it. Solid Modeling packages being considered include PTC OnShape, AutoDesk Fusion360, Siemens NX and Daussault/SolidWorks 3DExperience applications. AutoThese include OnShape CAD. Adjunct instructors will need to do the same.
3. Time to develop those skills and modify/create new tools for teaching them in courses.
4. Purchase turn-key curriculum for use in courses

## VIP GOALS

### \* 4g.1 What are your Three-Year Visionary Improvement Plan Goals (1-3 goals recommended)?

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

#### VIP1: CLOUD TECHNOLOGY & STUDENT SUPPORT

Increase Enrollments, Improve Retention, and Improve Success by Reducing Technology Barriers to Online Course Delivery, Assessing Student Technology-Literacy, Providing On-campus Technology Access and Supports, Providing Online Support

#### VIP2: ACADMIC PATHWAYS

Increase Enrollments, Improve Retention and Success and Increase Completion By Maintaining and Expanding Academic Pathways Through Existing Partnerships and Seeking Out New Partners

#### VIP3: CAREER PATHWAYS

Maintain and Expand Career Pathways by Updating and Expanding Technology Used, Creating Courses/Certificates/Degrees That are Aligned with Job/Workplace Roles and Advancement, and by Increasing the Breadth of Career Pathways Into Emerging High Growth Industries and Closely Related Fields Not Specifically Addressed By Current Program

### \* 4g.2 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.

**\* 4g.3 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

VIP1: CLOUD TECHNOLOGY & STUDENT SUPPORT

Specifically for Chaffey Goals 1 & 2:

learning, success, and completion for all students as its core equity by recognizing that the learning modalities of every student may not be well suited for, could be entirely incompatible with, online course content delivery, instruction, or support. Disadvantage students often lack access to technology at home or an environment conducive to learning to do their coursework and need somewhere to do it. Equity issues may be at the root of challenges some students face in an online learning environment. Student success, learning and completions

This also aligns with Goal 3.

Local employers are going to have to move to cloud-based CAD within the next 3-5 years whether they want to or not. The major CAD vendors are going to force them to much like Microsoft is doing with Windows 11 and their Office applications.

This VIP aligns with Goal 6 for obvious reasons.

VIP2: ACADMIC PATHWAYS

This VIP also aligns with Goals 1 & 2

Articulation agreements with university programs give our students added incentive to complete the requirements for transfer even if actually doing so may be a longer term objective.

Completing a course that is articulated provides students that must work a window into future academic advancement that may have to be delayed due to more urgent financial priorities but simply the fact that they have a foot in the door in the form of credit for courses in a university program

This VIP also aligns with Goal 2

it focuses on partnerships with schools in our community and the needs of the students and families in them. Articulation with Secondary school Drafting and Pre-engineering programs not only increases enrollments in our courses, it also provides us with new students already have an 'investment' in completing our program. These students also come to us better prepared for our courses and much more likely to succeed.

VIP3: CAREER PATHWAYS

This VIP also aligns with Goals 1 and 2 but focuses on Goal 3 as well.

Local employers need workers possessing skills to use the latest technologies and often do not have them internally. Our students that are hired to work at jobs that use SolidWorks, for example, often find that they are more skilled in using that application than all of their new coworkers are. This is often true even if those co-workers have been using Solidworks for several years.

It is possible to cite a example of former students that have advance to CAD manager, lead, or supervisor roles in less than 2 years after their data of hire. Most of these started with no work experience in CAD prior.