

Comprehensive Program Review Report



Program Review - Ag Technology

Program Summary

2023-2024

Prepared by: Charlie Abee

What are the strengths of your area?: The program has maintained enrollment above 2020 enrollment levels.

There is strong support for the program by local industry.

The program is getting a facility which will allow the program to showcase the curriculum and opportunities.

The mechanized agriculture industry has shown a great deal of interest in working with the program to better develop that power equipment technician program.

What improvements are needed?: The enrollment for the irrigation program has declined as have the number of completers.

There is a need for power equipment technicians which our program is not meeting.

The success rates have declined from 83.5% in 21-22 to 80.2% in 22-23

Describe any external opportunities or challenges.: There is always a need for trained equipment technicians in our area. We currently are in proximity to many local equipment dealers who not only sell equipment but do service and repair as well.

According to the June 2022 Labor Market Analysis for Heavy Equipment Operators from the Center for Excellence, between 2021 and 2026 there is expected to be an increase in equipment technician jobs. We have also been sought out by several equipment dealers to offer training in the areas of hydraulics, 12/24 volt dc electrical, drivetrains, hydrostatics and diesel engine troubleshooting.

Overall SLO Achievement: SLO achievement continues to improve as I gain more experience in teaching some of the irrigation topics I am finding different ways to teach some of the more complex subjects and learning where to slow down so students don't get overwhelmed.

Changes Based on SLO Achievement: No major changes are being made to courses based on SLO achievement this year. There is more of a need to develop new courses and programs which in turn will have their own SLOs.

Overall PLO Achievement: Overall PLO Achievement is improving. The small dataset of completers makes it hard to quantify results.

Changes Based on PLO Achievement: A new program in mechanized agriculture is being developed.

Outcome cycle evaluation: The outcome cycle evaluation is being updated and revised. Some outcomes have fallen by the wayside and are being caught up on.

Action: 2023-2024, 2022-2023, 2021-2022 Objective 1 Ag Mechanics Pathway Development

Establish connections with industry to revitalize the current Ag Mechanics pathway to meet labor market demand. Curriculum, timeline and program activities need to be revitalized

Industry is driving some major changes in the Ag Technology program. We are developing new courses this action will be continued

Leave Blank:

Implementation Timeline: 2021 - 2022, 2022 - 2023, 2023 - 2024

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Identify related course/program outcomes: District Objective 2.4 By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

Person(s) Responsible (Name and Position): Charlie Abee

Rationale (With supporting data): In reviewing the Program Review Data the courses in the Ag Technology pathway have low enrollment and are often canceled. This leads to a struggle to get students to complete these programs. LMI data shows there is a need for trained technicians in annual excess of 200 than are being provided currently. AGTC 103, AGTC 106, AGTC 201, AGTC 210 and AGTC 225 will be reviewed along with the Ag Equipment Technician skill certificate to determine the local need and the changes that need to be made to the program and courses.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2023 - 2024

10/09/2023

Status: Continue Action Next Year

As industry has been consulted with there has been a consistent demand for training in the areas of electrical, hydraulics, power transmissions, troubleshooting, and diesel engines. The program has consulted with the Associated Equipment Distributors and is planning to build the curriculum around the AED standards which have been developed by industry. We have currently meet with N and S Tractor, JG Boswell and EM Tharp Golden State Peterbuilt. Each of these industry partners has their own unique issues but have some commonality in their needs as well. Electrical training is across the board the concept that is needed across all three areas. N and S Tractor and JG Boswell have more specific equipment needs in the area of hydraulics, power transmissions, air conditioning systems, diesel engines, troubleshooting and failure analysis.

Impact on District Objectives/Unit Outcomes (Not Required):

Update Year: 2022 - 2023

10/10/2022

Status: Continue Action Next Year

The program has been involved with the development of a Regional Ag Tech Curriculum. This process has guided the progress of this objective. As a regional objective is taking shape and focus a more localized plan is coming together. Industry partners are being connected with.

Impact on District Objectives/Unit Outcomes (Not Required):

Resources Description

Personnel - Classified/Confidential - This is a request for a 0.5 time lab technician for the Agriculture Technology Area. (Active)

Why is this resource required for this action?: This technician would be in charge of preparing labs, maintaining equipment, maintaining tool and supply inventory. The program is getting a new facility along with the facility comes more tools equipment and maintenance. The program is only asking for 0.5 of a person with hopes of the potential of sharing a person with another program or department.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 100000

Equipment - Instructional - 6- Basic Through Advanced Hydraulic Troubleshooting and Touch Screen Double Station (Active)

Why is this resource required for this action?: These training stations will be for the hydraulics course that will be taught in fall of 2024. These units will allow the full implementation of hydraulic education. Hydraulics is a skill set that is needed by many industry partners and is needed for AED Accreditation.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 540000

Equipment - Instructional - Hydrostatic Transmission Simulator-Electric Motor Driven w/ Troubleshooting (Active)

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Why is this resource required for this action?: This resources is needed for both the Power Transmissions class along with the hydraulics class. This unit will allow students in multiple classes to learn how a hydrostatic transmission functions and how to troubleshoot it. This piece of equipment will be useful across multiple classes. Many types of agriculture equipment have hydrostatic transmissions.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 60000

Equipment - Instructional - Ohm's Law and DC Circuits Trainer Classroom Set (Active)

Why is this resource required for this action?: This equipment is needed for teaching basic DC Electrical along with Ohm's law. These skills are needed for industry along with AED accreditation.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 45000

Equipment - Instructional - 6- Combination Heavy Truck CAN Bus and Multiplexed Lighting System Trainer (Active)

Why is this resource required for this action?: As equipment has become more computer controlled technicians have needed to upskill their knowledge in computer systems. These trainers would allow students to learn the systems along with troubleshoot the systems in large tractors and heavy trucks. These are skills sought after by both the agriculture machinery industry and heavy truck industry.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 150000

Equipment - Instructional - 1-Diesel Engine bench John Deere 6.8L TIER 4F with programmable fault boxes (Active)

Why is this resource required for this action?: This resource is needed for advanced troubleshooting of diesel engines. As California moves to clean up its air engine emission standards are becoming more stringent. This trainer would allow students to learn about those components on a John Deer 6.8L Engine and would allow for faults to be programmed into the system that students would then have to troubleshoot and repair.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 110000

Equipment - Instructional - 6- Equipment HVAC Electronics Training Kit (Active)

Why is this resource required for this action?: Understanding operation and troubleshooting of HVAC Systems on equipment is an important skill necessary for technicians. Equipment HVAC is also a necessary category for the Associated Equipment Distributors Accrediation.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 50000

Equipment - Instructional - Air Conditioning System Trainers (H-Block 1234 yf Refrigerant, H Block, Orifice Tube and Heavy Vehicle) (Active)

Why is this resource required for this action?: This resource is necessary to teach about the various types of air conditioning systems and the troubleshooting of those systems.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 100000

Link Actions to District Objectives

District Objectives: 2018-2021

District Objective 1.1 - The District will increase FTES by 1.75% over the three years

District Objective 2.1 - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years

District Objective 2.4 - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

District Objectives: 2021-2025

District Objective 2.4 - Increase the percentage of CTE students who achieve their employment objectives by five percentage

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points (job closely related to field of study and attainment of a livable wage) and the number of CTE students who successfully complete 9+ CTE units in a single year by 10% from 2021-2025.

Action: 2023-2024, 2022-2023 Objective 2 Develop and Implement Basic Agriculture training for the Agriculture Industry through Non Credit and Competency Based Direct Assessment modalities.

During the 2022-23 School year I would like to develop several Non Credit Ag Irrigation Courses that could be delivered to on farm employees to improve their knowledge of best practices for water use and energy efficiency.

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Implementation Timeline: 2022 - 2023, 2023 - 2024

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Identify related course/program outcomes: District Objective 3.1 Reduce equity gaps in course success rates across all departments by 40% from 2021-2025.

Person(s) Responsible (Name and Position): Charlie Abee

Rationale (With supporting data): Updated Rational 2023 I am changing "Objective 2 Develop and Implement Non Credit Ag Irrigation Training for the Agriculture Industry" to "Develop and Implement Basic Agriculture training for the Agriculture Industry through Non Credit and Competency Based Direct Assessment modalities." The reason for this change is as we have worked through the curriculum on the F3 Grant which our district is a part of we have been required to implement this curriculum through the Competency Based Education Model. This model separates time from learning. It fixes learning and allows time to be variable. This modality bridges some equity gaps between working adults with many obligations and continuing their education. Our traditional 18 week semester with a single start date doesn't work well for the displaced adult who lost their job and needs training right away or the student who had a change of course in life and can no longer attend courses during the time they are offered but want to continue their education. Competency Based Education is a way for us to bridge that gap and make education more equitable for this demographic of people. Especially those who have some college and no degree at they probably have some student debt but are not reaping the benefits of a higher degree.

In 2014 California Governor Jerry Brown signed into law the Sustainable Ground Water Management Act. This law is mandating sustainable use of ground water resources by the year 2040. The Agriculture Division saw this as a need and created Ag Irrigation courses to train people to more efficiently use water. The classes didn't fill because a tradition college path was too difficult for employees to find the time to take classes. The classes were condensed to scheduling 2 days a week allowing students to earn a certificate in 1 semester. Employers and employees still say 2 days a week are a challenge to get off for an entire semester. Therefore the goal of this action is to take the education to the workers. The training in sustainable water use is desperately needed now more than ever. The employees that are managing the water have families to feed may lack reliable transportation may not be able to afford college.

- a.) This goal addresses student success because it is taking the education to the student and meeting them at their workplace where they will be implementing the knowledge they learn.
- b.) This action will allow the instructor to effectively teach more students in a semester because the education will come to the student. This will create stronger relations with the local agriculture community because Tulare County is a critically over drafted sub basin, we are ground zero for pumping allocations and the state is looking at our region to see how we handle the newly implemented regulations. COS has the opportunity to help lift those who work on the farm up and give them the skills to be efficient water managers.
- c.) This action will make education more equitable. On farm employees who are not looking for a college degree but want training will get that training brought directly to them. Farm workers cannot afford the fuel or time away from work to get more training to advance in their careers. This training will give those employees a leg up in industry making them are more valuable asset helping them earn a more livable wage.

This action is critical to our local area. We have had feedback from industry at many occasions such as the World Ag Expo, advisory meetings and other trade shows that short term training is what is needed in irrigation. Employers and employees are not overly interested in degrees at this time, but I would say connecting with farm workers and showing them they can do school may prompt some to further their education.

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Priority: High

Safety Issue: No

External Mandate: Yes

Safety/Mandate Explanation: This action is to help local industry address the implementation of Ground Water Sustainability Plans. These plans are being implemented in the new Water Year starting October 1st.

Update on Action

Updates

Update Year: 2023 - 2024

10/09/2023

Status: Continue Action Next Year

This action is ongoing but the scope of it has changed so I am going to edit the original action. Over the past year we have developed the curriculum for this program. As this is a regional project with 7 other community colleges the project has changed some in its original intention. The scope of it has become more broad. The scope of the project now is intended to deliver basic agriculture education and content to farm workers. The education has become a little more broad in nature once we consulted with our employer partners and our target audience the group decided that basic agriculture safety, digital literacy, workplace effectiveness, equipment operation and basic agricultural knowledge were the topic areas that needed to be covered. The curriculum is going to be offered in a Competency Based Education format which is still being defined at the Chancellors Office so we are working through this as fast as we can.

Impact on District Objectives/Unit Outcomes (Not Required):

Resources Description

Equipment - Non-Instructional - 4 door four wheel drive truck capable of pulling gooseneck trailers (Active)

Why is this resource required for this action?: This resource is required to meet this objective because some of the non credit offerings could be done at a growers farm. The Ag Technology Department has a Mobile Irrigation Technology Trainer that requires a 3/4 ton truck to pull it. The Ag Division had adequate vehicles until one of the vehicles was totaled in an accident. This put the agriculture division behind on a vehicle which would make it difficult to offer these courses on farms sometimes as we have other programs using these vehicles to get materials, animals, take students to competitions and other various activities around the agriculture units.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 80000

Personnel - Classified/Confidential - Competency Based Education Student Success Coordinator (Active)

Why is this resource required for this action?: A major component of the Competency Based Education model is built in wrap around student support services. This person would check in with students on weekly basis, monitor their progress through the modules of their content and activate student support services when needed for the students.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 150000

Link Actions to District Objectives

District Objectives: 2021-2025

District Objective 3.1 - Reduce equity gaps in course success rates across all departments by 40% from 2021-2025.

Action: 2023-2024, 2022-2023, 2021-2022 Objective 3 Establish Ag Mechanics Industry Partnerships

Jobsite learning is an important concept in CTE. We established industry partners to place Ag Irrigation students at for internships and now would like to do the same thing with the Ag Mechanics side of Ag Technology. These internships may be done concurrently while students are enrolled or interspersed between class sessions.

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Implementation Timeline: 2021 - 2022, 2022 - 2023, 2023 - 2024

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Identify related course/program outcomes: District Objective 2.4 By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

Person(s) Responsible (Name and Position): Charlie Abee

Rationale (With supporting data): Connection to real world or industry is important for student learning. It allows them to experience what is being taught in the classroom in a real life situation. Current industry is experiencing a labor shortage.

Training students while they are placed at an internship site allows the industry partner to evaluate the student to see if they would be a good fit for the company.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action	
<p><i>Updates</i></p> <p>Update Year: 2023 - 2024</p> <p>Status: Continue Action Next Year</p> <p>This action will continue. We are in the process of building a new building and developing a new program that focuses on training Agriculture Power Equipment (tractors, loaders, backhoes, skid steers etc.) technicians. This action has come directly from connecting with industry. As this action continues more local industry folks will be consulted so our program will meet the specific needs of our local industry.</p> <p>Impact on District Objectives/Unit Outcomes (Not Required):</p>	10/11/2023
<p>Update Year: 2022 - 2023</p> <p>Status: Continue Action Next Year</p> <p>Connections have been made with industry and more continue to be made. This action is going to be continued this year as development of this program is a large goal this year.</p> <p>Impact on District Objectives/Unit Outcomes (Not Required):</p>	10/07/2022

Link Actions to District Objectives

District Objectives: 2018-2021
District Objective 1.1 - The District will increase FTES by 1.75% over the three years
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District Objectives: 2021-2025
District Objective 2.4 - Increase the percentage of CTE students who achieve their employment objectives by five percentage points (job closely related to field of study and attainment of a livable wage) and the number of CTE students who successfully complete 9+ CTE units in a single year by 10% from 2021-2025.

Action: 2022-23 Objective 1 Develop an Introductory Level Course for the Ag Technology Ag Irrigation Program

An introductory level Ag Technology/Ag Irrigation course will be developed. The instructor will survey industry and program needs to create a course that gives students a basic starting point in Ag Technology/Ag Irrigation.

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Implementation Timeline: 2022 - 2023

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Identify related course/program outcomes: This Objective Aligns with District Objective 2.4 Increase the percentage of CTE students who achieve their employment objectives by five percentage points (job closely related to field of study and attainment of a livable wage) and the number of CTE students who successfully complete 9+ CTE units in a single year by 10% from 2021-2025.

Person(s) Responsible (Name and Position): Charlie Abee

Rationale (With supporting data): Ag Technology encompasses a large area of agriculture and is women in all facets of agriculture production. Currently there is not a method for giving students a broad strokes overview of agriculture technology and the importance it has in feeding the world in the future with challenges to both labor and water resources. This course will be designed to give an overview of the Ag Technology/Ag Irrigation Field, provide for some career exploration for students and help recruit students into the program.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2023 - 2024

10/09/2023

Status: Action Discontinued

When meeting with industry there seems to be more demand for training in the skills of hydraulics, electrical, power transmissions and troubleshooting. With the development of all of these courses it is best to develop these over this introductory course.

Impact on District Objectives/Unit Outcomes (Not Required):

Link Actions to District Objectives

District Objectives: 2021-2025

District Objective 2.4 - Increase the percentage of CTE students who achieve their employment objectives by five percentage points (job closely related to field of study and attainment of a livable wage) and the number of CTE students who successfully complete 9+ CTE units in a single year by 10% from 2021-2025.

Action: 2023-2024 Objective 3 Develop a Mechanized Agriculture Program

I will develop a Mechanized Agriculture Pathway at COS that will meet the need of local equipment dealers, farmers and independent repair shops . This program will also seek Associated Equipment Distributors Foundation Accreditation.

Leave Blank:

Implementation Timeline: 2023 - 2024

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Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Charlie Abee

Rationale (With supporting data): There was an undersupply of 543 workers in this area in the region last year.

Priority: High

Safety Issue: No

External Mandate: No

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Safety/Mandate Explanation: