Comprehensive Program Review Report



Program Review - Ag Technology

Program Summary

2020-2021

Prepared by: Charlie Abee

What are the strengths of your area?: The Ag Technology program has benefited from a Strong Workforce Development Grant and has established an Agriculture Irrigation sector to its program. This program is highly supported by industry. Reviewing the Program Review Data the following observations were made:

- 1. Success rate for most classes and program tend to be 70% and above.
- 2. FTES/FTEF Ratio is increasing
- 3. FTES numbers are increasing
- 4. 2019-20 had the highest number of awards for the program in the last 3 years.
- 5. Number of majors is staying consistent.

6. Strong Industry support by partnerships formed with Irrigation Matter, Exeter Irrigation, Willits Pump, Wild Eye, JG Boswell, Irrometer, Kaweah Pump, Gar Bennett, Southern California Edison, Cal Poly ITRC, Fresno State CIT, HotSpot Ag, and Fruit Growers Supply.

7. The program has memberships in the Engine and Equipment Training Council, the Irrigation Association and the California Agriculture Irrigation Association. These memberships allow for student scholarships, discount rates on curriculum, instructor certification, and program promotion on the state and national levels.

8. The program has strong relationships with feeder high schools. The instructor serves on advisory committees for Granite Hills High School, Lindsay High School, VTEC High School and Woodlake High School.

9. The program is a Associate Member of the Irrigation Association and the California Agriculture Irrigation Association which provides scholarship, placement, certification, training and collaboration opportunities for students and faculty.

10. The program is a collegiate member of the Engine and Equipment Training Council which provides opportunities for placement, scholarship and certification for students.

What improvements are needed?: The Ag Technology program has historically been coupled with the welding program. As the programs have divided enrollment for the Ag Technology program has struggled. This overall has a negative impact on FTES, FTES/FTEF ratio and success rates as noted below.

1. FTEF/FTES ratio is 6.45 when the district target level is 17.5. There is a lot of room for improvement here.

2. FTES for the program is 11.87 the goal for the program is 20

3. Award recipients typically are under 10 per year which is below the goal of 20 per year.

Describe any external opportunities or challenges.: Opportunities

1. The Sustainable Groundwater Management Act (SGMA), legislation signed by the governor to create a sustainability plan for groundwater in the state of California, is going to have an influence on the amount of water that can be pumped in California. This is going to provide opportunities in the irrigation field by promoting the improvement of existing irrigation systems and the need for better water management.

2. We have strong relationships with feeder high schools and those instructors look to us for leadership and guidance in their programs.

Challenges

1. Local Agriculture programs focus a lot of attention on welding, fabrication, livestock ornamental horticulture and floral design. This creates a challenge when trying to recruit students into the agriculture technology program because it is different than what they are used to at the high school level. The exposure to the industry is limited.

2. SGMA will present a challenge as well as an opportunity because it could potentially limit the number of acres farmed in California.

3. The State Agriculture Education Curriculum Standards place very little emphasis on irrigation systems. Many high school instructors lack training in irrigation and ag technology.

Overall SLO Achievement: Student learning outcome baselines for classes have been established. Improvement is continuing on the courses that have been offered in years past. AGTC 219 and PLSI 118 were just offered last semester for the first time and with COVID 19 interrupting the semester a solid assessment of achievement was challenging. Rearranging course topics in PLSI 108 has helped students with their grasp of irrigation scheduling.

Changes Based on SLO Achievement: I am exploring more ways to demonstrate plant water status so students have a concept of the difference between soil moisture status and plant water status.

Overall PLO Achievement: Overall PLO achievement is solid except for the fact that program completers are low. **Changes Based on PLO Achievement:** The program is reformatting the offering of the program to a single semester to boost

enrollment, supply skilled labor and decrease attrition.

Outcome cycle evaluation: A complete cycle has been done so outcomes should be discussed with advisory committee.

Action: 2020-2021 Objective 1: Provide Intense training coupled with work based learning

Through the direction of the advisory committee the program is going to create a cohort model of training coupled with a work based component so that students receive 280 hours of in class instruction coupled with 225 hours of job site learning. The in class courses will be clustered on two days a week to allow for students the remaining days to complete their work based learning.

Leave Blank:

Implementation Timeline: 2019 - 2020, 2020 - 2021

Leave Blank:

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Identify related course/program outcomes: District Objective 1.1 The district will increase FTES by 1.75% over three years. Person(s) Responsible (Name and Position): Charlie Abee

Rationale (With supporting data): The Ag Technology Program has undergone some major changes in the last 3 years with the development of new certificates and reformatting of the Associates Degree. This program is new to many people. Retention rates in this program struggle reducing the number of program completions. Industry needs trained employees in a timely manner and a traditional "2 year" program doesn't allow students to finish in a timely manner or for a work ready crop of trained irrigation techs to be available to industry who needs employees. This approach allows for intense 2 day a week training.

Priority: High Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Update on Action

Updates Update Year: 2020 - 2021 Status: Continue Action Next Year

10/12/2020

Instructor met with advisory committee to discuss ideas and developed a plan to make Irrigation Technician program a single semester program that incorporates worked based learning along with classroom instruction.

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

Link Actions to District Objectives

District Objectives: 2018-2021

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

Action: 2020-2021 Objective 2 Develop Work site learning partnerships with industry for Irrigation Cohort Program

The goal of this action is to develop 15 to 20 student placement sites for students who are in the Irrigation Cohort Program. These site would be asked to provide students with a minimum of 180 hours of work based learning for completion of their Irrigation Certificate.

Leave Blank: Implementation Timeline: 2020 - 2021 Leave Blank: Leave Blank: Identify related course/program outcomes: District Objective 2.4 Person(s) Responsible (Name and Position): Charlie Abee Rationale (With supporting data): The industry support for this program is incredibly strong because of the high demand for irrigation technicians. Industry is willing to work with young people to get them into the positions their companies have open. The industry views the programs job is to give the students the big picture and the "why" and the worksite learning is where students get to practice what is learned in the classroom in the environment that they will be working in.

Priority: High Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Link Actions to District Objectives

District Objectives: 2018-2021

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

Action: 2020-2021 Objective 3 Develop support systems for students in the Irrigation Cohort Program

Develop a support mechanism for students in the Irrigation Cohort Program that includes registration help, financial aid assistance and career development assistance.

Leave Blank: Implementation Timeline: 2020 - 2021 Leave Blank: Leave Blank: Identify related course/program outcomes: District Objective 2.4 Person(s) Responsible (Name and Position): Charlie Abee Rationale (With supporting data): The program may be working with students who are atypical in their background. These potential students may be first generation college students or may be working in the field already and have difficulty naviga

potential students may be first generation college students or may be working in the field already and have difficulty navigating the systems within the educational system. Providing this service will not only assist the student in meeting their career goals but will assist the program in meeting its productivity goals.

Priority: High

Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Link Actions to District Objectives

District Objectives: 2018-2021

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

Action: 2020-2021 Objective 4: Enhance Hands on Learning Opportunities for Students on Farm

I would like to enhance the ability for students to engage in meaningful hands on opportunities on the district farm. The development and the maintenance of the SAgE Farm are important to providing these opportunities.

Leave Blank:

Implementation Timeline: 2019 - 2020, 2020 - 2021

Leave Blank:

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Identify related course/program outcomes: District Objective 2.4 Increase number of students who achieve their employment objectives by 5%

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

Rationale (With supporting data): The development of the SAgE Farm at the Tulare College Center has been a great tool for training students in the hands on work in irrigation and plant science. The expanded use and development of the SAgE Farm will be instrumental in accomplishing district objective 2.4 by giving our students strong hands on training.

Priority: High Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2020 - 2021

Status: Continue Action Next Year

Student training on the farm continues. Equipment has been purchased to allow for pressure bombing of trees. Due to COVID-19 in Spring of 2020 the actual process did not happen but as regulations relax we will start to incorporate pressure bombing. Action will be continued but with another method rather than using pressure bombing, dendrometers will be investigated and incorporated into the educational program.

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

Resources Description

Equipment - Instructional - A nitrogen tank and fill hose are needed for the leaf pressure chamber. (Active)

Why is this resource required for this action?: Nitrogen gas is used to compress the leaf to extract water from the stem. A student can typically get 60 readings on 1 tank of nitrogen and then the cylinder has to be filled. The cylinder can be filled at a welding supply store but it takes time to go to the supply store to get it filled. A large tank would allow the tank in the pressure chamber to be filled multiple times before the big tank needed to be refilled. Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 1000

Link Actions to District Objectives

10/12/2020

District Objectives: 2018-2021

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

Action: 2019-2020 Objective 3 Instructor Professional Development in the area of Irrigation Design

Ag Tech 219 Irrigation System Design has been revised through the curriculum process to focus more on Agriculture Irrigation System Design. With this change the instructor needs some professional development to enhance his knowledge in Irrigation System Design specifically the new software available. The focus of this action will be for the instructor to obtain training in Irrigation system design. The potential training for this objective include

-Irrigation Association Show and Education Conference

-ITRC Training

-IrriCAD Training offered through Nelson Irrigation

In order to stay up to date with technology, curriculum and planning the instructor will participate in professional development activities. The following professional development activities will be key for instructor success.

- -Agriculture Division Faculty Retreat
- -California Agriculture Teachers Association Summer Conference, Fall and Spring Regional Meetings
- -Irrigation Association Show and Education Conference
- -Irrigation Association Educators Academy
- -California Agriculture Irrigation Association Fall and Spring Meetings
- -California Irrigation Institute
- -Cornell Pump Training

Leave Blank: Essential for Operation

Implementation Timeline: 2019 - 2020

Leave Blank: 08/13/2018

Leave Blank:

Identify related course/program outcomes: District Objective 4.3

College of the Sequoias Board of Trustees, administration, faculty, and staff will engage in best practices and staff development to sustain effective operational systems for institutional assessment and continuous improvement.

Relates to all course outcomes

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

Rationale (With supporting data): Agriculture and Technology are continually changing fields. Professional development is key for instructors to stay abreast new advances in the industry. Professional development will keep the instructors knowledge relevant making students competitive in the job market.

Priority: High Safety Issue: No External Mandate: Yes Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2020 - 2021

10/12/2020

Status: Continue Action Next Year

This is an ongoing action. COVID 19 regulations have made some professional development more accessible. The instructor has participated in many virtual industry training. The above mentioned training is still relevant to the irrigation programs viability and success.

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

Link Actions to District Objectives

District Objectives: 2018-2021

District Objective 4.3 - College of the Sequoias Board of Trustees, administration, faculty, and staff will engage in best practices and staff development to sustain effective operational systems for institutional assessment and continuous improvement.

Action: 2019-2020 Objective 4 Integration of automation into irrigation curriculum.

I would like to incorporate automation training into the Irrigation Construction and Installation Certificate through a collaborated effort with the COS Industrial Automation Program. A needs assessment needs to be conducted then turned into training objectives incorporated into the certificate.

Leave Blank: Implementation Timeline: 2019 - 2020 Leave Blank: Leave Blank: Identify related course/program outcomes: District Objective 2.4 Increase number of students who achieve their employment objectives by 5% Person(s) Responsible (Name and Position): Charlie Abee Rationale (With supporting data): The need for technicians trained in automation has come from a sit down meeting with Bennett Water Systems. Industrial Automation is becoming more prominent in manufacturing and other industrial applications and it is finding its way into the irrigation field. Automation will reduce labor and allow for more precise water application and nutrient management. Priority: Medium Safety Issue: No

External Mandate: No Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2020 - 2021

Status: Action Discontinued

This action is discontinued. The advisory committee and instructor feel it is best to increase the program numbers and develop industry partnerships based on the foundational knowledge that students will get in the courses. Additional training can be added in the future.

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

Link Actions to District Objectives

District Objectives: 2018-2021

District Objective 4.2 - Improve organizational effectiveness by strengthening operations of and communication between District departments, divisions, and constituents

Action: 2018-2019 Instructor Certification

In order for the program to have industry credibility the instructor should hold industry certifications so that the instructor demonstrates competency in the area of instruction at an industrial accepted level. Therefore the instructor will create a plan to earn the following industry certifications: Certified Agriculture Irrigation Specialist (CAIS) and Certified Irrigation Designer-Agriculture (CID Ag)

Leave Blank: Nonessential/Nice to have Implementation Timeline: 2018 - 2019, 2019 - 2020, 2020 - 2021 Leave Blank: 09/01/2018 Leave Blank: 12/17/2021 10/12/2020

Identify related course/program outcomes: District Objective 2.4 y 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): The rational for this objective are:

(a) how the action will address academic quality or student success

This action will improve allow the instructor to improve their ability and knowledge base ultimately increasing the academic quality and student success. It will educate the instructor on the industry knowledge expectations of someone who holds the industry certification.

(b) how the action will promote resource efficiency or improve internal / external relations.

This action will promote resource efficiency because the instructor will learn and know what tools are being used by professionals and not be sold a bill of goods by an instructional supplies company. It will improve external relations because the instructor will be viewed as an equal in the industry by industry partners.

(c) how the action will address an external opportunity or challenge.

This will address and external opportunity and challenge because the instructor who is training irrigation designers will have their Certified Irrigation Designer credentials and will hold students to those same standards. As noted in the program opportunities the Environmental Quality Incentives Program will be included in the next Farm Bill providing funding for irrigation system improvements.

(d) how the action will improve results on outcomes at any/all levels.

This action will allow the instructor to gain the knowledge and skill necessary to make students successful in obtaining their certifications. It will provide notoriety for the program and lead to more students into the program and more successful students out of the program.

Priority: Medium Safety Issue: No

External Mandate: Yes

Safety/Mandate Explanation: The Irrigation Association offers continuing education hours for certification renewal every year by certified instructors. In order to become a certified instructor for the Irrigation Association the individual must hold an Irrigation Association Certification. This will add credibility to the program and provide opportunities for training through the Training Resource Center.

Link Actions to District Objectives

District Objectives: 2018-2021

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

District Objective 4.3 - College of the Sequoias Board of Trustees, administration, faculty, and staff will engage in best practices and staff development to sustain effective operational systems for institutional assessment and continuous improvement.