Comprehensive Program Review Report



Program Review - Plant Science

Program Summary

2022-2023

Prepared by: Allison Ferry-Abee

What are the strengths of your area?: 1. Equity in availability of classes for non-traditional students

Most Plant Science students work full time, and are returning students seeking a career change. They cannot afford to quit their jobs to go to school full time.

In student surveys, ninety percent of plant science students preferred class times after 5pm. Thirty five percent of students could be available from 3 to 5pm. Only 15% were available to take classes during typical "school hours" from 8am to 3pm. Typical work hours for plant science students are 6 or 7am to 4pm.

Hybrid class formats allow students to experience hands-on learning while also offering reduced time required on campus. Average student drive time of Plant Science students to the Tulare campus is 25 minutes, with some students driving 1 hour and 30 minutes to attend classes.

All Plant Science core classes have been changed to a time frame between 3pm and 9pm, and most are offered in a hybrid format (in-person labs and lecture/discussion online).

2. The Plant Science program provides opportunities for students to increase their career qualifications.

Based on student surveyed in Spring 2021, 73% percent are first time secondary students, and 25% already have a Bachelor's degree. Eighty-five percent of students already have a full time job in Ag, with the majority (60%) working more than 40 hours per week. The most common jobs were as a field checker/scout, propagation, ag labor management, and ag sales representative. One hundred percent of students are taking Plant Science classes to obtain a higher skill, higher paying job in Agricultural Support Services, including as a Pest Control Advisor (PCA), Certified Crop Advisor (CCA), or Agronomist.

3. The Plant Science Program utilizes the Student Agriculture Experimental Farm (Sage Farm) and Tulare Campus farm to provide practical, hands-on training to all students in the program.

4. The job market for Plant Science students is extremely positive.

The California Pest Control Adviser's Association (CAPCA) estimates that for every Plant Science graduate (Associate's or Bachelor's) OR student with a Pest Control Advising license, there are at least 3 jobs available in California (Krista Frelinger, Education Committee Chair, CAPCA, personal communication). Note: LMI Data isn't very useful for this program because it doesn't identify the most important career sectors in Plant Science, particularly Advisors for the ag industry.

In order to make any pest control recommendations in the state of California, you must have a license from CA Department of Pesticide Regulation. It involves passing a series of exams and either two years of work experience in pest monitoring, or a Bachelor's degree in an agricultural field. In order to take the exam, you must also have completed 42 units of coursework in specific topics related to plant, biological, and animal science. Most Plant Science students are taking classes at COS in order to meet these unit requirements. Plant Science classes are designed to not only meet these specific requirements, but also prepare students to take the PCA exams.

5. The instructors regularly attend industry functions and scientific conferences and update course materials accordingly.

6. All courses have assessments entered and all courses have had assessments reviewed and updated per the schedule.

7. The program has an active advisory of industry and educational partners committed to sharing knowledge and providing input for success.

What improvements are needed?: 1. Student enrollment in the program.

Recruitment into the program is a challenge. Typically, students are recruited into Ag programs through participation in high school FFA (Future Farmers of America) programs. However, unlike many other agricultural departments, the majority of plant science students did not participate in FFA. Only 24% of current students were involved in FFA in high school. Of the previous FFA students, about half of them were involved in plant related judging contests (such as Citrus Judging or Agronomy) and half were involved with animal showing or judging.

Most current Plant Science students heard about the program through a friend or work colleague. The Plant Science program needs to be promoted in industry, including educational events for ag workers and trade publications.

2. Increase in degrees and certificates.

Because a specific degree or certificate is not required to obtain a PCA license, many students do not pursue it. The PCA license requires 42 prerequisite units. Completing the units is truly an achievement. A certificate needs to be created for students to be recognized for their achievement.

3. Maintenance of SAgE Farm

The entire school farm at the Tulare campus is utilized for all Plant Science classes. SAgE Farm (Student Ag Experimental Farm) is a portion of the farm that is utilized only for student instruction. While it is a small area (around 5 acres), it is very time intensive to manage. This year has been very challenging for weed control in particular.

4. Course Development and Improvement

Dr. Ferry-Abee will be teaching a new soils section in 2024, and needs to determine lab equipment needs.

Lab equipment is needed to replace broken dissecting scopes, broken mortars and pestles, and update some basic tools for labs.

4. Instructor Continuing Education.

Continued training of the Plant Science instructor to maintain knowledge of current (and ever-changing) industry, safety and environmental standards.

Describe any external opportunities or challenges.: Changes have been made in how students and their educational goals are audited for financial aid. In previous years, there was no audit of whether a student's educational goals matched the actual classes they were taking. However, this will be audited in the future. This means that a new certificate must be created so that students taking courses to qualify for the PCA license (a California Department of Pesticide Regulation qualification) are able to qualify for financial aid. This will also aid in tracking student achievement.

Overall SLO Achievement: SLO achievement was assessed in 9 classes for the 2021-2022 period. All achievement was satisfactory (above 70%) and , while slightly down from 2020-2021, was consistent with results from previous years. **Changes Based on SLO Achievement:** SLOs were reviewed for all classes in 2021-2022. They will continue to be monitored, assessed, and updated as needed on a yearly cycle.

Overall PLO Achievement: Overall success rates have remained stable in the past three years. The full time instructor has modified classes to a hybrid format while maintaining student success and class rigor.

Changes Based on PLO Achievement: It is expected that with continued marketing efforts, enrollment will remain stable or increase slightly in future assessment cycles.

Outcome cycle evaluation: In the last three years, significant improvements have been made in curriculum, student assessment, and student learning opportunities.

Action: 2022-2023, Plant Health Certificate Proposal

Create and propose a Plant Health Certificate that mirrors DPR's PCA (Pest Control Advisor) prerequisite courses.

Leave Blank:

Implementation Timeline: 2022 - 2023 Leave Blank: Leave Blank: Identify related course/program outcomes: Students are already taking the necessary courses at COS to complete the prerequisite classes needed to qualify to take the PCA exam. A certificate will allow their progress to be tracked in Degree Works, more straightforward counseling, and will increase the number of degrees and certificates earned. Person(s) Responsible (Name and Position): Allison Ferry-Abee Rationale (With supporting data): Priority: High

Safety Issue: No

External Mandate: Yes

Safety/Mandate Explanation: Because of the auditing process for financial aid, the classes a student takes must qualify for a specific degree or certificate to receive financial aid. Creation of a plant health certificate will allow students to meet these requirements.

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: 2022-2023, Investigate Equipment Needed for a New Soils Section

A new section of Soils (AG 004) is being proposed as a night class. We need to investigate what lab equipment will be needed for the additional section.

Leave Blank: Implementation Timeline: 2022 - 2023 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee Rationale (With supporting data): Priority: Medium Safety Issue: No External Mandate: No Safety/Mandate Explanation:

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

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

Action: 2022-2023, Add Classes to DPR Pre-Approval List

CA Department of Pesticide Regulation (DPR) reviews college courses and pre-approves them to meet Pest Control Advisor course requirements. Several courses could meet these prerequisites (AG 002 and CHEM 020) and need to be submitted to DPR for approval. Additionally, a course already on the pre-approved list (PLSI 113) has had a title change (from Introduction to Viticulture to Grape Production). I need to request an update to DPR's list.

Leave Blank: Implementation Timeline: 2022 - 2023 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee Rationale (With supporting data): Priority: High Safety Issue: No External Mandate: No Safety/Mandate Explanation:

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: 2022-2023, SAgE Farm Maintenance Improvement

Improve maintenance of the Student Ag Experimental Farm (SAgE Farm) through purchase of a weeding implement for the tractor, and a replacement work truck for the Ag Instructional Specialist.

Leave Blank: Implementation Timeline: 2022 - 2023 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee Rationale (With supporting data): Priority: High Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Resources Description

Equipment - Instructional - Tillage equipment to mechanically control weeds; compatible with current tractor. https://www.tilmor.com/en-us/products/924/adaptive-cultivator-system-g5?sc=KIT-1055-R-A6B1C1D1 (Active) Why is this resource required for this action?: This equipment will be used for mechanical weed control demonstrations in PLSI 110, PLSI 113, PLSI 105, and PLSI 012.

Additionally, this equipment is important for weed control at SAgE farm. Currently, weeds are controlled primarily with hand weeding, followed by herbicides. We need another control option that is less time consuming than hand weeding, and is not a chemical control. Student workers do not perform chemical control (i.e. pesticide application) at SAgE farm. This equipment could be used by safety trained student workers.

Notes (optional): Cost below includes equipment, freight costs, and taxes. Cost of Request (Nothing will be funded over the amount listed.): 7500

Equipment - Instructional - Replacement truck (4 door, 4WD) for the Agriculture Division (Active)

Why is this resource required for this action?: This truck is a replacement for an Agriculture Division truck that was totaled in Spring 2022. The truck is used by the instructional specialist to maintain SAgE Farm, prepare labs, and transport equipment for all agriculture instructors.

Notes (optional):

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

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

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

Action: 2022-2023, PLSI 110 Course Organization Update

CA Department of Pesticide Regulation publishes knowledge expectations for the Pest Control Advisor (PCA) exams. The course PLSI 113 teaches all of the knowledge expectations for the Integrated Pest Management exam. I would like to match my course module sequence to the order of topics in the knowledge expectations. The goal is to improve the flow of the course to better match industry goals.

Leave Blank: Implementation Timeline: 2022 - 2023 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee Rationale (With supporting data): Priority: Medium Safety Issue: No External Mandate: Yes Safety/Mandate Explanation: Knowledge Expectations are set by the California Department of Pesticide Regulation. I am more closely meeting those external industry expectations.

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

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

Action: 2021-2022, Syllabi Review

Course syllabi for AG 003, AG 125, PLSI 001, PLSI 105, PLSI 106, PLSI 110, and PLSI 113 will be reviewed in light of promoting student equity.

Leave Blank: Implementation Timeline: 2021 - 2022 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee Rationale (With supporting data): Priority: High Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2021-2022 Status: Action Completed 10/12/2022

All syllabi were reviewed for improving student equity. New verbiage was used in several areas to help students feel more welcome, and for student support services to be more accessible and approachable.

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: 2021-2022, Strengthen Relationships with Industry Partners

Two to three large companies that hire Plant Science graduates will be identified. We will reach out to them and explore whether a Plant Science degree or certificate could increase job prospects, and explore what requirements they are seeking in new hires. If appropriate, these qualifications could be incorporated into the program. This could potentially increase marketability of COS Plant Science students with a degree or certificate, rather than just a PCA license.

Leave Blank: Implementation Timeline: 2021 - 2022 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee, Plant Science Instructor Rationale (With supporting data): Priority: Medium Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2021-2022

Status: Action Completed

We met with three major employers of PCAs--GAR Bennet, Nutrien, and Helena, to discuss the Plant Science curriculum. The industry did not say they would hire a student with a Plant Health Certificate over a student with no certificate who had taken equivalent classes. However, they were supportive of the Plant Science program in general and approved of the current curriculum.

This information shows that, while supportive in general, the pest control industry is not very interested in certificates when hiring.

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

Link Actions to District Objectives

10/12/2022

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

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

Action: 2021-2022, Marketing Strategy

The Plant Science department will hold monthly or bi-monthly meetings with the Dean and relevant COS staff to explore marketing opportunities for the Plant Science program.

Leave Blank: Implementation Timeline: 2021 - 2022 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee. Plant Science Instructor Rationale (With supporting data): Priority: High Safety Issue: No External Mandate: No Safety/Mandate Explanation:

Update on Action

Updates

 Update Year: 2021-2022
 10/12/2022

 Status: Action Completed
 10/12/2022

 Bi-monthly meetings were held to discuss marketing of the Plant Science program. Goals were identified, and marketing materials were developed and reviewed.

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

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

Action: 2021-2022, High School Agriculture Teacher Survey

Local high school agriculture teachers will be surveyed to determine needs for a Crop Production course designed for Dual Enrollment.

Leave Blank: Implementation Timeline: 2021 - 2022 Leave Blank: Leave Blank: Identify related course/program outcomes: Person(s) Responsible (Name and Position): Allison Ferry-Abee Rationale (With supporting data): The overarching goal for an I

Rationale (With supporting data): The overarching goal for an Introduction to Crop Production course would be to provide a connection between high school ag programs and the College of the Sequoias. It would provide an opportunity for high school students to learn more about plant science, while maintaining the educational standards of COS. Local high school ag teachers

need to be surveyed about their current lab capabilities to develop a course description that would be both applicable and meet the needs of students.

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

Update on Action

Updates

10/12/2022

Update Year: 2021-2022 Status: Action Completed

An informal survey was conducted at the CA Agriculture Teacher's Association summer conference. The majority of Plant Science/Horticulture teachers in the Tulare/Kings area were interested in any dual enrollment courses.

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

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