

Comprehensive Program Review Report



Program Review - Plant Science

Program Summary

2023-2024

Prepared by: Allison Ferry-Abee

What are the strengths of your area?: 1. The Plant Science program provides opportunities for students to increase their career qualifications.

2. 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.

3. 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.

Ninety-eight percent of Plant Science students are pursuing a PCA license.

4. Class times and formats have been changed to meet student demand.

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 many are offered in a hybrid format (in-person labs and lecture/discussion online).

5. Industry awareness and support for the Plant Science program has grown in the last several years, and the program has gained several valuable donations from community members for the new Student Agricultural Experimental Farm, (SAG E Farm). The rigor of the curriculum has also increased to match industry expectations.

What improvements are needed?: 1. Increase 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 achievements of students need to be tracked and impediments to degree obtainment need to be determined.

3. Instructor Continuing Education.

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

4. Changing Industry Needs

Agriculture is a rapidly changing industry, both in terms of legislation and technology employed. The Plant Science program must match industry's needs in order to train students effectively.

Describe any external opportunities or challenges.: Because a specific degree or certificate is not required to obtain a PCA license, many students do not pursue it. The achievements of students need to be tracked and impediments to degree obtainment need to be determined.

Overall SLO Achievement: SLO achievement was assessed in 9 classes for the 2020-21 period. All achievement was satisfactory (above 70%) and was consistent with results from previous years.

Changes Based on SLO Achievement: SLOs were changed in three classes (PLSI 106, AG 003, and PLSI 113) to update them to current standards and teaching methods of the instructor. All courses will continue to be monitored and assessed.

Overall PLO Achievement: Overall success rates have remained stable in the past two years, which is an achievement during COVID. The full time instructor has modified classes to a hybrid format while maintaining student success and class rigor.

FTES/FTEF ratios have decreased slightly from 9.98 in 2021-22 to 9.41 in 2022-23.

Changes Based on PLO Achievement: It is expected that increasing the number of evening classes will reflect an increase in enrollment in the upcoming evaluation cycle.

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

Action: Plant Science Program Marketing

Many good paying jobs in the Plant Science sector remain unfilled because there are not enough trained people for the jobs, and not enough students are interested in Plant Science and/or know about the program and its opportunities. Funding is needed for marketing material to increase awareness of the plant science program and job opportunities.

Leave Blank:

Implementation Timeline: 2023 - 2024

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Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Allison Ferry-Abee

Rationale (With supporting data):

Priority: High

Safety Issue: No

Program Review - Plant Science

External Mandate: No

Safety/Mandate Explanation:

Link Actions to District Objectives

District Objectives: 2021-2025

District Objective 1.1 - The District will increase FTES 2% from 2021 to 2025.

District Objective 2.1 - Increase the number of students who earn an associate degree or certificate (CTE and non-CTE) by 5% from 2021-2025.

Action: Instructor Continuing Education

The Plant Science Instructor will complete continuing education to maintain relevancy and ensure students meet industry needs and standards.

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Implementation Timeline: 2023 - 2024

Leave Blank:

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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: 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, Update Instructional Equipment to Industry Standards

Update instructional equipment, including a greenhouse at COS to current industry standards.

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Implementation Timeline: 2023 - 2024

Leave Blank:

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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

Program Review - Plant Science

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, Textbook Equity Assessment

Assess which of the required textbooks for Plant Science have multiple, current copies in the library, and obtain copies as needed.

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Implementation Timeline: 2023 - 2024

Leave Blank:

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Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Allison Ferry-Abee

Rationale (With supporting data): Availability of textbooks is an important facet of student equity. In specialized CTE classes, low and no-cost textbooks are not always available. In order to promote student equity, we want to ensure several copies of all required textbooks for Plant Science classes are available at the Tulare campus library.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Resources Description

Equipment - Instructional - Additional textbook copies. (Active)

Why is this resource required for this action?:

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 750

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, Purchase Lab Equipment Needed for Extra Section of Soils Class

An additional section of Soils (AG 004) is being added and will be taught by a different instructor. Additional lab equipment (non-consumable) is needed for specific laboratory experiments for the additional section.

Leave Blank:

Implementation Timeline: 2023 - 2024

Leave Blank:

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Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Allison Ferry-Abee

Rationale (With supporting data): During 2022-2023 Program Review, needs for an additional AG 004 Soil class section were assessed, and the following needs were identified. Additional Munsell Soil Color charts are needed (class set of 12, 1 per pair of students) and 6 hygrometers for quantifying soil texture are required, requiring \$3,000 of funding.

Priority: High

Safety Issue: No

External Mandate: No

Program Review - Plant Science

Safety/Mandate Explanation:

Resources Description

Equipment - Instructional - 6 Munsell Color Charts and 12 Soil Hydrometers (Active)

Why is this resource required for this action?: An additional section of the class is being added.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 3000

Link Actions to District Objectives

District Objectives: 2021-2025

District Objective 1.1 - The District will increase FTES 2% from 2021 to 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, 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: 2023 - 2024

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Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Allison Ferry-Abee

Rationale (With supporting data): 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.

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: 2021-2025

District Objective 2.1 - Increase the number of students who earn an associate degree or certificate (CTE and non-CTE) by 5% from 2021-2025.

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

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Program Review - Plant Science

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.

Update on Action

Updates

Update Year: 2023 - 2024

09/06/2023

Status: Continue Action Next Year

The certificate has been created but still requires more information regarding previous year's class sizes. The certificate was approved by the Ag Division and Plant Science Committee.

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 Objectives: 2021-2025

District Objective 2.1 - Increase the number of students who earn an associate degree or certificate (CTE and non-CTE) by 5% from 2021-2025.

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

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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:

Update on Action

Updates

Update Year: 2023 - 2024

09/06/2023

Status: Action Completed

Program Review - Plant Science

An outline of all labs was created with a list of required equipment. No additional non-consumable equipment is needed at this time.

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 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

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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: 2023 - 2024

09/06/2023

Status: Action Completed

All requested courses were successfully updated and are DPR approved as prerequisites for students to qualify for the PCA exam.

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: 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

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Program Review - Plant Science

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: 2023 - 2024

09/06/2023

Status: Action Completed

Equipment and replacement work truck were approved by above base funding and Perkins VTEA funding and were purchased.

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

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.

Program Review - Plant Science

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.

Update on Action

Updates

Update Year: 2023 - 2024

09/06/2023

Status: Action Completed

The course was reorganized to align with PCA Knowledge Expectations and is currently being taught in the updated format.

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