

# Bakersfield College 2018-2019 Program Review – Annual Update

Program Name: **Plant Science**

**Bakersfield College Mission:** Bakersfield College provides opportunities for students from diverse economic, cultural, and educational backgrounds to attain Associate and Baccalaureate degrees and certificates, workplace skills, and preparation for transfer. Our rigorous and supportive learning environment fosters students' abilities to think critically, communicate effectively, and demonstrate competencies and skills in order to engage productively in their communities and the world

## **Describe how the program supports the Bakersfield College Mission:**

### ***Instructional Programs only:***

- A. List the degrees and Certificates of Achievement the program offers  
**AS-T, AS, CA**
- B. If your program offers both an A.A. and an A.S. degree in the same subject, please explain the rationale for offering both and the difference between the two. **N/A**
- C. If your program offers a local degree in addition to the ADT degree, please explain the rationale for offering both.  
**This is a CTE program. Local industry has told us they want employees with an associate's degree, including general education, but with more units in the plant sciences than is needed for the AS-T. (see fall 2015 Advisory Board minutes)**

### **Program Goals:**

- A. List the program's current goals. For each goal (minimum of 2 goals), discuss progress and changes. If the program is addressing more than two (2) goals, please duplicate this section. Please provide an action plan for each goal that gives the steps to completing the goal and the timeline.
  1. **Program Goal: To obtain a new Plant Science lab containing state of the art equipment**  
**List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?**  
**Student Learning, Student Progression and Completion, Facilities, Leadership and Engagement**  
**Progress on goal achievement: The Measure J bond has passed and we formed a committee in fall of 2017 to work with an architect to draw up plans for the new agriculture building. The rudimentary plans have been drawn up for a new \$20 million building and construction will start in the fall of 2020. The plant science program is to occupy two large labs and use two large greenhouses.**  
**Status Update – Action Plan and any link to Resource Requests: We will continue to “fine tune” the building plan for the plant science program keeping in mind the fact that the horticulture program will soon be merged into the plant science (crops) program (see below). This may result in the need for larger combined facilities and faculty and staff able to work in both disciplines.**
  2. **Program Goal: To increase the number of students majoring in Plant Science**  
**List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?**

## **Student Learning**

**Progress on goal achievement:** Although the unduplicated head count increased 34% to 446 students in fall of 2017 compared to fall of 2016, there were only 70 students majoring in “pure” Plant Science with a crops emphasis plus 10 students majoring in Plant Science with a horticulture emphasis (see IRP Data). This was about the same as fall of 2016. I do not have access to the fall 2018 data at this time.

**Status Update – Action Plan and link to Resource Requests:** The number of plant science majors is stagnant. The plan last year was to develop a program to regularly visit local high schools to recruit students, especially from the relatively large number of local agriculture programs. We are working with the local high school programs and have set dates this coming spring semester to visit those schools. We will visit using agriculture department professors and our Agriculture Ambassadors. The plan is to visit each high school at least once during the 2019 spring semester. We are also attending other outreach efforts such as local job fairs, ag fairs, and high school transfer days.

### **B. List new or revised goals (if applicable)**

**1. Program Goal:** To completely merge the ornamental horticulture into the plant science program. This is a revised goal from last year in which we were going to make a complete new plant science program with a horticulture or crops emphasis for the CA, AS, and AS-T. We were made aware that we cannot formally designate an “emphasis” for a program because it will not show up on the degree anyway. So, we will develop a CA, AS, and AS-T in Plant Science with a large list of horticulture and crops courses from which students can choose. We will counsel the prospective students as to which courses to take for their particular career interests. This will make it doubly important that plant science students take AGRI B1 their first semester and develop a workable educational plan.

List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?

#### **Student Progression and Completion**

**Progress on goal achievement:** We have met with the appropriate deans and members of the Curriculum Committee to discuss and refine our plans.

**Status Update – Action Plan and link to Resource Requests:** We will officially apply to revise the Plant Science program through *eLumen* in October of this semester.

**2. Program Goal:** To hire a new Agriculture Farm Lab technician. Our use of the lab has grown with addition of more plant science and animal science sections plus the addition of the new Mechanized Agriculture program and the pending Food Science program. We need a technician to manage pest control, irrigation, and fertilization of crops growing on the farm that are not part of student projects, order and purchase materials for the farm, do minor repairs and maintenance of machinery at the farm, and supervise work study and work experience students at the farm.

List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?

#### **Student Learning, Student Progression and Completion, Facilities**

**Progress on goal achievement:** This is a new goal.

**Status Update – Action Plan and link to Resource Requests:** We will apply for the position this fall using the *Classified Position Request* form

and the formal request process via FCDC. (see *Classified Position Request form*)

3. Program Goal: Hire a New Plant Science Instructor to cover the increase in Dual Enrollment students needing plant science classes, to teach Plant Science courses at the new Arvin Center, and to replace one instructor who is starting a new program and will not be teaching plant science courses in the future.
4. Program Goal: To receive CSU Breadth Area B.1. GE credit certification for our Soil B1 (Introduction to Soil Science) course. This will give our Plant Science a way of satisfying their physical science GE credit and soils credit for the degree at the same time allowing for more flexibility in their educational plans.

List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?

**Student Learning, Student Progression and Completion**

Progress on goal achievement: This is a new goal.

Status Update – Action Plant and link to Resource Requests: The Soil B1 course revision has been submitted for the first time this week. We are waiting for a response from the dean and department chair.

#### Program Analysis:

Take a look at your trend data (all programs should have some form of data that is used to look at changes over time). *All programs will answer the following questions unless otherwise indicated.*

1. Please report on any unexpected changes or challenges that your program encountered this cycle:

**The 34% rise in headcount was higher than expected. We have almost doubled the number of plant science sections from last year (13 to 23). Some of those sections are from our dual enrollment program. However, as already mentioned, we have had very little increase in plant science majors; 70-80 in the last three years. Obviously, the increase in plant science dual enrollment sections has not led to an increase in declared plant science majors. Our headcount is increasing mostly due to an increase in students taking plant science courses for GE credit.**

**There has been a decrease in productivity from a high of 18.3 in 2014-15 to 16.3 in 2017-18. This mirrors the drop in productivity in the college as a whole as we have hired many more faculty. Also, dual enrollment plant science classes typically have fewer students than those classes at BC (~25 vs. 35).**

**Over the last five years, there have been 7 AA, 27 AS, and 5 CA degrees awarded in plant science. This is about 50% of the total number of students in the major, which is a little higher than the college as a whole. We do not know how many students have transferred without obtaining a degree or certificate. It would be a good statistic to know.**

**The AS-T has only been in place for a little over a year, so no students have obtained that degree yet. Hopefully, the degree will result in higher graduation rates.**

2. How does your trend data (or other data your area collects) impact your decision making process for your program?

**We are putting more effort into recruitment for the plant science program with more high school visits, job fairs, open house events, and counselor training events where we explain the wide ranging and numerous opportunities for employment in the plant sciences. (see CTE data)**

**We are expanding facilities and have hired more faculty to accommodate more students taking plant science courses. Unfortunately, this expansion will start in 2020 and take two years to finish. In the meantime, we are increasing utilization of our existing facilities by scheduling classes at Delano, the Southwest Center, and at night.**

3. Evidence of Department Dialog of data
  - If you have had time to review and discuss your program's data with members of your department, attach documentation of your discussion. Documentation can come in the form of minutes from meetings or retreats, email dialog or any other ways that show substantive discussion.

**We have discussed trend data at almost every weekly department meeting throughout the 2017-18 academic year. The trend data directs our discussions concerning our class schedules, recruitment activities, assessment plans, and resource allocation.**

4. Were there any changes to student demographics (age, gender, or ethnicity) for the past cycle? **Nothing significant**
5. Were there any changes to student success and retention rates for face-to-face and online courses? (instructional only)

**The gap in success rates between traditional and on-line teaching modes increased over the past year. Students in traditionally taught courses had a 92% success rate, while only 69% of the students in distance education courses passed their classes; the largest gap ever. This is mostly because of a rise in the success rates of the students in traditional classes, not a reduction in the success rate of on-line students. And, the increase in the success rate of students in traditional classes was probably due to the introduction of more dual enrollment courses that were all taught using the traditional method plus each student being assigned a tutor and counselor for the course.**

6. Equity gaps
  - Please look for large differences, or gaps, between top performing groups and others. Consider how you could identify the reasons behind these gaps, and if there changes that could be made to reduce them. For in depth review of equity issues, and on changes that are being made campus-wide, please refer to the current [Bakersfield College Student Equity Plan](#).

- 1. The age group with the highest success rate was the youngest group (19 and younger). This trend started in the 2016-17 year and has increased markedly in the 2017-18 year (89% of the 19 and younger group passed their plant science classes, while only 77% of students 30 years and older passed their plant science classes). I believe that this is because most of the 19 and younger group were dual enrollment students that have assigned tutors and counselors that work with them to insure success.**
- 2. African Americans continued to succeed at a lower rate than the other ethnic groups (64% vs. ~82%). This parallels the college wide gap (55% vs. ~72%). About 70% of students taking plant science courses last year were Hispanic, while only about 4% were African American. This was very close to the numbers for the college as a whole.**

7. Please describe any recent achievements of your **department**, including but not limited to faculty who have won awards or distinctions, new projects your department has implemented, professional development work, professional conference presentations or recently published work.

- 1. Greatly expanded dual enrollment classes and activities**
- 2. Development of new Viticulture course (CRPS B16)**
- 3. Development of annual Ag Careers Exploration day with the Kern County Farm Bureau**
- 4. Development of new Mechanized Ag program with more than \$200,000 of new machinery at the farm**

## 5. Development of new Food Science program

8. The college has embarked on significant efforts such as **Guided Pathways, affinity groups and completion coaching communities** to improve the success and completion rates of our students. Please describe what your program/department/office is doing to contribute to these efforts.

**We have been working with members of Culinary Arts and Nutrition programs to develop the Agriculture/Culinary/Nutrition Pathway. The Pathway works especially well with our new Food Science program. We are working to define classes that would be common to all three disciplines and to develop educational plans for students entering the pathway.**

9. Explain your role if you are involved in Dual Enrollment, Inmate Education, or Rural Initiatives.

**The Agriculture Department has the largest dual enrollment program of any department at the college. We work closely with the Wonderful Academy and Wasco High School supply faculty and courses for their dual enrollment programs. The programs have grown greatly in the last few years from a few agriculture courses to a complete degree program offering an AS-T in Ag Business. This last year saw our first graduating class from the Wonderful Academy. CRPS B5 and SOIL B1 are required courses in this dual enrollment program. The number of sections of CRPS B5 and SOIL B1 have grown from one or two sections per year three years ago to over six per year now.**

### Analysis of Received Resources from Previous Cycle

**Discuss the type of resources you received and their Impact on program effectiveness?**

#### **Facilities: N/A**

*If your program received a building remodel or renovation, additional furniture or beyond routine maintenance, please explain how this request or requests impacts your program and helps contribute to student success.*

- 1: Space Allocation
- 2: Renovation
- 3: Furniture
- 4: Other Beyond Routine Maintenance

#### **Technology: N/A**

*If your program received technology (audio/visual – projectors, TV's, document cameras) and computers, how does the technology impact your program and help contribute to student success?*

- 1: Replacement Technology
- 2: New Technology
- 3: Software
- 4: Other \_\_\_\_\_

#### **Other Equipment**

*If your program received equipment that is not considered audio/visual or computer equipment technology, please explain how these resources impact your program and help contribute to student success.*

**We obtained a new precision seed storage refrigerator from VTEA monies. The unit is necessary to store highly valuable seed that would otherwise die within a year of purchase. This unit allows us to successfully store seed, which can only be purchased in relatively large amounts, for later use by our classes. In the long run, this unit will pay for itself by eliminating the need to throw away dead seed. It will also allow us to purchase a larger variety of crops, which results in a larger selection of crops for student projects and makes the projects more interesting for the students.**

### Conclusion:

Present any conclusions and findings about the program. This is an opportunity to provide a brief abstract or synopsis of your program's current circumstances and needs. Consider this a snapshot of your program if someone were to only read this portion of your annual program review.

Planning of the new Agriculture building using Measure J funding is on track. Preliminary plans call for a split-level building containing two lab rooms and one classroom dedicated to soil and plant sciences. There are also plans for two large state of the art greenhouses to be either attached to or adjacent to the main building. Construction is slated to start in fall of 2020.

There has been a 34% increase in the number of unduplicated students taking plant science classes in the last year. This is the largest single-year increase in at least 20 years. However, this has not yet translated into more students majoring in plant science. This is probably because most of the increase was due to additions of dual enrollment sections and the **only available major at this time is Ag Business**. We are starting a vigorous recruitment program this year that includes a large open house event sponsored by the Farm Bureau, visitations to every high school agriculture program in the region, and attendance at most, if not all, BC and high school transfer events.

After consultation with our dean and members of the Curriculum Committee, we have decided to merge the Horticulture Program and the Plant Science (Crops) Program. We will only have one CA, AS, and AS-T in Plant Science plus a few JSCs in very specific sub-disciplines. We will counsel students into the coursework they need for their chosen professions in AGRI B1 when they make their Student Ed Plans. The applications will be submitted by the end of this October.

We need to hire a replacement technician for the Horticulture area because our present technician is retiring by the end of 2019. The present technician has a long list of duties that need to continue being done. We would also like to hire a full-time technician for the Agriculture Farm Laboratory because of the dramatic rise in the use of the facility after hiring four new teachers, adding ten new sections of courses that all use the farm, and a dramatic increase in the amount of machinery that must be serviced and repaired. We will also need to hire another full-time Plant Science instructor for the expected dramatic increase in DE and Arvin Center plant science courses.

We have just applied for CSU Breadth Area B.1. Certification for our SOIL B1 course. This will give our plant science students greater flexibility in their schedules and in the development of their Student Ed Plans.