Bakersfield College

Program Review – Annual Update

Attachments (place a checkmark beside the forms listed below that are attached):

[Faculty Request Form](http://committees.kccd.edu/bc/committee/programreview)  [Classified Request Form](http://committees.kccd.edu/bc/committee/programreview)  [Budget Change Request Form](http://committees.kccd.edu/bc/committee/programreview)

[ISIT Form](http://committees.kccd.edu/bc/committee/programreview)  [M & O Form](http://committees.kccd.edu/bc/committee/programreview) X [Best Practices Form](http://committees.kccd.edu/bc/committee/programreview) **(Required)**

Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**I. Program Information:**

Program Name: **Plant Science**

Program Type:  Instructional  Non-Instructional

**Program Mission Statement:**

The mission of the Bakersfield College Agriculture Department Plant Science Program is to provide pertinent state-of-the-art education for vocational and transfer students in order to produce skilled plant science professionals for the industry, both public and private. This is in accordance with the college mission to respond to student and community needs with efficiency and flexibility and with the BC institutional level learning outcomes, i.e. to demonstrate knowledge and abilities in a chosen area of study.

**Program Description: Describe how the program supports the mission of Bakersfield College**

The Plant Science program is a Career Technical Education (CTE) program. Therefore, the program automatically aligns us with one of the core missions of Bakersfield College, and that is to supply trained individuals to work in vocational jobs of regional agricultural businesses. Plant Science supervisory level jobs have increased about 4% in the Bakersfield labor market area from 2013 to 2014. These jobs require a minimum of an associate degree and two years of experience. (EMSI Occupational Change Summary 2014)

Although Plant Science is formally a CTE program, all of the course offerings are transferable to the CSU and/or UC system and the program also offers general education credit for three of the six major courses. Therefore, Plant Science also meets the third Budget Decision Criteria for transfer.

The closest competing school with a Plant Science program is over 70 miles away at College of Sequoias (COS) in Visalia. Porterville College has a small agriculture program and we work very closely with them regarding curriculum needs within our district. We have the only Plant Science program in Kern County, which is the third leading county in the United States in value of agricultural production (USDA Agricultural Statistics Summary 2012).

**Degrees and Certificates: List the degrees and/or Certificates of Achievement awarded by the program, if applicable.**

AA Plant Science

AS Plant Science

CA Plant Science

**II. Program Assessment:**

1. **How did your outcomes assessment results inform your program planning?**
2. *Demonstrate managerial and leadership abilities for plant science majors that will enhance opportunities for employment and*

*success in the agriculture industry in the 21st century.*

(Track student success rates for plant science majors using IRP data for the courses listed in the matrix for this SLO.

Develop a scoring rubric using student grades in those courses multiplied by their relative "leadership value" to obtain a

weighted average each year.)

This PLO was assessed last year for the whole agriculture department, but data has not been disaggregated for Plant Science

majors. However, all plant science majors must pass Agri B49 (Ag Leadership) with a “C” or better to graduate, and success

rates for all students in Agri B49 was **83%** in 2013-14 (ODS 2013-14).

1. *Master skills needed for baccalaureate level education or obtain a certificate in plant science at B.C.*

*(*Track A.A., A.S., Certificate, and transfer rates for plant science students from IRP data.)

The total awards confirmed upon Plant Science students has increased from1 - 3 per year in the last 5 years to **8** for the 2013-2014 year. The number of plant science majors has increased from **25 to 55** in the same time period. These awards are broken out into approximately 25% for the AA, 50% for the AS, and 25% for the CA. In the 2013-14 year, this amounts to about a 24% award rate per two year cycle.

1. *Demonstrate specific skills within the plant science discipline needed for employment.*

(Track Success and Retention rates for Plant Science courses using IRP data).

Student success rates in all Plant Science courses have increased from 77% to **81%** over the last five years (IRP 2014). This compares to a success rate of only 69% for the college as a whole.

1. **How did your outcomes assessment results inform your resource requests this year?**

The data shows that we need to keep increasing the number of students in the Plant Science program and we also need to increase the graduation rate for those students. Plant Science course success and completion rates are relatively high (81% and 92%, respectively), so the problem is getting students to complete other courses (mostly general education) and apply for graduation.

In order to do this, we wish to start the *“Plant Science Personal Communication Program”.*  This program involves: 1) Obtain e-mail and telephone data for all Plant Science majors, 2) Personally contact each student and obtain career and scholastic goal information, 3) Personally advise students regarding possible pitfalls of their goals and impress upon them the advantages of obtaining a degree or certificate in Plant Science, and 4) Use the information in conjunction with the SARS Alert System to better identify problems relating to individual Plant Science students and determine what the program, department, and/or college can do to help.

In order to start this program, we are asking for 0.1 release time for one professor to build the database, contact individual students, and advertise the program at local high schools (particularly with the high school ag programs). Also, we will need to update the database at least quarterly to catch changes in the Plant Science student population.

1. **Note any significant changes in your program’s strengths since last year.**

There were no significant changes.

1. **Note any significant changes in your program’s weaknesses since last year.**

The number of Plant Science majors increased from 38 to 55 (45%). As positive as this statistic is, it may be an anomaly. We

hope it is the result of aggressive recruitment and the development of a strong internship program with local companies.

1. **If applicable, describe any unplanned events that impacted your program.**

The program received a moderate amount of year-end VTEA monies for the purchase of badly needed equipment at the Ag

Farm Lab. Some of this equipment, like the GPS guidance unit for the tractor and the Brillion seeder, will allow students

access to more up-to-date, hands-on technology that is currently used by the industry.

Also, monies became available to renovate the agriculture building, including the addition of new “smart board” technology.

This technology will allow us to better illustrate botanical concepts to students, especially regarding plant anatomy, morphology,

and physiology. It remains to be seen how this may affect course success and retention rates.

**III. Technology and Facilities Analysis**

1. **Has your program received new or repurposed technology in this cycle?** Yes, as per “e” above.
   1. **If yes, how have you assessed the outcome of the use of that technology and its effectiveness as it relates to student outcomes?**

We have just received the equipment and have not had time to assess the outcomes of that technology.

* 1. If no, what technology could play a contributing factor in future student success and outcomes for your program? How would you evaluate the use of this technology?
  2. How might other areas use this technology?

(NOTE: Technology requests can be made by filling out the [ISIT Request form](http://www.bakersfieldcollege.edu/irp/Annual%20Program%20Reviews/2012-13/13%20ISIT%20Priority%20Workbook%2012-13.xlsx).)

1. **Has your area received any facilities maintenance, repair or updating in this cycle? If yes, how has the outcome contributed to student success?**

Yes, the floors, ceiling, roof, windows, and plumbing were repaired. So far, the biggest change to student success may be in

their more positive attitudes toward their agricultural education at BC. Almost all second-year (or more) students say that it is

about time the building was repaired and that they feel less ignored by the college.

(NOTE: Facilities and M&O requests can be submitted by completing the [M&O request form](https://committees.kccd.edu/sites/committees.kccd.edu/files/Copy%20of%2012%20M%26O%20Needs%20Workbook%2012-13%20APR.xlsx))

**IV. Trend Data Analysis:**

Discuss any significant changes in data trends over the last year using data provided by Institutional Research. Metrics may include the following:

**a. Changes in student demographics (gender, age and ethnicity)**

The percentage of female students in Plant Science has risen every year from 38% in 2009-10 to exactly 50% this

year. We have achieved “gender equity”! The percentage of students in each age class has not changed

significantly in the last five years; just over half are 20 – 29 years old. The ethnic makeup has changed significantly

over the last five years. In the 2009 – 2010 academic year, 35% of Plant Science students were Hispanic while

53% were Hispanic in the last academic year.

**b. Changes in enrollment (headcount, sections, course enrollment and productivity)**

Total student headcount has increased from 223 to 292 over the last five years (+11%), while the number of

sections has stayed the same (10), and census day enrollment has increased from 263 to 341 (+30%). Supposedly, productivity

stayed at about 19 FTES / FTEF until this last year when it dropped to 16.9 FTES / FTEF because the department gained one

full-time teacher. However, that teacher is not teaching any plant science courses, so I need to check on that statistic.

**c. Success and retention for face-to-face, as well as online/distance courses**Success and retention rates have remained relatively steady over the last five years, increasing slightly from 77% and 89% to 81% and 92%, respectively. However, both success and retention are higher for face-to-face classes as compared to on-line classes. Success and retention rates for face-to-face courses were 87% and 95%, but only 69% and 87% for hybrid / on-line courses, respectively. So, there was an 18% drop in the success rates between face-to-face and hybrid / online courses. However, our hybrid / on-line courses are taught only in those modes, so we do not have direct comparison with face-to-face versions of the same classes. And, one course in particular (Integrated Pest Management) is one of our more technical courses. Anyway, the success and retention rates for the Plant Science hybrid / on-line courses are exactly the same as the average for Bakersfield College face-to-face courses and more than 10% higher than the average of BC on-line courses.

I believe that the main reason for the lower success and retention rates for Plant Science hybrid / on-line courses compared to face-to-face courses is that the typical Plant Science distance education student has a full-time job, while the typical face-to-face student has either no job or a part-time job. Even though the hybrid / on-line courses are more convenient, they still require the same or greater amount of time as face-to-face courses and I believe most on-line students do not understand that.

**d. Degrees and certificates awarded (five-year trend data for each degree and/or certificate awarded)**

There has been little change in the Plant Science five-year award trend data until the last two years (2012 – 14) when the total awards increased to eight. Before two years ago, there were two or less awards given in each of the three categories (CA, AA, AS) each year. We hope the trend continues. I think the major change is that we are now actively counseling students into degree pathways in the Agriculture Department.

**V. Progress on Program Goals:**

List the program’s goals from the previous Program Review. For each goal, please discuss progress and changes. If the program is addressing more than two (2) goals, please duplicate this section.

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| --- |
| **Previously Established Goal 1:** *(state goal)*  Facility Needs – Learning Environment  *Poor lab conditions combined with a lack of funding does not allow instructors to teach with the newest technology. A lack of classroom space and updated lab facilities does not allow the goal to teach the latest technology.*  Progress on Goal:  Completed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Date) X Revised: \_\_\_\_\_\_\_9/21/14\_\_\_ (Date)  Comments on Goal 1:  Although the Agriculture building was repaired, no new lab or classroom space was provided for any program. Multimedia resources were updated in the classrooms, which will allow us to use “smart boards” and enhance our teaching methodology. However, in order for the Plant Science to grow, we need a good, new, and larger plant science lab or labs. The only “lab” is really a classroom with tables (not work stations) instead of desks and the one classroom lacks adequate space for students to efficiently move from the tables to the lab countertop and back. Also, there is a need for more storage space for lab equipment and supplies within the labs and more microscopes and other laboratory equipment so students all have better access to equipment.  **Previously Established Goal 2:** *(state goal)*  *Enrollment numbers and awards for Plant Science and Environmental Horticulture have been low. Our goal is to increase the number of students and completions.*  Progress on Goal:  Completed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Date) X Revised: \_\_\_\_\_\_9/21/14\_\_\_\_\_\_\_\_\_ (Date)  Comments on Goal 2:  Progress has definitely been made for increasing enrollment and completions for Plant Science (See Trend Data Analysis above). We will continue to try to increase enrollment (majors) in Plant Science via recruitment from local high schools, especially high school agriculture programs. We will also continue to work with all agriculture students to increase completion and award numbers. Again, we would like to start a *Plant Science Personal Communication Program* as described above that we think will significantly increase student success. |

**VI. Curricular Review (Instructional Programs only):**

1. List each of the courses offered within the discipline’s academic program in the first column, using one row per course. Place an **X** in the appropriate column to indicate when the course is scheduled for review.

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| --- | --- | --- | --- | --- | --- | --- |
| Course | **2013-2014**  **(2019-2020)** | **2014-2015**  **(2020-2021)** | **2015-2016**  **(2021-2022)** | **2016-2017**  **(2022-2023)** | **2017-2018**  **(2023-2024)** | **2018-2019**  **(2024-2025)** |
| **CRPS B1** |  | **X** |  | **X** |  | **X** |
| **CRPS B2** |  | **X** |  | **X** |  | **X** |
| **CRPS B3** |  | **X** |  | **X** |  | **X** |
| **CRPS B4** |  | **X** |  | **X** |  | **X** |
| **CRPS B10** |  | **X** |  | **X** |  | **X** |
| **SOIL B1** |  | **X** |  | **X** |  | **X** |
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1. List courses that are proposed for *addition*. Crops B5 Plant Science
2. List courses that are proposed for *deletion*. Crops B10 Plant Biology
3. List any changes the program has made to online/hybrid/distance education courses. None
4. Provide an update on the program’s transition to adopting a [Transfer Model Curriculum](http://www.c-id.net/degreereview.html) (AA-T or AS-T), if applicable.

The TMC for the plant science discipline is now in place and mandated by the State. We are in the process of developing the AS-T for our Plant Science program at BC. We have submitted a new Crops B5 Plant Science course for review, which is a course which is needed for the AS-T degree. As soon as the course is in place, we will submit the paperwork for our new program. The AS-T will replace our existing AA in Plant Science. We estimate that our program will be in place by fall 2015.

**VII. Conclusions and Findings:**

Present any conclusions and findings about the program.

1. The Plant Science program is growing in student numbers and number of awards, but still needs to increase those

numbers.

2. The Plant Science program has relatively high success and retention rates.

3. The Plant Science program has a need for more laboratory space and more equipment so each student can have

better access to the tools necessary to learn.

4. The Plant Science program will develop a *Personal Communication Program* to help increase award numbers by

instituting much more one-on-one advising with students regarding their problems in completing their certificates

and degrees.

5. The Plant Science program is developing a state mandated AS-T program which should be in place by fall 2015.