**Bakersfield College**

**Program Review – Annual Update 2015**

**I. Program Information:**

Program Name: Biology

Program Type:  Instructional  Student Affairs  Administrative Service

***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:

Following the Bakersfield College Mission, the Biological Science Department provides courses and programs that support the needs of the diverse Bakersfield College student population. Students may follow the Biology AS program of study with an emphasis in general biology or human biology as the general foundation to transfer to a wide variety of Baccalaureate Biology programs. Many non-biology major students in the Department’s classes follow career pathways in Nursing and Allied Health, taking absolutely critical courses in General Microbiology (BIOL B16), Essentials of Human Anatomy & Physiology (BIOL B18), and Human Anatomy & Physiology I&II (BIOL B32 & BIOL B33), necessary for their credentials. Additionally, the Department serves many Bakersfield College students with supporting courses for science majors and non-science majors, who require a natural science course to fulfill their general education requirements. Thus, the courses in the Biology Department are part of the educational success of nearly every Bakersfield College Associate’s Degree graduate.

All biology courses emphasize critical thinking and writing. This is accomplished with skill-building laboratories, field trips, discussions, and didactic teaching. The Department’s teaching styles and curriculum development support the College’s Strategic Directions. The Biological Science Department continues to use Student Learning Outcomes and assessment tools to align academic pathways for student vocational education and transfer to 4-year colleges/universities.

Program Mission Statement:

The mission of the Bakersfield College Biological Science Department is to establish high quality science education, instilling discipline competencies for students in the vocational education and transfer pathways supported by Bakersfield College Biology curriculum. The Department’s pedagogical strategies value active learning, field experience, critical thinking, and exposure to professional and research activities. Biology Faculty is dedicated to providing rigorous Biology education that is responsive to our diverse institutional and community needs. The Department’s mission supports the 2015-2018 Strategic Directions for Bakersfield College.

**II. Progress on Program Goals:**

1. 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.

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| **Program Goal** | **Which institutional goals from the Bakersfield College Strategic Plan will be advanced upon completion of this goal? (select all that apply)** | **Progress on goal achievement**  **(choose one)** | **Comments** |
| 1. Increased departmental budget. | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | Completed: \_\_\_\_\_\_\_\_\_\_ (Date)  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)  Ongoing: 2013-14 (Date) | Additional funds are required to support additional course offerings. Biology faculty are resourceful and always place student success as a priority. Biology faculty offer lecture class packs, written their own lab manuals to provide student’s text material at a very reasonable price and meet the Biology’s Department’s PLOs. Our SLOs and PLOs continue to reveal a deficiency in departmental financial support. Biology courses rely heavily on anatomical and molecular models, equipment, chemicals and solutions. The 2014-15 budget provided **only** $9.03 per student. |
| 2. Microscope Replacement and Maintenance Contract | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | Completed: \_\_\_\_\_\_\_\_\_\_ (Date)  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)  Ongoing: 2013-14 (Date) | The microscopes located in SE-30, MS-14, MS-17 and MS-24 must be replaced. The outdated microscopes do not allow faculty to fulfill BC’s Stategic Initiative of Student Learning and Student Progression and Completion. Many microscopes are in such bad shape that many of them are unusable. Some of them require more complete maintenance than our technician has the time and skill to do while others are no longer repairable. |
| 3. Increase Lab Tech position from 10 month to 12 month position | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | Completed: \_\_\_\_\_\_\_\_\_\_ (Date)  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)  Ongoing: 2013-14 (Date) | Biology courses require laboratory support. The increase of a lab technician from 10 to 12 months provides support for additional courses and as well as summer course offerings on the BC Main campus. |
| 4. Part-Time (19 hours) Lab Tech position in DST | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | Completed: \_\_\_\_\_\_\_\_\_\_ (Date)  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)  Ongoing: 2013-14 (Date) | Biology courses require laboratory support. A part-time (19 hour per week) will provide support for Biology and Physical Science courses as well as summer course offerings. |
| 5. Request for New FT Biology Faculty member | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | Completed: \_\_\_\_\_\_\_\_\_\_ (Date)  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)  Ongoing: 2013-14 (Date) | Adjunct faculty are extremely difficult to find/hire in Kern County. Biology courses are in extremely high demand. An additional FT Biology faculty member will provide greater access to students interested in completing their Allied Hearth pre-requisite, GE and transfer courses. |

1. List new or revised goals (if applicable)

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| **New/Replacement Program Goal** | **Which institutional goals will be advanced upon completion of this goal? (select all that apply)** | **Anticipated Results** |
| **6.** Improve student transfer rates through implementation of the statewide Associate Degree for Transfer mandate, specifically for the Biology AS-T program and specific transfer agreements with private colleges. | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | Submit by end of Fall 2015 courses BIOL B3A and BIOL B3B for C-ID approval.  Submit appropriate materials by the end of Fall 2015 for approval of a Biology AS-T degree using existing courses. |
| **3.** Improve enrollment management providing enough class sections for demand for all biology courses, especially for BIOL B32, BIOL B11, and BIOL B3A, which are bottlenecks for student progression. (replaces program goals 3 and 5) | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | As student demand for biology courses far exceeds the availability of faculty and other resources, increase in the number of faculty, in laboratory materials, and in laboratory staff is paramount to improving the number of sections. In the Spring semester, the Department may be able to find an additional adjunct faculty member, but practical reductions in waitlists most likely will require additional fulltime faculty by Fall of 2016. |
| **4.** Increase biology learning opportunities and degree completion options for students at the Delano Campus. (replaces program goal 4) | 1: Student Learning  2: Student Progression and Completion  3: Facilities  4: Oversight and Accountability  5: Leadership and Engagement | Increase the number of sections of biology courses at the Delano campus by the start of registration for the Fall 2016 semester. This will require expanding laboratory support and hiring appropriate faculty. This will also allow for the potential increase in other lab-based science courses at the Delano Campus. |

**III. Trend Data Analysis:**

Highlight ***any significant changes*** in the following metrics and discuss what such changes mean to your program.

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

* 68% of Biology students are female (54% female college wide)
* 67% of Biology students are between the ages of 20-29 (52% are ages 20-29 college wide)
* 67% of Biology students are Hispanic/Latino (65% students are Hispanic/Latino college wide)

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

* The number of Biology Majors has increased by 50% since 2011 (472 to 708)
* 92% Biology students have completed a Student Ed Plan (71% college wide)
* 91% Biology students are fully matriculated (69% college wide)
* Class sections offered, student enrollment have increased since 2011
* Biology classes have not increased as dramatically as other departments due to lab capacity (Max = 24 students)
* Average number of waitlisted students per year = 794 students (Equivalent to 33 additional classes). This number would even be higher if we didn’t limit the number of students on the waitlist (Limit 12 students per waitlist).

1. Success and retention for face-to-face, as well as online/distance courses.

* Note; The Biology Department does not teach any online/distance courses.
* Success and retention rates are equivalent to college wide rates.

1. Changes in the achievement gap and disproportionate impact (Equity).
2. Other program-specific data that reflects significant changes
   * + California Job Projections 2010-2020 (<http://edd.ca.gov>)
     + Most job openings with minimum AS Biology degree required
       - #1 Registered Nurse ($88,000) (requires at least 13 units of college-level biology courses)
       - #3 Elementary School Teacher ($67,500)
       - #7 High School Teacher ($65,400)
     + Fastest growing job projections with minimum AS Biology degree required
     + Seven of top sixteen jobs require a minimum AA Biology Degree
       - #2 Medical Scientist ($83,400)
       - #4 Biochemist/Biophysicist ($81,500)
       - #8 Veterinarian Tech ($34,900)
       - #10 Health Educator ($49,900)
       - #14 Pharmacist ($130,000)
       - #15 Respiratory Therapist ($70,300)
       - #16 Scientific Sales ($82,100)
     + Classes, classes, classes. Student frustration about not being able to get into classes is almost toxic. The students’ biggest academic barrier is availability of STEM classes.
     + “According to research, careers in science, technology, engineering and math (STEM) are growing 2-3 times faster than any other career field. Bakersfield College’s effort to increase student participation and success in STEM careers is apparent in many of our efforts on campus and in the community   
       (i.e. HerWorld).” – President Sonya Christian, *Bakersfield College President’s Blog;* <http://bcpresident.wordpress.com/>

**IV. Program Assessment (focus on most recent year):**

1. How did your outcomes assessment results inform your program planning?

* Pre-Allied Health courses (BIOL-16, 18, 32 and 33) are in high demand. In an effort to focus the Department’s limited resources on supporting these courses, the Biology Department has cancelled courses (BIOL-7, 20 and 34) that do not meet AS-T, C-ID, general education or transfer criteria.
* Biology major courses (BIOL-3A and 3B) have been revised to meet C-ID course descriptors. The courses will be submitted for C-ID and Biology AS-T acceptance.

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

* All Biology classes have a laboratory component. Assessment outcomes reveal that all laboratories must be equipped with additional models and updated microscopes.
* Although the STEM grant has allowed for the purchase of some microscopes and equipment, additional funds are required to maintain and replace models, equipment and supplies.
* Biology courses rely heavily on anatomical and molecular models, equipment, chemicals and solutions. Although our departmental budget has remained stagnant, the Biology Department has redesigned course curriculum to meet ADT requirements that allow more students the opportunity to enter the Allied Health pathway.
* Program assessment allows the department to focus on the specific models, equipment, supplies and instructional technology required to provide the essential skills required to meet course descriptors required by C-ID.

1. How do course level student learning outcomes align with program learning outcomes?

* All Biology courses have been ‘Mapped’ to aligned PLOs and ILOs. ‘Maps’ were completed during the 2015 Professional Development Week. The ‘Mapping’ templates were provided by David Neville and the Assessment Committee.

1. How do the program learning outcomes or Administrative Unit Outcomes align with Institutional Learning Outcomes? All Student Affairs and Administrative Services should respond.

* See “C”

***Institutional Learning Outcomes***:

*Think: Think critically and evaluate sources and information for validity and usefulness.*

*Communicate: Communicate effectively in both written and oral forms.*

*Demonstrate: Demonstrate competency in a field of knowledge or with job-related skills.*

*Engage: Engage productively in all levels of society – interpersonal, community, the state and the nation, and the world.*

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

* All Biology classes are currently in compliance. BIOL-32 and 33 have been accepted for C-ID and part of the Kinesiology AS-T.
* All Biology classes have been ‘Mapped’ to align SLO’s, PLO’s to ILO’s.

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

* DST lab technician has not been replaced for laboratory support in Delano.

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

* Anatomical models were ordered and never received. We requested a refund from the vendor. The refund was returned to the KCCD but never placed back into the Biology Department budget.

**V. Assess Your Program’s Resource Needs:** To request resources (staff, faculty, technology, equipment, budget, and facilities), please fill out the appropriate form. <https://committees.kccd.edu/bc/committee/programreview>

1. Human Resources and Professional Development:
2. If you are requesting any additional positions, explain briefly how the additional positions will contribute to increased student success. Include upcoming retirements or open positions that need to be filled.

* There is an extreme demand for Biology courses at Bakersfield College. All Allied Health courses fill (including waitlists) prior to open registration. All other Biology courses fill very early into open registration. The BC Biology Department is in a position to meet the President’s goal of continued FTES growth. All we need is staffing and an increase in our department budget.
* The BC Biology Department is requesting the following positions;
  + Increase the currently Lab Tech position from 10 months to a 12 month position
  + Replace PT Lab Tech position in Delano to support the Biology and Physical Science Departments
  + New FT Biology Instructor

1. Professional Development:
2. Describe briefly the effectiveness of the professional development your program has been engaged in (either providing or attending) during the last year, focusing on how it contributed to student success.
   * Student success is priority #1. Biology faculty are engaged with students in and out of the classroom. Activities include;
     1. A+ Program
     2. STEM Mentorship
     3. Habits of the Mind
     4. Renegade Talks
     5. Levan Colloquium
     6. Supplemental Instruction
     7. Club Advisors (i.e. Pre-Med Club, Pre-PA Club, Christian Fellowship…)
     8. Week Zero
3. What professional development opportunities and contributions can your program make to the college in the future?

* Scientific Learning Workshops
* Biodiversity in the Galapagos Island Workshop

1. Facilities:
2. How have facilities’ maintenance, repair or updating affected your program in the past year as it relates to student success?

* New seats in the SE lecture halls have allowed our department the opportunity to fill lecture halls to capacity.

1. How will your Facilities Request for next year contribute to student success?

* Lab sessions meet 1 ½ to 3 hours per lab. Ergonomic lab chairs will provide students with a better lab environment for student success.

C. Technology and Equipment:

1. Understanding that some programs teach in multiple classrooms, how has new, repurposed or existing technology or equipment affected your program in the past year as it relates to student success?
2. How will your new or repurposed classroom, office technology and/or equipment request contribute to student success?
3. Discuss the effectiveness of technology used in your area to meet college strategic goals.
4. Budget: Explain how your budget justifications will contribute to increased student success for your program.

* Additional funds are required to support additional course offerings. Biology faculty are resourceful and always place student success as a priority. Biology faculty offer lecture class packs, written their own lab manuals to provide student’s text material at a very reasonable price and meet the Biology’s Department’s PLOs. Our SLOs and PLOs continue to reveal a deficiency in departmental financial support. Biology courses rely heavily on anatomical and molecular models, microscopes, equipment, chemicals and solutions. The 2014-15 budget provided **ONLY** $9.03 per student.

**VI. Conclusions and Findings:**

Present any conclusions and findings about the program. This is an opportunity to provide a brief abstract/synopsis of your program’s current circumstances and needs.

The BC Biology Department approaches the study of biology with cutting edge technology and content. The courses emphasize hands on learning and high quality, effective teaching strategies. Field work and real-life applications of science are highly valued as an important component for all students whether targeting transfer, workforce, or general science education.   
 The BC Biology Department is positioned to meet President Christian’s goal of greater student access, course completion, degree completion and transfer. We need an increased department budget, additional laboratory tech support and additional faculty to accomplish these goals.  
 Lastly, I truly believe that the BC Biology Department is the “Best Department” on the BC Main Campus. We respect each other professionally and like each other personally.

**VII. Forms Checklist (place a checkmark beside the forms listed below that are submitted as part of the Annual Update):**

[Best Practices Form](http://committees.kccd.edu/bc/committee/programreview) **(Required)**

Curricular Review Form **(Instructional Programs Required)**

[Certificate Form](http://committees.kccd.edu/bc/committee/programreview) **(CTE Programs** **Required)**

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

Professional Development Form  [ISIT Form](http://committees.kccd.edu/bc/committee/programreview)  [Facilities Form](http://committees.kccd.edu/bc/committee/programreview) (Includes Equipment)

Other: Anatomical Model Request Document