**Bakersfield College**

**Program Review – Annual Update 2016**

**I. Program Information:**

Program Name: Biology; General Biology

Program Type: [x]  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. The General Biology AS program provides students with the opportunity to obtain scientific knowledge as the foundation to transfer to a wide variety of Baccalaureate Biology programs. Biology is the study and application of principles of cell biology, ecology, evolution, genetics, and anatomy and physiology as it relates to humans and other organisms. Laboratory and field trip activities emphasize the integrated and interdependent nature of living systems. Course work trains students to use observation and investigation to identify questions and purse answers using the scientific method.

Graduates with an AS in General Biology may pursue jobs in a variety of fields including; biochemistry botany, ecology, entomology, genetics, health, immunology, medicine, molecular biology, oceanography, pharmacy, teaching, wildlife management, zoology and related clinical fields. Biology majors may choose to specialize in research based on a particular organism or an aspect of biology related to those listed above. Career opportunities in Biology include many fields of biology, medical school, dental school and veterinary school.

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 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 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. | [x]  1: Student Learning [x]  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 2015-16 budget provided **only** $10.72 per student.  |
| 2. Request for Replacement and Additional FT Biology Faculty members | [x]  1: Student Learning [x]  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. The replacement for retiring faculty and an additional FT Biology faculty member will provide greater access to students interested in completing their Allied Heath courses. |
| 3. Microscope Replacement and Maintenance Contract | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  | [x]  Completed: \_\_2015-16\_ (Date) [ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[x]** Ongoing: \_\_2013-14\_ (Date) | Thanks to the BC STEM grant, microscopes located in SE-30, 31 and 38 have been replaced. The new microscopes allow faculty to meet our SLO and PLOs as well as fulfill BC’s Strategic Initiative of Student Learning and Student Progression and Completion. The line item for microscope maintenance **must** be kept to assure that they are usable. Some of them require more complete maintenance than our technician has the time and skill to do while others are no longer repairable. |
| 4. Increase Lab Tech position from 10 month to 12 month position | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  | [ ]  Completed: \_\_\_\_\_\_\_\_\_\_ (Date) [ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[x]** 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.  |
| 5. Part-Time (19 hours) Lab Tech position in DST | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  | [ ]  Completed: \_\_\_\_\_\_\_\_\_\_ (Date) [ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[x]** 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. |
| 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. | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  | [ ]  Completed: \_\_\_\_\_\_\_\_\_\_ (Date) [ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[x]** Ongoing: 2015-16 (Date) | BIOL B3A and BIOL B3B courses were approved by C-ID in Fall 2015. The Biology AS-T degree was submitted for approval in Spring 2016. The State Chancellor’s Office has reviewed the Biology AS-T and has recommended several revisions to the document. The Biology AS-T will be resubmitted Fall 2016. |

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** |
| 1. Improve enrollment management providing additional class sections for the extreme demand for biology courses, especially for BIOL B3A, 3B and 11 which are bottlenecks for student progression.  | [ ]  1: Student Learning [x]  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 will require an increase in department budget, additional lab support and fulltime faculty by Fall of 2017.  |
| 2. Increase biology learning opportunities and degree completion options for students at the Delano Campus.  | [x]  1: Student Learning [x]  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 2017 semester. This will require expanding laboratory support and hiring additional faculty to serve BC Main Campus and DST. 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).
* 69% of Biology students are female (54% female college wide)
* 66% of Biology students are between the ages of 20-29 (51% are ages 20-29 college wide)
* 68% of Biology students are Hispanic/Latino (66% students are Hispanic/Latino college wide)
1. Changes in enrollment (headcount, sections, course enrollment and productivity).
* The number of Biology; General Biology Majors has increased by 28% since Fall 2011 (314 to 436; 5 yr. average = 399)
* 95% Biology students have completed a Student Ed Plan (75% college wide)
* 95% Biology students are fully matriculated (73% 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.
* The Biology Department does not teach any online/distance courses.
* Success and retention rates are equivalent to college wide rates
1. Other program-specific data that reflects significant changes *(please specify or attach).*
* 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 STEM students’ biggest academic barrier is availability of 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
(HerWorld).” – President Sonya Christian, Bakersfield College President’s Blog; <http://bcpresident.wordpress.com/>

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

Use attached **Assessment Report Form AU Tab**

1. Describe *any significant changes* in your program’s strengths since last year.
* BIOL B3A and BIOL B3B courses were approved by C-ID in Fall 2015. The Biology AS-T degree was submitted for approval in Spring 2016. The State Chancellor’s Office has reviewed the BC Biology AS-T and has recommended several revisions to the document. The BC Biology AS-T will be resubmitted Fall 2016.
* The STEM grant will conclude in September 2016. The grant has been extremely beneficial to BC STEM students. Bakersfield College has reapplied for an additional STEM grant that will primarily focus on the expansion of the engineering program in Delano. There will be very little support available for BC Main Campus students.
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.
* A FT Biology instructor has accepted an administrative position that required several faculty to absorb her teaching load. We are currently down one faculty member and have to pending Spring 2017 retirements.
* The loss of Raquel Lopez as the DST Office Coordinator has greatly impacted the Biology Department’s ability to schedule courses in Delano

**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. Additionally, the Chemistry Department is now offering more courses that are pre-requisite courses for several Biology courses. All Biology courses fill very early during 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
	+ Replace FT Biology Instructor (Retirement of Richard Wise).
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 our top priority. 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
		9. Gad Fly Café
		10. The Impossible Dream; Critical Thinking in the Classroom
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
	* The Impossible Dream; Critical Thinking in the Classroom
4. Facilities:
5. 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.
6. 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.

D. Budget: Explain how your budget justifications will contribute to increased student success for your program.

* + Additional funds would be 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 2015-16 budget provided **ONLY $10.72 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 replacement faculty to accomplish these goals.

Lastly, we truly believe that the BC Biology Department is the “Best Department” on campus. Student success is the driving force behind all of our departmental decisions.

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

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

[x]  Curricular Review Form **(Instructional Programs Required)**

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

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

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

[x]  Other: Models and Microscope Attachment