**APR Report—2018-2019**

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| **Section I: Program Description** |

**IA1. Program (Select your program from the drop down list)**

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| Life Science |

**IA2. Other Program (If your program is not on the above list, write it in here)**

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**IB. Program Lead (Your first and last name)**

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| Greg Golling |

**IC. Program Mission Statement**

Provide the Program’s Mission Statement.

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| **The fundamental mission of the Life Sciences is to prepare both majors and non-majors students to engage in scientific inquiry, communicate scientific information clearly, acquire basic biology knowledge and skills, and prepare students for further education, career goals and enhance contributions to society.** |

**ID. Program Summary**

Provide a brief summary on the current status of the program being reviewed.

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| **The college's Life Science department is a hard-working and humble group. We have been impacted for several years primarily due to the staggering numbers of students preparing to apply to the allied health field - which requires students to take Human Anatomy, Human Physiology, Microbiology and Nutrition courses. In total, the department currently offers 14 courses, three of which are part of the biology majors' sequence needed for a bachelor's degree in Life Science. Courses in the majors' sequence include Cell Biology, Botany, and General Zoology. Many students take the Fundamentals of Biology lecture course either online or on-campus to fulfill the natural science requirement for graduation. The Environmental Studies course is offered for Energy Technology students and those students who wish to further their study of ecology. We have recently received approval for a new courses, pathophysiology, that we plan to offer in the Spring of 2019.**  **Our Department currently has 4 full-time faculty and 4 adjuncts to fill 45 sections of courses. The Anatomy courses typically are completely filled during the first week of registration, before general registration has begun. All Anatomy, Physiology, and Microbiology courses are filled generally by the second week of registration. Each of these sections also has a full wait list. We would like to offer additional sections of these courses, but do not have any additional full-time or adjunct faculty to teach them.** |

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| **Section II: Looking Back—2017-2018** |

**IIA. Present the Results** (Rubric Criterion 3)

Provide a descriptive summary of the outcomes from the 2017-2018 cycle of program review.

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| Life Sciences courses continue to have wait-lists in over 75% of the Life Science classes offered every semester; to the extent that students must wait to take required courses (in many cases this amounts to wait times over a year) and they are delayed in completing their degree or transfer requirements. According to the "enrollments" data provided by the Research Office, ALL sections of Biology 2250, 2257 and 2260 (core Allied Health courses), plus about half of the Introductory Biology sections, from 2012/13 to 2017/18 are not only filled to capacity but have enough wait-listed students for additional sections if there were enough faculty to offer those sections. On average we receive fewer than 1 applicant for each adjunct professor posting, making it very difficult to add additional sections without instructors to teach them. The Introductory Biology course is one of a few key General Education Science courses for graduation. The fact that this course is also impacted can have a large impact on completion rates and, ultimately, our school funding.  To meet this need, we presented a Life Science position request to the Academic Senate in 2015, 2017, and 2019. We received 4th place, 3rd place, and 2nd place scores, respectively, from the Senate, not quite high enough to secure this much-needed position. Our most recent request was just 6 points behind 1st place. We cannot add any additional sections at this time without additional faculty, resources, and lab space. One faculty member was able to attend a 1-day Vernier technical hands-on training workshop. Another faculty member was able to attend a 3-day online teaching conference in Anaheim. Other faculty were unable to attend due to lack of funds and inability to find suitable substitute instructors.  The Life Science Program currently has the top 2 majors with respect to number of students. Liberal Arts Allied Health had 461 declared majors and Life Science had 320. Both of these majors remained stable from last year’s totals. We did see a decrease in Allied Health from 2015/16, but it may be due to the introduction of Kinesiology, which grew substantially the following year. We are unsure how to meet any additional growth in these areas without the additional instructors to provide the needed courses.    In terms of course success rates, we continue to have high rates of success overall in the Life Science courses. In our three core major’s courses (Biol 2201/02/03) we have a combined average success rate of over 80%. For our Allied Health track, the three main courses (Biol 2250/57/60) each have a success rate over 90%. The Introductory Biology courses, which are part of the GenEd package, continue to have success rates over 81%.  Regarding SLO’s, one specific CSLO for the Anatomy course asked students to correctly identify 50 of 60 muscles on a lab exam. Approximately 50% of the students did not achieve mastery of this subject matter. For BIOL 2202 (Zoology), students were asked to demonstrate knowledge of the nervous and endocrine systems. Once again, about 50% of students did not achieve mastery of the particular subject matter. |

**IIB. Probe the Results: I Wonder . . .** (Rubric Criteria 1, 3)

In this section, judge whether the activities you implemented in 2017-2018 to reach your goals were effective. Did the activities have an effect on the outcome? Please describe WHY you believe your outcomes came out the way they did. Did you reach your goals? If yes, explain why. If you did not reach your goals, explain why.

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| Regarding student success in Life Science classes and student retention, the 2017/18 results were largely in line with what we have seen in previous years. We had anticipated increasing these results by hiring additional Life Science faculty, both full-time and adjunct, hiring a qualified Life Science tutor, and attending professional development training and conferences. We were not able to hire an additional full-time Life Science professor. We were able to hire one additional adjunct to teach our BIOL 2250 (Anatomy) course. Unfortunately, there was only one adjunct who applied for the position, so we were unable to build a deeper pool. We were able to get a tutor, however, they were really only qualified to help with the BIOL 1510 (Intro Biology) course. As for professional development we had two faculty attend conferences to help development of online techniques and to enhance utilization of Vernier Laboratory equipment.  In an effort to reduce time to degree, we added an extra section of BIOL 2250 (Anatomy) and BIOL 1513 (Environmental Studies). These were both night sections to incorporate those students that work during the day. Both of these sections were taught by adjunct faculty.  One of the goals we had was to provide more authentic laboratories for the students. We were unable to meet this goal as it required the purchase of specific equipment that greatly exceeded our budgets.  Our last goal was to increase the numbers of Life Science majors. The total number of students in these majors stayed about the same. This is largely due to the fact that we are unable to increase the number of section offerings. Just about all sections of courses in Life Science are full. Without additional faculty we do not have the ability to offer these extra sections. Without the extra sections, at best we can hope that our majors counts remain the same. |

**IIC. Ideate Innovations: What if . . .** (Rubric Criteria 1, 5)

In this section, describe activities you believe would have an effect on your 2018-2019 outcome measures.

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| In order to accommodate more students and offer additional sections of these core courses, most importantly, we would need to hire additional qualified Life Science faculty and secure additional classroom/lab space. We have begun to offer additional sections in the G8 lab, which was originally used for Life Science courses. Most of our equipment was purchased with grant monies over 5 years ago. As this equipment ages we will need to repair/replace it to maintain our high course success rates. Furthermore, as we add more sections and students, we will need additional lab equipment and supplies to ensure that all students have equal access to success. In order to increase student success further, particularly in the 1500-level courses taken by non-majors, we would like to have a full-time Life Science tutor and a dedicated space for student interaction (e.g. Math Lab and English Lab), such as ConnExpo.  One issue we currently see is that students are now permitted to take Physiology or Microbiology before having taken the Anatomy course. Furthermore, in extreme cases we have students taking all three courses at the same time. In previous years most students stayed with the sequence of Anatomy, Physiology, and then Microbiology – which helped to increase student success specifically in Physiology. Without knowing the actual structures and anatomical features it is very difficult to understand their functions. The Anatomy class has also historically been a class that allowed the students to dip their toe into the Allied Health field. It is not as difficult as Physiology or Microbiology, so students that passed Anatomy tended to do better in Physiology and Microbiology. To resolve this issue we are looking to combine the Anatomy and Physiology courses, much like what is done at other colleges, including Bakersfield College. This would generate an A&P 1 course and an A&P 2 course, which the students would need to take in sequence. We anticipate that this change would help with overall success rates as the students move through the Allied Health courses. |

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| **Section III: Looking Forward—2018-2019** |

**III. List Your 2018-2019 Goals—Be Quantitative!**

List your 2018-2019 APR goals in terms of their expected changes on the outcome measures as indicated earlier. Each goal that requires resources, impacts other areas, or otherwise is substantive requires the submission of an APR Goal form. Keep in mind the scoring rubric criteria:

1. The relationship between program review narrative and the APR Goal is evident and strongly supported by evidence.
2. The APR Goal directly implements institutional planning document goals.
3. The outcome directly implements institutional planning outcomes, and is transferrable and/or scalable institutionally.
4. APR Outcome indicators, methods and/or timelines use institutional measures, transferrable/scalable institutionally
5. Before/after benchmarks and timelines are completely specified, identical methods, transferrable/scalable.

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| 1. Maintain student success in the Life Sciences  2. Increase student retention and graduation rates.  3. Reduce time to degree.  4. Provide more authentic and higher quality of education to the students.  5. Increase the numbers of Life Science Majors.  6. Implement A&P I and II courses.  7. Acquire additional Instructional space.  All of these would be achieved by the following:  a. Hire additional Life Science Faculty  b. Hire qualified Life Science tutor.  c. Increase our adjunct pool.  d. Attend professional development training and conferences.  e. Repair and replace equipment as it becomes antiquated.  f. Obtain additional laboratory space, preferably re-acquire G8 and G9 for Life Science usage.  g. Develop new Field Studies courses and workshops to attract new Life Science majors.  h. Increase advertising and awareness of how awesome Life Science majors can be.  i. Implement A&P I and II courses.  j. Acquire modern electrophysiology equipment as a replacement for current outdated equipment. |
| **Section IV (Optional): Evaluation of Program Review and Planning Process** |

**IVA. Evaluation of Program Review and Program Planning Process**

In this cycle of program review, what aspects of the program review and program planning process worked best and why?

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| What worked best is that the process was largely the same. |

**IVB. Evaluation of Program Review and Program Planning Process**

In this cycle of program review, what aspects of the program review and program planning process would you change and why?

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| Nothing comes to mind. |