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| **Berkeley City College’s mission is to provide our diverse community with**  **educational opportunities, promote student success, and to transform lives.** |

**Introduction and Directions**

The Peralta Community College District has an institutional effectiveness process which consists of the following components: a District-wide Strategic Plan which is updated every six years; Comprehensive Program Reviews which are completed every three years; and Annual Program Updates (APUs) which are completed in non-program review years.

The Program Review 2021-22 timeline has been developed for each program and services to guide through the semester. Please review and work with your Deans, Managers, Department Chairs and/or Supervisors to complete this Program Review.

The Program Review is intended to primarily focus upon planning for the subsequent two years and institutional effectiveness. The Program Review process directly leads to the institutional resource allocation process and budget planning for the following academic year (2022-23). This is an opportunity for each administrative unit, support service program, and department to reflect on progress made and identify areas of program improvements to achieve equitable student success and elimination of achievement gaps. In this process of making continuous quality improvement, there is an opportunity for each program, student services, and department to request resources that support achieving the stated goals.

If you have questions regarding other material in the Program Review, please contact your Dean or Manager. If you have questions regarding data, please contact Dr. Phoumy Sayavong, Senior Researcher and Planning Analyst (psayavong@peralta.edu).

**Please email the completed Program Review to your Dean by November 30, 2021.**

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| **COLLEGE PROFILE** |
| [Click here to view the Berkeley City College Student Demographics Dashboard](https://app.powerbi.com/view?r=eyJrIjoiOWQ0NDc2M2YtZDUyMi00MjdkLTljZTktOWI3MzQyYzdlNDc0IiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9).  This 2-page dashboard will provide information on the characteristics of our student body from the past two years such as headcount, ethnicity, enrollment status, age group, educational goals, and majors. |

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| **College Outcomes** | **2017-2018** | **2018-2019** | **2019-2020** | **2020-21** |
| Full Time Equivalent Students (FTES) | 4,140 | 3,864 | 3,696 | 3,290 |
| Efficiency  (Productivity; avg faculty-student ratio) | 13.4 | 13 | 13.2 | 14.3 |
| Success Rate (%) | 67% | 69% | 67%\* | 74% |
| Degrees + Certificates Awarded (#) | 1,021 | 948 | 1,106 | 1,014 |

*\*Excludes “EW” grades*

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**To view prior Program Reviews,** [**click here**](https://drive.google.com/drive/folders/1uzclwbMDUQPLY-nkDx1sq8Dy6ODICv-6?usp=sharing)**. To view prior Annual Program Updates,** [**click here**](https://drive.google.com/drive/folders/1NcFLqqL0DhYtaKQ6ntaejh1z7qtGao1F?usp=sharing)**.**

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| 1. **DEPARTMENT DESCRIPTION**   Please verify the mission statement for your department. If your program has not created a mission statement, provide details on how your department supports and contributes to the College’s mission. | | |
| The most important goal of the science department, in which Astronomy, Biotechnology, Biology, Geography, and Physical Sciences are the disciplines, is to provide students with the knowledge and skills they will need in order to perform successfully in the next stage of their careers, whether that stage involves transfer to a 4-year institution, entering a professional program of study such as nursing, or entering the workplace in a specialized field such as biotechnology. Another important goal is to build stepping stones to science in order to make careers in science accessible to students who have little or no background in science and math but who have been excited by the news and the potential of interesting jobs in biotechnology and other science related fields. | | |
| **Name(s) of member(s) completing this Program Review** | **Department/Program** | **Completion Date** |
| Pieter de Haan | Science: Astronomy, Biology and Biotechnology, Geography, Physical Sciences |  |
| **List faculty names and/or staff with assignments in fall 2021.** | | |
| Full Time | Part Time | |
| Barbara Des Rochers Ph.D. (Biol)  Pieter de Haan Ph.D. (Biol)  Randy Yang Ph.D. (Biol)  Erika Yeh Ph.D. (Biol)  Natalia Federova MS (Biol)  Bio technician (Vacant) | Matthew Fillingim Ph.D. (Astr +Phys)  Doug Schmidt Ph.D. (Biol)  Linda McPheron Ph.D. (Biol)  Julia Chang Ph.D. (Biol)  Lili Banihashemi MS. (Biol)  Scott Blitch MS. (Biol)  Jacob Bertrand Ph.D. (Biol)  Sheldon Nelson MS(PhysS)  Irene Yung-Wen Liou (MA Geog)  Elena Givental Ph.D. (Geog) | |

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| **II. STUDENT EQUITY & SUCCESS** |
| Using the data dashboards provided below, review and reflect upon the outcome trends for your department. You may use data from other sources if available.  [Click here if you would like to view BCC’s Planning Documents](https://www.berkeleycitycollege.edu/prm/bcc-plans/) (Education Master Plan, College Strategic Goals, Student Equity Plan, District Strategic Goals, Vision for Success, Guided Pathways, Technology Plan, Facilities Plan)    For assistance with data dashboards, contact Phoumy Sayavong at [psayavong@peralta.edu](mailto:psayavong@peralta.edu?subject=Program%20Review%20Data%20Dashboard%20Assistance) |

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| **3A.** [**Enrollment Trend and Productivity Dashboard**](https://app.powerbi.com/view?r=eyJrIjoiNWJlOWZmYTEtNTY0MC00MDhkLWE5OTAtYmJjZjIxNzJiNWViIiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9&pageName=ReportSection86d6f65e2fb41a73da4d)  \*Note that completion and retention rates are presented with the inclusion and exclusion of excused withdrawals (EW) and military withdrawals. | | |
| **What are your enrollment trends in the past three years?** | | |
| **Astronomy** had a 50% decline in enrollment in Spring 2019 when the course established a math prerequisite. The enrollment in 2017-2018 was 150 students and in 2020-2021 it was down to 76 students. Productivity declined from 25.1 in 2017-2018 to 18.8 in 2019-2020 and shows a slight increase in the last year to 19.0. This is still well above the number 17.5.  For Astronomy the Total Course Completion and Retention is 84.1% and 91.2% Without the EW and MW the total number are a little different at 85.6% and 91.0%.  **Biology** had a slight decline in enrollment from 1082 students in 2017-2018 to 918 students in 2020-2021. Productivity declined from 16.7 in 2017-2018 to 15.4 in 2020-21. This is still well above the numbers of the College, which this academic year is around 14.3.  For Biology the Total Course Completion and Retention is 79.3.1% and 88.5% Without the EW and MW the total number are a little different at 81.4% and 88.2%.  **Geography** had a dramatic decline in enrollment from 405 students in 2017-2018 to 107 students in 2020-2021. Productivity declined from 16.6 in 2017-2018 to 14.1 in 2020-21. This is slightly below the numbers of the College, which this academic year is around 14.3.  For Geography the Total Course Completion and Retention is 69.9% and 83.8% Without the EW and MW the total number are a little different at 72.0% and 83.3%.  **Physical Sciences** stayed steady with around 80 students. In the years 2018 to 2020, the enrollment was much higher because we ran two sections instead of one. The productivity declined slightly from **23.4** in 2017-2018 to **20.0** in 2020-2021. This is still well above the number 17.5.  For Physical Sciences the Total Course Completion and Retention is 83.8% and 97.0% Without the EW and MW the total number are a little different at 85.2% and 97.0%.  **Conclusion**: For most disciplines described here (except for Geography), the productivity is well above the college productivity. The Total Course Completion and Retention in our disciplines (except for Geography) is mostly higher than seen at the college level. | | |
| **When the data for your department are disaggregated by student ethnic groups, what trends do you observe and how do plan to address them over the next three years?** | | |
| *Disaggregate the data and outcomes as far down as a possible then ask:*   * + *What trends do you notice when examining course success rates for disproportionately impacted student populations? Which factors do you believe have the greatest impact (positive or negative) and cause variation between student course success rates between faculty in your department? Describe some specific methods your department/unit is planning or implementing to address these equity gaps. How will you evaluate the efficacy of these interventions?*   + *How has pivoting to online instruction contributed to potential reductions in student success? Provide some specific examples of practices that faculty in your department have found ineffective in the online environment.* | | |
| **Year 1 (2021-22)** | **Year 2 (2022-23)** | **Year 3 (2023-24)** |
| Spring 2022 will be the first semester with some F2F classes. Our hope is that the Equity gap in Biology and Geography will narrow. Over the last 2 semesters several Biology Instructors took workshops in reducing existing equity gaps. See next paragraph. | The workshops in reducing existing equity gaps will be continuing and opened for other STEM fields.  Right now, it is geared towards Biology instructors | Hopefully by this year we can assess our results of the workshop. |
| **What would you recommend that we do to increase student enrollment in your department?** | | |
| To Address the equity gap, Pieter de Haan at the Biology department is in contact with faculty at UCB and CSU-EB. We applied and received a grant to solve this problem. The Title of the grant is: "Closing Equity Gaps in Introductory Biology through Faculty Professional Development in Active Learning Practices". A short synopsis of the grant is: "Faculty Learning Opportunities for Student Success (FLOSS) is a multi-institution initiative to support faculty instruction and student learning in introductory biology courses. Faculty and instructional staff representing University of California, Berkeley (UCB); California State University, East Bay (CSU-EB); and Berkeley City College (BCC) developed a Community of Practice (CoP) to boost student achievement and to narrow observed equity gaps via faculty professional development in active, student-centered teaching practices.  The CoP proposed here meet three goals: 1) to foster, in faculty participants, a deeper understanding of the academic and social barriers to learning in their students; 2) to provide faculty participants with critical pedagogical theory (how students learn) and with practices to promote deeper learning and greater engagement in diverse student learners; and 3) to improve the classroom experience and increase student achievement while reducing existing equity gaps. FLOSS participants engaged in eight interconnected sessions over one semester to use, refine, and share practices and strategies in a collaborative environment. Expert guest speakers did model dynamic, hands-on activities and interactive discussions of learning theory. Participants implemented evidence-based, high-impact practices, geared toward stimulating engagement and promoting problem-solving skills and critical thinking in their students.  Proposed outcomes for faculty participants include enhancements in pedagogical knowledge, instructor confidence, and student achievement, persistence, and retention in introductory biology courses. Beyond this, the proposed project extended new knowledge and insights to a wider group of UCB, CSUEB, and BCC STEM faculty and staff. Evaluation of program success will involve focus groups and surveys to understand the student experience in student-centered teaching environments; grade assessments of students in target courses will identify whether student achievement has increased, and equity gaps have diminished. Ultimately, the project goal through the planned program of faculty professional development is the translation of improved teaching strategy and confidence in pedagogical practices to measurable improvements in student success."  The purpose of this grant for BCC is that the teaching techniques in the following courses are used: BIOL-1A, BIOL-1B and BIOL-10. If we are successful in breaking this equity gap, then this method will be used in all the sciences and probably it will eventually lead to Flex-day workshops to address the methods we developed.  **Dual enrollment is tried out during this year with select courses in our department. The Summer Institute has our Biology-13 (Ecology), Physics-10, and Astronomy-10 earmarked for High School students. The CIRM grant for Biotechnology is expected to increase the enrollment in Biology.**  **There are plans to investigate a new CE program of Environmental Sciences. The LMI data looks very strong. (**[Environmental Scientists and Specialists, Including Health (bls.gov)](https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.bls.gov%2Foes%2Fcurrent%2Foes192041.htm&data=04%7C01%7Cpdehaan%40peralta.edu%7Ca4581d75be774ed3222c08d9bfee95e4%7Ceea16a1648af477b911305b1c01123ff%7C1%7C0%7C637751853695936916%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=xNCNTHT6HEveOuoe0oXuJA7Uh2daZkXThvLOoVFdr28%3D&reserved=0)).  **It shows the highest employment, and the second highest wages in California. To complete this program, we need to establish new courses including a Geographic Information Systems (GIS) and an Introduction to Environmental Science. We are also thinking about a Coordinator position for Biotechnology.** | | |

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| **3B.** [**Course Completion and Retention Rates Dashboard – Instruction**](https://app.powerbi.com/view?r=eyJrIjoiNjc2MDhiNTEtNTJhZi00MDM0LTk5NDItNTRiY2EzMGI1NTZiIiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9&pageName=ReportSection86d6f65e2fb41a73da4d)  \*Note that completion and retention rates are presented with the inclusion and exclusion of excused withdrawals (EW) and military withdrawals.  *If you need more guidance with this item, click here for additional support.* [Click here for additional guidance for how to view and use equity data](https://drive.google.com/file/d/14C9cxxXt_YAzK_LJEVPSD_fJwwcWUVps/view?usp=sharing). If you would like to view BCC’s Equity Plan, [click here](https://www.berkeleycitycollege.edu/prm/files/2020/09/Student-Equity-Plan-2019-2020.pdf). | | |
| **On page 3 of the “Course Completion and Retention Rates by Subject” dashboard, what are the completion and retention trends by gender, age, ethnicity in your department?** | | |
| The Course and Retention Rates by Gender, Age and Ethnicity:  Astronomy  Gender: The completion rate for both sexes is increasing, however the difference between Female and Male is about 6 to10% lower for the Females e.g., 84.7% Males 78.1% Females in 2018-1019 to 93.9% Males and 82.5% Females. The retention rate follows the completion rate.  Age: Over the last three years the largest group 19-24 years old showed an increase in completion and retention. The increasing rate is seen in all the age groups.  Ethnicity: The Disaggregated data of the Course Completion and Retention shows the following results:  Course Completion and Retention for Asian students are increasing from 84% (25 students) in 2018-2019 to 92.2% (14 students) in 2020-2021.  Course Completion and Retention for Black / African American students have mixed results:  75% and 100% (12 students) in 2018-2019, 64.3%, 75%\* (14 students), and 85.7%, 83.3%\* in 2019-2020. 76.9% (13 students) and 100% in 2020-2021.  Course Completion and Retention for Hispanic / Latino students have also a mixed result: 80.6% and 88.9% (36 students) in 2018-2019, 91.7%, 95.7%\* and 100% in 2019-2020. 81.3% and 87.5% (16 students) in 2020-2021.  Course Completion and Retention for Two or More students increased from 89.9% (18 students) in 2018-1019 to 100% (6 students) in both 2019-2020 and 2020-2021.  The White student’s data in Course Completion and Retention also show a mixed result: 81.3% (48 students) and 85.4% in 2018-2019, 96.2% (26 students) in 2019-2020 and in 2020-2021 92% (24 students).  The equity gap in Astronomy is not very large. The interesting fact is that the math prerequisite showed a better result for all groups.  Biology  Gender: In Biology there are about 50% more females enrolled than males. The completion rate for both sexes is increasing, however the difference between Female and Male is diminishing e.g., 79.8% Males 75.9% Females in 2018-1019 to 80.1% Males and 79.4% Females. The retention rate gets better for females  Age: Over the last three years the group 35-54 years old showed an increase in completion and retention. The other age groups fluctuated.  Ethnicity: The Disaggregated data of the Course Completion and Retention shows the following results:  Course Completion and Retention for Asian students are increasing from 85% (280 students) and 90.7 in 2018-2019 to 86.5% and 91.8% (226 students) in 2020-2021.  Course Completion and Retention for Black / African American students have mixed results:  53.4% and 72.8% (98 students) in 2018-2019, 71.0%, 78.4%\* (127 students), and 87.7%, 86.4%\* in 2019-2020. 66.7%, 70.7%\* (100 students) and 82.9%, 81.8%\*in 2020-2021.  Course Completion and Retention for Hispanic / Latino students have also a mixed result: 72.2.6% and 84.6% (216 students) in 2018-2019, 70.5%, 75.0%\* (221 students) and 87.2% 86.4%\* in 2019-2020. 77.7%, 79.9%\* and 88.3%, 88.0%\* (238 students) in 2020-2021.  Course Completion and Retention for Two or More students fluctuates from 73.6% and 80.6% (68 students) in 2018-1019 to 83.8%, 88.6%\* (63 students) and 91.9, 91.4\* in 2019-2020. 68.8, 72.1\* and 84.4, 83.6%\* (60 students) in 2020-2021.  The Unknown / NR data in Course Completion and Retention fluctuates from 72.7% (10 students) in 2018-2019, to 93.3%, 96.6%\* (23 students) and 96.7%, 96.6%\* in 2019-2020. And in 2020-2021 the numbers were down to 78.6%, 84.6\*, and 89.3%, 88.5%\*.  The White student’s data in Course Completion and Retention also show a mixed result: 85.9% (211 students) and 89.9% in 2018-2019, 88.7%, 93.1%\* (190 students), and 94.3%. 94.1%\* in 2019-2020 and in 2020-2021 83.6%, 84.4%\* (192 students), and 87.4%, 87.3%\*.  The equity gap in Biology is large, but less in this last year.  Geography  Gender: The completion and retention rate for females is increasing in such a way that females have a higher rate than males. Females were lagging males in 2018-2019: 71.7% Males 66.7% Females. In 2020-2021 females were higher in completion rates than males: 69.6% Males and 73.5% Females. The retention rate also gets better for females.  Age: The 16-18 years have a very low completion rate (9 students). The largest group 19-24 shows some improvement in completion and retention. The group of 25-29 shows a dramatic increase of completion from 65.6% to 100% last year.  Ethnicity: The Disaggregated data of the Course Completion and Retention shows the following results:  Course Completion and Retention for Asian students are increasing from 67.3% (40 students) and 85.7% in 2018-2019 to 83.3% and 91.7% (22 students) in 2020-2021.  Course Completion and Retention for Black / African American students have mixed results:  64.7% and 76.5% (13 students) in 2018-2019, 71.4 and 76.2% (18 students), and 87.7%, 86.4%\* in 2019-2020. 58.3.% and 75% (9 students) in 2020-2021.  Course Completion and Retention for Hispanic / Latino students have also a mixed result: 59.3% and 75.3% (65 students) in 2018-2019, 71.1%, 78.0%\* (38 students) and 80.0% 78.0%\* in 2019-2020. 56.7%, 58.6%\* and 66.7%, 65.5%\* (27 students) in 2020-2021.  Course Completion and Retention for Two or More students fluctuates from 50.0% and 85.7% (11 students) in 2018-1019 to 85.7% (13 students) and 92.9% in 2019-2020. 62.5% and 87.5% (6 students) in 2020-2021.  The White student’s data in Course Completion and Retention also show a mixed result: 80.7% (67 students) and 90.4% in 2018-2019, 64.4%, 74.5%\* (47 students), and 88.1%. 86.3%\* in 2019-2020 and in 2020-2021 86.7%, (25 students), and 90.0%.  The equity gap in Geography is still large.  Physical Sciences  Gender: The completion and retention rate for both sexes is increasing. Females are doing better in completion rate.  Age: The completion and Retention rate are high and stable over the last three years.  Ethnicity: The Disaggregated data of the Course Completion and Retention shows the following results:  Course Completion and Retention for Asian students increased from 89.5% and 94.7% (36 students) in 2018-2019 to 100% (13 students) in 2020-2021.  Course Completion and Retention for Black / African American students increased from  66.7% and 95.2% (21 students) in 2018-2019 to 90.9%, 100% in 2020-2021.  Course Completion and Retention for Hispanic / Latino students have a mixed result: 86.8% and 98.1% (53 students) in 2018-2019, 72.9.7%, 74.1%\* and 94.9%, 94.8%\* in 2019-2020. 80.0%, 82.8%\* and 96.7%, 96.6%\* (30 students) in 2020-2021.  Course Completion and Retention for Two or More students declined from 100% (9 students) in 2018-1019 to 75%, 85.7%\* (8 students) in 2020-2021.  The White student’s data in Course Completion and Retention declined from 100% (15 students) in 2018-2019 to 87.5%, 100% (16 students) in 2020-2021  The equity gap in Physical Sciences is small in the Hispanic/Latino population. | | |
| **What disproportionately impacted (DI) population(s) showed outcomes gains in your program area and which need more support?** | | |
| **EQUITY GAP** Biology and Geography are showing the largest equity gap, however the equity gap decreased for both disciplines during 2020/2021. Physical Sciences and Astronomy show hardly any equity gap. | | |
| **How do these outcome trends compare to the college average?** | | |
| The DI population of the College average shows an increase in completion and retention, which is similar in Biology and Geography. | | |
| **What questions do you have about the trends?** | | |
| Does the change from F2F classes to online classes reduces the equity gap? | | |
| **Based on input you’ve received from students, what have they expressed as their need (s) to complete and succeed in your courses? (support your recommendations with examples) e.g., offer diff modalities; timing of day).** | | |
| We will as a department make certain courses are available online. | | |
| **How will these outcome trends you identified in this section affect your department goals and plans for the next three years?** | | |
| **Year 1 (2021-22)** | **Year 2 (2022-23)** | **Year 3 (2023-24)** |
| Research which courses should be F2F and which courses should be online. | Establish the online and F2F courses into the program. | Assess the impact on online vs F2F classes. |

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| **3C.** [**Degrees and Certificates Dashboard**](https://app.powerbi.com/view?r=eyJrIjoiZjU2M2M5MzItOTcwZi00Y2U1LWJmODUtYTc0YjlhZGI2ZDhjIiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9&pageName=ReportSectionde32556e136b0a8caccd) | | |
| **On page 1 of the “Degrees and Certificate Awards Trends” Dashboard, what are the award trends for your department (overall, by gender, age, and ethnicity).** | | |
| The largest increase in the Degrees and Certificates are seen in the Hispanic / Latino group. More females than males are receiving degree and certificates. The age group of 19-24 received most of the degrees and certificates. | | |
| **On page 4, what DI population(s) award trends showed gains in your program area and which populations need more support?** | | |
| Looking at the Degrees and Certificates for this group declined from 5 degrees in 2017-2018 to 3 degrees in last year | | |
| **How do these outcome trends compare to the college average?** | | |
| The College shows a little increase in these years from 103 to 104 degrees and certificates. During the complete online semesters, we see an increase to 164 degrees and certificates. | | |
| **Based on input you’ve received from students, what have they expressed as their need (s) to complete their degrees and/or certificates? (support your recommendations with examples)** | | |
| We will keep a certain percentage of our courses online, to make the materials more assessable. | | |
| **How will these outcome trends you identified in this section affect your department goals and plans for the next three years?** | | |
| **Year 1 (2021-22)** | **Year 2 (2022-23)** | **Year 3 (2023-24)** |
| Rethink the Schedule. | Can we put Biology for majors online, to make it more assessable? We need to discuss this in our department. | The action plan of our department meeting will be executed. |

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| **3D.** [**Transfer Dashboard**](https://app.powerbi.com/view?r=eyJrIjoiZmJlODJiODktZjM0OC00ZWIwLWIzNDMtN2Y1Yzc3ZGFhNGRhIiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9) |
| **This dashboard does not provide data by subject. Reflect on what you can do to affect student transfer. How may your department help to support BCC student transfer?** (e.g., serve on panels, strengthen GP in your dept, change curriculum, increase number of AD-Ts, etc.) |
| We are working on more AS-T degrees. Physics AS-T is in curricunet and will soon be established.  A new program in Environmental Sciences is researched because the job data shows that this is a popular degree for students. Although the enrollment declined in Geography, we should also look at the possibility of an AD-T or AS-T degree. It might increase the enrollment in Geography. |

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| **3E. Curriculum** |
| View the department’s curriculum through the lens of student equity outcomes. BCC outcome data suggests that disproportionately impacted groups of students experience low rates of success. |
| **How do you plan to adjust the curriculum to advance student equity and address DI student outcome gaps?**  Examples include: making adjustments to lesson plans based on student assessment outcomes; review pedagogy and revise assignments for culturally relevant content; simplify student processes and make service areas student-centered; manage class discussions and student participation; review best practices, etc.). |
| Faculty Learning Opportunities for Student Success (FLOSS) is a multi-institution initiative to support faculty instruction and student learning in introductory biology courses. This semester is the last semester that is covered by the State Grant. The plan is to open it up for all disciplines in our department. See Pages 6 and 7 of this Program Review. |

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| In the boxes below, add improvement actions that are directly related to **Student Equity & Success**. If there are no improvement actions in this area, leave blank. *If you have more than one Improvement Plan, add more by copying and pasting the table below.* | |
| **IMPROVEMENT ACTIONS** | |
| Department/Discipline: | Biology |
| Action Name: | FLOSS |
| Description: | To Address the equity gap, Pieter de Haan at the Biology department is in contact with faculty at UCB and CSU-EB. We applied and received a grant to solve this problem. The Title of the grant is: "Closing Equity Gaps in Introductory Biology through Faculty Professional Development in Active Learning Practices". A short synopsis of the grant is: "Faculty Learning Opportunities for Student Success (FLOSS) is a multi-institution initiative to support faculty instruction and student learning in introductory biology courses. Faculty and instructional staff representing University of California, Berkeley (UCB); California State University, East Bay (CSU-EB); and Berkeley City College (BCC) developed a Community of Practice (CoP) to boost student achievement and to narrow observed equity gaps via faculty professional development in active, student-centered teaching practices.  The CoP proposed here meet three goals: 1) to foster, in faculty participants, a deeper understanding of the academic and social barriers to learning in their students; 2) to provide faculty participants with critical pedagogical theory (how students learn) and with practices to promote deeper learning and greater engagement in diverse student learners; and 3) to improve the classroom experience and increase student achievement while reducing existing equity gaps. FLOSS participants engaged in eight interconnected sessions over one semester to use, refine, and share practices and strategies in a collaborative environment. Expert guest speakers did model dynamic, hands-on activities and interactive discussions of learning theory. Participants implemented evidence-based, high-impact practices, geared toward stimulating engagement and promoting problem-solving skills and critical thinking in their students.  Proposed outcomes for faculty participants include enhancements in pedagogical knowledge, instructor confidence, and student achievement, persistence, and retention in introductory biology courses. Beyond this, the proposed project extended new knowledge and insights to a wider group of UCB, CSUEB, and BCC STEM faculty and staff. Evaluation of program success will involve focus groups and surveys to understand the student experience in student-centered teaching environments; grade assessments of students in target courses will identify whether student achievement has increased, and equity gaps have diminished. Ultimately, the project goal through the planned program of faculty professional development is the translation of improved teaching strategy and confidence in pedagogical practices to measurable improvements in student success."  The purpose of this grant for BCC is that the teaching techniques in the following courses are used: BIOL-1A, BIOL-1B and BIOL-10. If we are successful in breaking this equity gap, then this method will be used in all the sciences and probably it will eventually lead to Flex-day workshops to address the methods we developed. |
| Completion timeline: | During the year 2022-2023 we hope to open these workshops for STEM related fields. |
| Responsible person: | Pieter de Haan |

**III. PROGRAM GOALS**

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| 1. **List your current Department Goals.** | | |
| 1. The goal of the Biotechnology Program at Berkeley City College is to provide students with the knowledge and skills they will need in order to perform successfully in the next stage of their careers, whether that stage involves entering the workplace in a research or industrial laboratory, transferring to a 4-year institution to complete an undergraduate degree, or entering a professional program of study such as nursing or medicine. The programs and courses are designed to include both academic and laboratory training and emphasize development of competence and confidence. There are two Certificates of Achievement (CA) and an A.S. degree in Biotechnology and they are stackable: The first CA prepares students for entry level biotechnology laboratory assistant positions in industry and academic laboratories, the second CA is designed for students who have completed the first certificate and want to progress in their education and training so that they can either enter the workforce directly or transfer to a 4-year institution. The second CA also has been designed for professionals in the industry and research laboratories, who desire more up to date laboratory training. The A.S. degree in Biotechnology prepares students for employment as technicians and research associates in the pharmaceutical and biotechnology industries, state and federal laboratories, and a range of clinical and academic laboratories. BIOL-AST: The Associate in Science in Biology for Transfer Degree is designed to prepare students to complete the baccalaureate degree in Biology upon transferring into the CSU system. This program assists in seamlessly transferring to a CSU to earn a bachelor’s degree in Biology. The courses in the BIOL-AST degree program are also articulated to allow students to transfer to local U.C.’s. All classes in this program are currently being offered at BCC. | | |
| 1. **How do the goals align with the College goals? If so, which ones?** | | |
| **Berkeley City College Goals**   * **GOAL I:** Strengthen Resilience: Strengthen BCC students’ abilities to become self-directed, focused and engaged in the pursuit of transformative, life-long learning experiences that result in personal and academic success. * **GOAL II:** Raise College Competence: Raise student skills and competencies, and expand their learning experiences, so that they can successfully complete their college program. * **GOAL III:** Enhance Career-Technical Education Certificates and Degrees: Enhance BCC’s 1- and 2-year career and technical education programs so that they provide current and transferable skills and competencies to earn a living wage in our area, and to maintain competency for advancement in one’s career. * **GOAL IV:** Increase Transfer and Transfer Degrees: Ensure that all of BCC’s programs of study and transfer pathways for degrees prepare students, in a timely manner, for multiple transfer options. * **GOAL V:** Ensure Institutional Sustainability: Increase BCC’s impact in education through innovation, internal and external collaboration and partnerships, and sufficient resources, both short-term and long-term. | | |
| GOAL I. Strengthen Resilience: Strengthen BCC students’ abilities to become self-directed, focused and engaged in the pursuit of transformative, life-long learning experiences that result in personal and academic success.  Closing Equity Gaps in Introductory Biology through Faculty Professional Development in Active Learning Practices" is the title of our Grant from the State of California: Faculty Learning Opportunities for Student Success (FLOSS) is a multi-institution initiative to support faculty instruction and student learning in introductory biology courses. Faculty and instructional staff representing University of California, Berkeley (UCB); California State University, East Bay (CSU-EB); and Berkeley City College (BCC) will develop a Community of Practice (CoP) to boost student achievement and to narrow observed equity gaps via faculty professional development in active, student-centered teaching practices.  The grant started Fall 2020 and opened for workshops in Spring 2021.  GOAL II. Raise College Competence: Raise student skills and competencies, and expand their learning experiences, so that they can successfully complete their college program.  The A.S. degree in Biotechnology prepares students for employment as technicians and research associates in the pharmaceutical and biotechnology industries, state and federal laboratories, and a range of clinical and academic laboratories. This degree recently was upgraded to allow students to incorporate transfer level science coursework while they are completing the A.S. degree. For students transferring to 4-year schools with active research programs, an A.S. degree in biotechnology enhances their prospects of securing employment in a laboratory as they complete their degree.  GOAL III. Enhance Career-Technical Education Certificates and Degrees: Enhance BCC’s 1- and 2-year career and technical education programs so that they provide current and transferable skills and competencies to earn a living wage in our area, and to maintain competency for advancement in one’s career. The goal of the Biotechnology Program at Berkeley City College is to provide students with the knowledge and skills they will need to perform successfully in the next stage of their careers, whether that stage involves entering the workplace in a research or industrial laboratory, transferring to a 4-year institution to complete an undergraduate degree, or entering a professional program of study such as nursing or medicine. The programs and courses are designed to include both academic and laboratory training and emphasize development of competence and confidence. There are two Certificates of Achievement (CA) and an A.S. degree in Biotechnology and they are stackable: The first is designed for students who are just starting their careers in a STEM related field and who have yet to complete formal coursework in biology and chemistry. Completion of this certificate allows students to apply for entry level laboratory assistant positions. The second CA certificate is designed to build on the first certificate and give the student more in-depth laboratory experience while allowing them to complete coursework toward a 4-year STEM degree. Completion of this certificate prepares students for a broader range of assistant positions in industry and academic laboratories. The second CA also has been designed for professionals in the industry and research laboratories who desire more up to date laboratory training. Future goals for the Biotechnology program are to develop one or two non-credit certificates that parallel the second CA certificate which will allow laboratory technicians currently employed in the industry to upgrade their skill set at no cost. Barbara Des Rochers worked tirelessly on a Grant that was funded by CIRM (Californian Institute of Regenerative Medicine) for students to do paid internship at research institutions in the Bay Area. This 5-year grant will increase the Degrees and Certificates. The CIRM grant does also opens the Connections with bay area Biotech companies.  Goal IV: Increase Transfer and Transfer Degrees: Ensure that all of BCC’s programs of study and transfer pathways for degrees prepare students, in a timely manner, for multiple transfer options.    In our department we are working on more AS-T degrees (Physics is in the works right now), Geography AA-T degree is starting up at Curricunet and is overseen by Elena Givental. We do have a Bio-AST degree, this degree is updated now.  GOAL V. Ensure Institutional Sustainability: Increase BCC’s impact in education through innovation, internal and external collaboration and partnerships, and sufficient resources, both short-term and long-term.  See reply to the first Goal. | | |
| 1. **Assess your facilities utilization (including labs, support for online learning, and other spaces) and for each year, indicate if the space is insufficient. If so, what are the needs and why? \****Note that facility needs and planning are addressed in the Facility Master Plan for the college, including the planning for new buildings.* | | |
| **Year 1 (2021-22)** | **Year 2 (2022-23)** | **Year 3 (2023-24)** |
| We need more space when we return to in person teaching. Especially Lab space is needed. We are using all Lab spaces in our building. Lectures are held in different lecture rooms. The tiered classroom 431 is always used for double sections. We need more of these tiered classrooms! Lunch seminars are also held at the tiered classroom. Evening seminars utilize the auditorium. | We are in need for a Biotech Center and a dedicated Biotech lab that needs to be sterile to grow stem cells. We have the plans for the expansion to the 4th floor to increase dedicated labs for Physics, Geography, and Geology. | Hopefully we can start moving into the new spaces and establish the new Biotech Center and laboratories. |
| 1. **What are the essential functions of your department, any unique characteristics or trends? Provide specific examples.** | | |
| Lab Support | | |
| 1. **Describe how external factors (if applicable), such as State and Federal laws, advisory board recommendations, district and college governance have an impact on the support services your department provides. (e.g., partnered with dual enrollment and contract Ed programs at K-12 districts and high schools; support staff at high schools have access to Canvas to follow along and support students; allow tutors into the classes; Guided Pathways, AB 705, etc.)** | | |
| External factors from the advisory board: We are looking at the possibility of dual enrollment especially in the Summer Institute. Biotech program is mapped to the Guided pathway. Prerequisite for Astronomy-10: is this needed? Community of Practice is explained in Section 3A. We will develop an Environmental Science Degree (ADT or AST) soon. This will be a new CE program. | | |

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| Based on your responses to questions 4-8, are there areas that need improvements? If so, add improvement actions below. If there are no improvement actions in this area, leave blank. *If you have more than one Improvement Plan, add more by copying and pasting the table below.* | |
| **IMPROVEMENT ACTIONS** | |
| Department/Discipline: | Science |
| Action Name: | Environmental Science Degree |
| Description: | An ADT or AST Degree in Environmental Sciences |
| Completion timeline: | 2025 |
| Responsible person: | Science Faculty |

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| 1. **ASSESSMENT** |
| Berkeley City College is committed to a culture of assessment to improve instruction, services, and institutional planning.  Findings from SLO, PLO, ALO assessments, and program review data are used to direct resources for areas that are institutional priorities that are articulated in the Educational Master Plan and BCC Strategic Plan.  *Due to the critical role that course and program assessments play in our institutional planning and to be in compliance with the Accreditation requirements, the Program Review resource allocation requests require the completion of assessment in order to qualify.* |
| **9A. List and describe the department/program’s progress and reflection on Student Learning Outcomes (SLOs), Program Learning Outcomes (PLOs), and/or Service Area Outcomes (SAOs). If your department/program offers a degree or certificate, please describe the department’s progress on Program Learning Outcomes (PLOs).** |
| Last semester all the Science courses taught over the last 3 years were assessed. This semester the new cycle of assessment started. We are working on the program learning outcomes. |
| **9B. What improvement plans did your department identify upon the assessment of each program? How has your department used the results of assessment to improve student learning outcomes and/or curriculum? Please be as detailed as possible.** |
| The action plans in several Biology courses pointed out that we needed additional exercises in the lab manuals. The lab manuals are updated and will improve student learning. The improved student learning will be noticed in this new cycle of assessments. In addition of the Lab improvements instructors that were enrolled in the FLOSS workshops are actively introducing teaching techniques in their biology courses to reduce the equity gap. |
| **9C. Describe how the program has made use of information from the data it has from program and student learning outcomes in Round 4 (last cycle of the last 3 years) for continuous improvement.  Include the three most significant plans for improvements as a result of the assessment process with timelines.**[Click here to view your Assessment Calendar](https://peralta4-my.sharepoint.com/:x:/r/personal/pdehaan_peralta_edu/_layouts/15/Doc.aspx?sourcedoc=%7BBB9EF0D8-62C2-4AF3-9ADF-A8B85693754D%7D&file=Science%20Round%204%20Assessment%20Schedule%208_10_20.xlsx&action=default&mobileredirect=true) |
| All our courses were assessed during Round 4. We are assessing the programs this semester. The most important action plans of the courses and programs are the updated lab manuals. In addition of these lab manuals, new learning techniques are introduced in the Biology 1A and 1B courses that will improve student learning and most importantly will reduce the equity gap seen in the Biology program. Another action plan is to introduce the FLOSS workshops to the complete Science department over the coming years. |
| **9D. How does your department, program, or unit ensure that students are aware of learning or service area outcomes?** |
| The learning outcomes are listed on the syllabi and on the Canvas sites of the courses. On the course website service areas are listed. We go over the outcomes with the students every semester. |
| **9E. Besides your syllabi, where are the service area and/or program level outcomes published? If on a website, please specify the URL.** |
| The Program level outcomes are listed on the Syllabi, Canvas page (e.g. <https://peralta.instructure.com/courses/10877/assignments>  <https://peralta.instructure.com/courses/44552/assignments/syllabus>) and of course in curricunet (e.g. <https://peralta.curricunet.com/Form/Program/Index/693>). |

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| In the boxes below, add improvement actions that are directly related to **Assessment.** If there are no improvement actions in this area, leave blank. *If you have more than one Improvement Plan, add more by copying and pasting the table below.* | |
| **IMPROVEMENT ACTIONS** | |
| Department/Discipline: | Biology |
| Action Name: | Fall 2021 Assessment |
| Description: | Improve lab syllabi of the following courses BIOL-10, BIOL-1A, BIOL-1B and 50-C |
| Completion Timeline | January 2021 |
| Responsible person: | Pieter de Haan, Barbara Des Rochers, Randy Yang, Julia Chang, Erika yeh |

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| 1. **ENGAGEMENT** |
| **10A. Discuss how faculty and staff have engaged in institutional efforts such as committees, presentations, and departmental activities. Please list the committees that full-time faculty/staff/admin participate in.** |
| Science Faculty are engaged in the following committees:  Academic Senate  Assessment Committee  Chair Committee  Department Meetings  Facility Committee  Guided Pathway Committee  Hiring Committees  Roundtable  Tech Committee  BCC CE Committee  District wide CE Committee |
| **10B. Discuss how faculty and staff have engaged in community activities, partnerships and/or collaborations.** |
| Speakers program UCB FLOSS grant Advisory board  Faculty reported out during the department meetings about the different committees. |
| **10C. Discuss how adjunct faculty members are included in departmental training, discussions, and decision-making.** |
| In our department meetings adjunct faculty participate in the discussions. Adjunct faculty are also involved in the FLOSS workshops described earlier. |
| 1. **10D. Discuss the relationship and engagement with other support services, programs, departments, or administrative units and how these relationships support your area to meet its goals.** |
| Career and Technical Education TLC Tutors |

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| In the boxes below, add improvement actions that are directly related to Engagement. If there are no improvement actions in this area, leave blank. *If you have more than one Improvement Plan, add more by copying and pasting the table below.* | |
| **IMPROVEMENT ACTIONS** | |
| Discipline: | Sciences |
| Action Name: | FLOSS / BAYER agreement / CE Committee / Dual Enrollment |
| Description: | See Section 3E for FLOSS description |
| Completion Timeline | May 2024 |
| Responsible person: | Pieter de Haan, Barbara DesRochers |

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| **VI. Prioritized Resource Requests** |
| In the boxes below, add a 3-year resource requests for your department/program that *have not been funded by existing funding sources*. Work with your supervisor to estimate costs. If there are no resource requested, leave the boxes blank.  [Click here to view the Resource Request Process and Timeline](https://drive.google.com/file/d/1AaC-W2_qjNaYbe6h8WjQ4_HIX43eBctx/view?usp=sharing) |

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| **Resource Category** | **Description/Justification** | **Estimated Annual Salary Costs** | **Estimated Annual Benefits Costs** | **Total**  **Estimated**  **Cost** | **Overall**  **Priority Ranking (1=Most important)** |
| **Personnel** |  |  |  |  |  |
| Classified Staff | Biotech Technician | $50,000 | $15,000 | $65,000 | 2 |
| Student Worker | To support students in the laboratories | $40,000 | Non | $40,000 | 1 |
| Part Time Faculty | Physiology  Geography  Environmental Sciences | $60,000 | $20,000 | $80,000 | 3 |
| **Professional Development** | Description/Justification | | | Estimated Cost |  |
| Department wide PD needed | Workshops | | | $2,000 | 1 |
| Personal/Individual PD needed | Courses for Faculty | | | $3,000 | 1 |
| **Supplies** | Description/Justification | | | Estimated Cost |  |
| Software (for whom or role?) | ARCVIEW | | | $350 | 1 |
| Books, Magazines, and/or Periodicals | Science and Nature | | | $500 | 1 |
| Instructional Supplies | For Biology labs  LED Projectors in the labs | | | $25,000 | 1 |
| Non-Instructional Supplies | Office supplies | | | $2,000 | 1 |
| **Technology & Equipment** | Description/Justification  *Before you list your technology request,* [*click here to view the latest Technology Refresh Plan*](https://drive.google.com/drive/folders/1SityYoJ8rYTzcYq_Iwtr59fJ6205LWIX?usp=sharing) *to verify whether it has already included.* | | | Estimated Cost |  |
| New | Inverted Microscope | | | $9,000 | 1 |
| Replacement | Refresh of Instructional Equipment | | | $20,000 | 1 |
| **Facilities** | Description/Justification | | | Estimated Cost |  |
| Classrooms |  | | |  |  |
| Offices | We need more office space e.g., Dr. Erika Yeh | | | ? | 1 |
| Labs |  | | |  |  |
| Other | More Storage Space. Shelves attached to the wall + Cabinets for microscopes | | | $5,000 | 1 |
| **Library** | Description/Justification | | | Estimated Cost |  |
| Library materials (including streamline media needs) |  | | |  |  |
| Library collections |  | | |  |  |
| OER |  | | |  |  |
| **Other** | Description/Justification | | | Estimated Cost |  |
| OTHER Description | **Increase in Program Director release time**:  The **Director of the Biotechnology Program** teaches, and designs courses, writes and overseas grants, and runs a program at what appears to be 0% release time, down from 10% release time 10 years ago (which was inadequate)–compared to other CTE programs this is not adequate.  Equipment Maintenance  Web page design  Advertisement of our programs | | | .5 release time  $8,000  $2,000  $10,000 | 1  1  1  1 |

**Thank you for your time and effort in completing the Program Review!**

**Please email the completed Program Review to your Dean by November 30, 2021.**