## Welcome to Program Review

Berkeley City College - 2019
CHEM - Instruction
Annual Program Update

## Program Overview

Please verify the mission statement for your program. If your program has not created a mission statement, provide details on how your program supports and contributes to the College mission.

## The Chemistry Program mission is to:

- Promote student success, increase accessibility, and improve equity;
- Improve retention and outcomes in chemistry;
- Provide our diverse community with educational opportunities and training in the STEM fields, such as earning an AS degree in Analytical Chemistry and Biotechnology;
- Provide effective instruction, student support, tutoring and mentoring to ensure a successful transfer to 4-year college or university and build a career in the STEM fields.


## Program Total Faculty and/or Staff

## Full Time

Sam Gillette (faculty)
Siraj Omar (faculty \& Department Co-Chair)
Natalia Fedorova (Lab Manager)
Azul Lewis (Lab Technician)

Part Time

Dalileh Alei
Ali Dehghani
Anu Sharma
Neeta Sharma
Daniel Phillips
Gurnam Singh

The Program Goals below are from your most recent Program Review or APU. If none are listed, please add your most recent program goals. Then, indicate the status of this goal, and which College and District goal your program goal aligns to. If your goal has been completed, please answer the follow up question regarding how you measured the achievement of this goal.

## Microsoft Power BI

Goal-1:To provide students with the knowledge and skills that they need to be successful in college majors in the science disciplines in the next stage of their academic career, whether that stage involves transfer to a 4-year institution, entering professional programs, such as nursing, medicine, dentistry or engineering.

Status
In-Progress

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?

## College Goal

Increase Transfer and Transfer Degrees: Ensure that all of BCC's programs of study and transfer pathways for Distarees brap are students, in a timely manner, for
multiple transfer options.
Advance Student Access, Equity, and Success

Goal-2: To build a foundation for students to make a careers in the STEM fields.

Status
In-Progress

If Completed, What evidence supports completion of
this goal? How did you measure the achievement of this goal?

## College Goal

Enhance Career-Technical Education Certificates and
Degrees: Enhance BCC's 1- and 2-year career and
Dtestrict Cagoafucation programs so that they provide
current and transferable skills and competencies to

competency for advancement in one's career.

Goal-3: To provide the community with informative courses to enhance their understanding and appreciation of the world of science; this includes creating a monthly seminar series by invited speakers in various STEM disciplines.

## Status

In-Progress

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?

## College Goal

Ensure Institutional Sustainability: Increase BCC's
impact in education through innovation, internal and

## Describe your current utilization of facilities, including labs and other space

Office spaces: Rooms 511 and 523 are shared by full-time faculty, some part-time faculty and classified staff (lab manager and lab technicians. More office space needed to accommodate part-time faculty.

Lab spaces: Room 514 and 521 are available lab spaces for the Chemistry Program - room 514 is dedicated for use by organic chemistry and analytical chemistry classes, while room 521 is shared by Chem 30A, Chem 1A, and Chem 1B. In addition, the department also has a small room (room 515) to house all the analytical equipment for biology and chemistry and a storage room for the Science Department supplies and surplus.

Additional space needed: The current available space (lab and office) does not allow for the expansion of the chemistry program. Future expansion of the chemistry program will require the following additional space:

- one new general chemistry laboratory;
- one dedicated room for tutoring and study session, and
- Sufficient office space for part-time faculty to work, prepare for class or hold office hours.


## Program Update

## Semester End Enrollment/Usage Pattern

Review your Semester End Enrollment by setting the filter to your college and subject

Using the dashboard, review and reflect upon the data for your program. Describe any significant changes and discuss what the changes mean to your program. Consider whether performance gaps exist for disproportionality impacted students. Focus upon the most recent year and/or the years since your last comprehensive program review. Cite data points from the dashboard to support your answer.

Enrollment pattern and completion and retention rates in chemistry at BCC more or less mimic that of the overall enrollment pattern. There was a slight drop in enrollment for the last 3 years. However, completion and retention rates show small but steady increases. From 2016-17 to 2018-19 academic years, completion rates in chemistry increase from $63 \%-72 \%$, while the retention rates increase from $72 \%-80 \%$. This is a very encouraging trend.

Describe the department's progress on Student Learning Outcomes (SLOs) and/or Administrative Unit Outcomes (AUOs) since the last Program Review/APU. If your discipline offers a degree or certificate, please describe the department progress on Program Learning Outcomes (PLOs).

The chemistry program is making good progress in accessing the SLOs. The first round of SLO assessment has been completed and we're in the second round of SLO assessments. During the second round of SLO assessments, only CHem 12A and 12B SLOs have so far been assessed. The rest of SLOs will be assessed this and next semesters. SLO assessment is always a work in progress.

Describe the outcomes and accomplishments from previous year's funded resource allocation request.

| Brief description of |
| :--- |
| funded request |


| Source (any additional |
| :--- | :--- | :--- | :--- |
| award outside your base |
| allocation) | | Total |
| :--- |
| Award |
| Amount |$\quad$ Outcome/Accomplishment

Purpose: Student Workers/Tutors are needed to provide tutorial services and assist instructors during laboratory classes. They serve as embedded tutors to help students who came underprepared, especially those from underrepresented groups. Tutors help them with their academic success and to narrow the achievement gap.

Outcome: The department received \$9K (for chemistry) from the college general fund for this purpose. In addition, the science department receives \$10K (for chemistry) from Perkins funding and another $\$ 3 \mathrm{~K}$ from Strong Work Force funding for student workers. This has enabled the department to hire student workers as embedded tutors for introductory and general chemistry laboratory classes. (Note: The current allocation from the college general fund for this purpose is sufficient as long as the department continues to receive the same amount of additional funding from other sources, namely, Perkins and SWF.)

Purpose: for purchase of chemicals, replacement glassware, and other office supplies (e.g. whiteboard markers, whiteboard erasers, pen, pencils, etc.) The Science Department is allocated \$7.5K (for chemistry) from Lottery Fund for the 2019/20 academic year. Most of this allocation will be used to purchase chemicals to ensure that we have enough chemicals to run all laboratory classes. An additional $\$ 1.5 \mathrm{~K}$ is needed to replace glassware due to accidental breakage and other consumable items, such as filter papers, labeling tapes, gloves, and stationeries.
$\left.\begin{array}{|l|l|l|l|}\hline \begin{array}{l}\text { Priority-\#2: } \\ \text { General Chemistry Boot Cant }\end{array} & \text { General Fund } & \$ 3 \mathrm{~K} & \begin{array}{l}\text { Purpose: To provide an 8-hour } \\ \text { chemistry workshop to prepare } \\ \text { students enrolled in Chem 1A. The } \\ \text { workshop is conducted by a chemistry } \\ \text { instructor the week before the regular } \\ \text { semester begins so that students } \\ \text { enrolled in Chem 1A are more } \\ \text { prepared. }\end{array} \\ \text { (Outcome: Students who attended the } \\ \text { chemistry boot camp generally } \\ \text { performed better in the Chem 1A class } \\ \text { they attended. Previous chemistry } \\ \text { boot camps were funded by SWF, but } \\ \text { this grant funding is not available for } \\ \text { future boot camps.) }\end{array}\right\}$

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Action
Improvement
Actions

## Improvement Action

| Action Item | Description To be | Responsible Person |
| :---: | :---: | :---: |
| SLO Assessments | The chemistry instructors ne 12/20/2 better in assessing the SLO's of the course(s) he/she teaches. | All instructors teaching Chem 1A, 18,30 and 308 |
|  |  |  |

## Resource Request

Choose an Option

## Improvement Action

| Action Item | Description |
| :--- | :--- |
| Curriculum Update |  |


| To be completed By | Responsible Person |
| :--- | :--- |
| $11 / 22 / 2019$ | Siraj Omar |

## Resource Request

Choose an Option

## Improvement Action

| Action Item | Description To be com | Responsible Person |
| :---: | :---: | :---: |
| Priority-\#1: Hire Full-time instructor | Responsibility: to teach gene $8 / 1 / 2020$ organic chemistry classes and develop a CE program in Analytical Chemistry. | Siraj Omar |
|  |  |  |

## Resource Request



Total Costs
110000

Resource Request

## Microsoft Power BI

Supplies | Instructional |
| :--- |
| Supplies and |
| Materials |

Description/Justification

| Priority-\#1: |
| :--- |
| Purpose: for purchase of chemicals, replacement |
| glassware, and other office supplies (e.g. |
| whiteboard markers, whiteboard erasers, pen, |
| pencils, etc.) |
| The Science Department is allocated \$7.5K (for |
| chemistry) from Lottery Fund for the 2019/20 |
| academic year. Most of this allocation will be used |
| to purchase chemicals to ensure that we have |
| enough chemicals to run all laboratory classes. An |
| additional \$1.5K is needed to replace glassware |
| due to accidental breakage and other consumable |
| items, such as filter papers, labeling tapes, gloves, |
| and stationeries. |

Estimated Cost
9000

## Resource Request

Other
Other

Description/Justification

Estimated Cost
8000

Priority-\#2:
Equipment Repair and Maintenance Justification: Purpose: 1. The chemistry department has an analytical instrument called GC-MS that needs to be moved from room 515 to 514. The reason for the move is because this instrument uses helium gas and room 515 is not sufficiently ventilated to handle any mishap that could be caused by any gas tank leakage. This instrument when operated also generated a lot of heat, and in a small room with insufficient ventilation, it causes other instruments in the room to malfunction and will cost the college more to pay for the repair. Moving the GC-MS to room 514 will solve this problem. However, this instrument must be moved by professional because it involved disconnecting and reconnecting different parts of the instrument, as well as disconnecting and reconnecting the gas line. The entire cost for the move (including fine-tuning the instrument is estimated to be about $\$ 5 \mathrm{~K}$. An additional $\$ 3 \mathrm{~K}$ is also needed to service the rest of the analytical instruments, namely, GC, HPLC, IR, and UV-spectrometers as well as the analytical balances.

## Resource Request

Other
Other

Description/Justification

Estimated Cost
3000

Priority-\#2:
Chemistry Boot Camp:
Since the last 4 years ago, the science department has been offering the chemistry boot camps, which is an 8-hour workshop (done over 4 days). The boot camp was conducted during the week before the regular semester began. The objective of the boot camp is to improve students' readiness when they attend the regular Chem 1A classes during the semester. The boot camp targetted students who are under-prepared for the regular class so that they have a better chance of passing the class. From previous years of experience, the department found that students attending the boot camp had a higher rate of success in Chem 1A.
The previous chemistry boot camps were funded by SWF, but this grant funding is not available for future boot camps. Therefore the department is requesting funding from the college general fund.

## Resource Request

Technology and New
Equipment

Description/Justification
Estimated Cost
500
Priority-\#2:
A new printer for GC-MS spectrometer.

## Resource Request

Personnel
Classified Staff

| \% Time |
| :--- |
| 100 |

Description/Justification
Estimated Annual Salary Costs

Estimated Annual
Benefits Costs

| Priority-\#3 |  |
| :---: | :---: |
| 48000 | 24000 |
| Chemistry Lab Technician |  |
| Responsibility: To manage the chemistry laboratory and assist instructors to prepare laboratory classes. |  |
| (This position is currently funded by the Strong Work Force Fund, which has enabled the department to hire a full-time laboratory technician for chemistry. <br> The department is requesting the college to be funded this position through the college general fund, so that the SWF fund that is allocated for this position could be used to support the CE program that provides internship and job training to our students.) |  |

Total Costs
72000

## Resource Request

| Personnel | Student Worker |  |  |
| :--- | :--- | :--- | :--- |
| \% Time | Description/Justification | Estimated Annual Salary | Estimated Annual |
| 15 |  | Costs | Benefits Costs |
|  |  |  |  |



Total Costs

## Resource Request

Choose an Option

## Resource Request Summary

Total Cost: \$223952
Total Resource Request: 10

## Microsoft Power B

| Personnel |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Type | \% Time | Description/Justificłtitimated |  | Estimated | Total Costs |
|  |  |  | Annual Salary | Annual Benefits |  |
|  |  |  | Costs | Costs |  |
| Full-time Faculty | 100 | Priority-\#1: | 75000 | 35000 | 110000 |
|  |  | Justification for |  |  |  |
|  |  | request: The |  |  |  |
|  |  | chemistry |  |  |  |
|  |  | program at BCC |  |  |  |
|  |  | offers the |  |  |  |
|  |  | equivalent of |  |  |  |
|  |  | 5.88 FTEF |  |  |  |
|  |  | courses in |  |  |  |
|  |  | chemistry, but |  |  |  |
|  |  | has only 2 full- |  |  |  |
|  |  | time faculty. |  |  |  |
|  |  | Abut 63.3\% of |  |  |  |
|  |  | the courses |  |  |  |
|  |  | offered are |  |  |  |
|  |  | currently taught |  |  |  |
|  |  | by adjunct |  |  |  |
|  |  | faculty. Another |  |  |  |
|  |  | full-time faculty |  |  |  |
|  |  | would reduce |  |  |  |
|  |  | the |  |  |  |
|  |  | department's |  |  |  |
|  |  | dependence on |  |  |  |
|  |  | adjunct faculty. |  |  |  |
|  |  | In addition, an |  |  |  |
|  |  | additional full- |  |  |  |
|  |  | time faculty will |  |  |  |
|  |  | enable the |  |  |  |
|  |  | department to |  |  |  |
|  |  | develop more |  |  |  |
|  |  | CE programs in |  |  |  |
|  |  | analytical |  |  |  |
|  |  | chemistry and |  |  |  |
|  |  | makes our |  |  |  |
|  |  | chemistry |  |  |  |
|  |  | graduates more |  |  |  |
|  |  | marketable in |  |  |  |
|  |  | the job market. |  |  |  |
| Classified Staff | 100 | Priority-\#3 | 48000 | 24000 | 72000 |

Chemistry Lab
Technician
Responsibility:
To manage the chemistry
laboratory and
assist instructors
to prepare
laboratory
classes. (This
position is
currently funded
by the Strong
Work Force
Fund, which has
enabled the
department to
hire a full-time
laboratory
technician for
chemistry. The
department is
requesting the
college to be
funded this
position through
the college
general fund, so
that the SWF
fund that is
allocated for this
position could
be used to
support the CE
program that
provides
internship and
job training to
our students.)
Priority-\#1:
Student
Workers/Tutors
are needed to
provide tutorial
services and
assist instructors
during
laboratory
classes. They
serve as
embedded
tutors to help
students who
came under-
prepared,
especially those
from
underrepresented
groups. Tutors
help them with
their academic
success and to
narrow the
achievement
gap. Student
workers are also
needed with
chemical
preparation and
lab clean-up.
Break down of
lab-hours where
student workers
are needed are
as follows: 1)
Lab TA's for
spring and fall
semester: 33
lab-hrs/wk x 32
$w k s=1056 \mathrm{hrs}$
2) Summer Lab

TA's: 24 lab-
hrs/wk $\times 6 \mathrm{wks}=$
144 hrs 3)
Tutors (Fall and
Spring): $5 \mathrm{hrs} / \mathrm{wk}$
x 32 = 160 hrs 4)
Tutors
(Summer): 4
$\mathrm{hrs} / \mathrm{wk} \times 6 \mathrm{wks}=$ 24 hrs Total \# of student worker hrs = 1384 hrs
Estimated cost:
1384 hrs x 15.50
$=\$ 21,452$
Sub-Total: \$203452

## Professional Development

No Resources found for this
category
Technology and Equipment

| Type | Description/Justification | Estimated Cost |
| :--- | :--- | :--- |
| New | Priority-\#2: A new printer for GC-MS | 500 |
|  | spectrometer. |  |

Sub-Total: \$500
Supplies

| Type | Description/Justification | Estimated Cost |
| :---: | :---: | :---: |
| Instructional <br> Supplies and <br> Materials | Priority-\#1: Purpose: for purchase of chemicals, replacement glassware, and other office supplies (e.g. whiteboard markers, whiteboard erasers, pen, pencils, etc.) The Science Department is allocated \$7.5K (for chemistry) from Lottery Fund for the 2019/20 academic year. Most of this allocation will be used to purchase chemicals to ensure that we have enough chemicals to run all laboratory classes. An additional $\$ 1.5 \mathrm{~K}$ is needed to replace glassware due to accidental breakage and other consumable items, such as filter papers, labeling tapes, gloves, and stationeries. | 9000 |

> Sub-Total: \$9000

## Facilities

No Resources found for this
category

## Microsoft Power B

Library
No Resources found for this
category
Other
Type
$\begin{array}{ll}\text { Description/Justification } & \text { Estimated Cost } \\ \text { Priority-\#2. Equipment Repair and } & 8000\end{array}$
Priority-\#2: Equipment Repair and 8000
Maintenance Justification: Purpose:

1. The chemistry department has an analytical instrument called GC-MS
that needs to be moved from room 515 to 514. The reason for the move is because this instrument uses helium gas and room 515 is not sufficiently ventilated to handle any mishap that could be caused by any gas tank leakage. This instrument when operated also generated a lot of heat, and in a small room with insufficient ventilation, it causes other instruments in the room to malfunction and will cost the college more to pay for the repair. Moving the GC-MS to room 514 will solve this problem. However, this instrument must be moved by professional because it involved disconnecting and reconnecting different parts of the instrument, as well as disconnecting and reconnecting the gas line. The entire cost for the move (including finetuning the instrument is estimated to be about \$5K. An additional \$3K is also needed to service the rest of the analytical instruments, namely, GC, HPLC, IR, and UV-spectrometers as well as the analytical balances. which is an 8 -hour workshop (done over 4 days). The boot camp was

Priority-\#2: Chemistry Boot Camp: 3000
Since the last 4 years ago, the
science department has been offering the chemistry boot camps,
conducted during the week before the regular semester began. The objective of the boot camp is to improve students' readiness when they attend the regular Chem 1A classes during the semester. The boot camp targetted students who are under-prepared for the regular class so that they have a better chance of passing the class. From previous years of experience, the department found that students attending the boot camp had a higher rate of success in Chem 1A. The previous chemistry boot camps were funded by SWF, but this grant funding is not available for future boot camps. Therefore the department is requesting funding from the college general fund.

Sub-Total: \$11000

## Sign and Submit

Please provide the list of members who participated in completing this program review.
$\square$ Pieter de Haan
Siraj Omar

## Please enter the name of the person submitting this program review.

Siraj Omar

