Science and Engineering Department
AUP for Academic Year 2020-2021
October 2019

Describe Department/Unit

Connection to College Mission

The mission of the Science and Engineering Department is to provide the rigorous science foundation necessary for students to achieve the skills, knowledge, intellectual curiosity, and scientific literacy essential for a wide range of professional, technical, and academic careers. For students pursuing careers outside of science, an understanding of the processes and an appreciation for science is provided. The department mission supports the mission of the district and college by striving to provide excellent educational programs, services, and opportunities for transfer and CTE students.

Report on Improvements Made and Gaps Identified in the Prior Year

Student Equity: Actions Taken

The Science department adopted the following collegewide Student Success Initiatives.

Action Steps

1. Give a student engagement survey during the first week of class and discuss with students. It gets students thinking about short and long-term goal-making for college and shows instructors are interested in their educational goals. By asking them why are they are in college and what their major is, instructors let students know they expect them to have a reason for enrolling in postsecondary education. Recognizing them by name is a small gesture that can go a long way in making a student feel like an important and valuable participant in your course.

2. Give an early diagnostic assignment with meaningful feedback within the first 10 days of the semester. By providing early meaningful feedback, instructors can help students keep motivated and their eyes on the prize of their college goals. Students want to know where they stand in their individual classes and whether they are on the right track. Early meaningful feedback can also allow students to “course correct” by connecting with additional resources if needed to improve their performance.

Metrics

Informally, faculty members should discover they know more about their students’ short- and long-term goals; they should experience better student discussion and engagement in the first two weeks; they should see fewer student absences; and they may be making more referrals to tutoring or other learning support help in the early going. Quantitatively, the college should see improved rates in completion of educational plans, attrition, retention, success, persistence, degree/certificate/transfer completion, and equity gaps.

Student Equity: Gaps to be Addressed

Gender: Male

Gap Identified:

During the 2018-19 academic year, male students were underrepresented in:

Biology:

27.6% Male versus 71.8% Female

Biology's male student population was 27.6%. This is lower than Cerro Coso Community College's collegewide male student population, which was 44.9%.

Gender: Female

Gap Identified:

During the 2018-19 academic year, female students were underrepresented in:

Physics:

36% Female versus 64% Male

Physics' female student population was 36%. This is lower than Cerro Coso Community College's collegewide female student population, which was 53.7%.

Ethnicity: African American

Gap Identified:

African American students achieved a low success rate in:

Biology

Biology's success rate for African American students was 46.4%. This success rate is lower than Cerro Coso Community College's collegewide success rate for African American students, which was 70.6%.

Gender: Male

Gap Identified:

Male students achieved a success rate that was lower than the collegewide male success rate in:

Biology:

Biology's success rate for male students was 69.8%. This success rate is lower than Cerro Coso Community College's collegewide success rate for male students, which was 79.2%.

Ethnicity: African American

Gap Identified:

African American students achieved a low success rate in:

Physical Science

Physical Science's success rate for African American students was 55.5%. This success rate is lower than Cerro Coso Community College's collegewide success rate for African American students, which was 70.6%.

Age: 40 or older

Gap Identified:

During the 2018-19 academic year, students Age 40 or Over achieved a success rate that was lower than the collegewide Age 40 or Over success rate in:

Physical Science

Physical Science's success rate for students Age 40 or Over was 69.4%. This success rate is lower than Cerro Coso Community College's collegewide success rate for Age 40 or Over students, which was 80.7%.

Outcomes Assessment: Actions Taken

Outcomes Assessment: Gaps to be Addressed

Program Review: Actions Taken

Annual Planning: Actions Taken

Advertise and Motivate Students to Apply for STEM Scholarships

The Science department is making a concerted effort to advertise all applicable scholarship opportunities available for all applicable students.

Create a Database of Students who Graduate with a Science Degree

Creating a formal and complete database of students who graduate from the Cerro Coso Science department may not be possible. This is because the completeness of the database relies on students volunteering to remain in contact with the Science department after they graduate from Cerro Coso Community College.

Review of Current Year Initiatives

Reminder of Initiatives for the Current Year

Ensure that Online Courses Meet Accessibility Standards

Prepare for the Retirement of the Science Department's Chemistry Faculty Member

Plan Initiatives for Next Year

Initiatives for Next Academic Year

Hire a Replacement Full-Time Chemistry Faculty Member

Is this part of a multiyear initiative?

Yes

Specific Action Steps to be Taken:

While hiring a faculty member is technically beyond the authority of the Science department, the Science department will continue to stress the need for this replacement position until it is filled.

More information about this position is located in the "Staffing Requests" section of this Annual Unit Plan.

Lead Measure of Success:

A "lead" measure for this initiative is receiving official administrative approval for hiring a replacement Chemistry faculty member.

Are any of the lead measures identified above lacking assessment instruments?

No

Does the department request help to develop these instruments?

No

Lag Measure of Success:

Person Responsible:

Science Department Chair

Other

Hiring a replacement Chemistry faculty member fills the basic need of the college offering the core classes needed for students to graduate. A Chemistry faculty member is also needed to oversee the safety standards of the chemistry lab supplies and facilities.

Which strategic goal does this initiative address?

Goal 1: Maximize Student Success

Write the Science Department's Next Program Review

Is this part of a multiyear initiative?

Yes

Specific Action Steps to be Taken:

The Science department must submit its next Program Review in approximately 1.5 years. The data for the Program Review will be collected and assembled between now and December 2020. Simultaneously, a draft copy of the Program Review will be written during this time period. During the "Winter Break" between Fall 2020 and Spring 2021, the Program Review will be finalized.

Lead Measure of Success:

A "lead" measure for this initiative is having a draft copy of the department's Program Review completed by Fall 2020.

Are any of the lead measures identified above lacking assessment instruments?

Yes

Does the department request help to develop these instruments?

No

Lag Measure of Success:

Person Responsible:

Science Department Chair

It addresses a program review strategy

Which strategic goal does this initiative address?

Goal 1: Maximize Student Success, Goal 2: Advance Student Equity Measures, Goal 5: Strengthen Organizational Effectiveness

Evaluate Resource Needs

Facilities

(1.) The emergency gas shutoff button in room 331 Main Building does not work. This needs to be fixed.

(2.) The chemical storage cabinets in the chemical storage room have no noticeable airflow/exhaust.

(3.) The dishwasher located in the Laboratory Prep area is currently inoperable. This dishwasher is used to wash and sterilize the glassware for Biology and Chemistry labs.

(4.) Ideally, the main vacuum pump that feeds into the lab tables in room 330 and 331 Main Building would have an on/off switch that is accessible by the instructors. Currently, the main vacuum pump must be scheduled in advance to automatically turn on and off at specific times.

(5.) Ideally, the Science department would have access to a dedicated washer and dryer for the Chemistry and Biology lab coats.

(6.) The three wooden storage sheds at the college observatory require new flooring. Currently, these storage sheds have wooden flooring with approximately 1.5 foot air gaps beneath them. The wooden flooring has collapsed in various locations inside two of the storage sheds.

Information Technology

Marketing

Professional Development

Research and Data

The Science department has a Program Review due in approximately 1.5 years. The Science department chair will most likely need several hours of Institutional Researcher time to help collect the necessary data for the Program Review.

Staffing Requests

1000 Category - Certificated Positions

Chemistry

Location:

Ridgecrest/IWV

Justification:

The Science department's only full-time Chemistry faculty member retired from the college in May 2019. If a full-time faculty member is not hired as a replacement, then the stability and safety of the Chemistry courses, and their related lab facilities, will slowly deteriorate with time.

Chemistry is a highly specialized and time intensive area of instruction. Because of this position's unique skill and time

requirements, attempting to fill this position with only part-time adjunct instructors will not be enough to maintain a stable program of Chemistry courses.

Chemistry also requires high levels of continuously maintained safety standards for the safety of both the students and the facilities. Currently, the college does not have a full-time chemistry safety expert. If a full-time Chemistry faculty member is not hired, then the college must at a minimum hire a chemistry safety expert.

(1.) Are there too few or too many students enrolling for particular classes or majors?

No.

(2.) Are there too many courses or programs that are under capacity?

No.

(3.) Are courses “core mission”?

Yes.

(4.) Are courses overscheduled?

No.

(5.) Is there capacity to offer courses or programs at different times and/or locations?

If “capacity” refers to capacity in faculty members, then the answer is “no.”

If “capacity” refers to capacity in potential Chemistry students, then the answer is “yes,” at the Bishop and Mammoth sites.

(6.) Is there a workforce shortage in the service area or region?

Not Applicable

(7.) What are the costs and/or revenue from gaps between student demand and course or program capacity?

Do not know

(8.) In support of your proposal, provide the following data:

(a.) Size of wait lists in the discipline

There are generally no wait lists for the Chemistry courses.

(b.) Department productivity, previous year

Do not know where this data is available.

(c.) Number of faculty currently in the department

3 full-time Biology faculty members

1 full-time Physical Science faculty member

(d.) Number of adjunct faculty

Because the full-time Chemistry faculty member who retired taught all the Chemistry courses for over a decade, the Science department does not currently have a roster of reliable Chemistry adjunct instructors. For the Fall 2019 semester, the Science department is employing four Chemistry adjuncts who are new to the college.

(e.) Number of certificates awarded, previous year

Chemistry courses fulfill the Cerro Coso, CSU, and IGETC “General Education” graduation requirements in the areas of “Physical Science” and “Laboratory Science.”

Chemistry courses also provide transfer students with the first two years of Chemistry courses they need to earn a four-year Science Bachelor’s Degree.

During the past five academic years, there were an average of 10 General Science Associate Degrees awarded per year.

(f.) Number of degrees awarded, previous year

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(g.) Core curriculum classes

CHEM C101: Introduction to Chemistry

CHEM C111: General Inorganic Chemistry I

CHEM C113: General Inorganic Chemistry II

CHEM C221: Organic Chemistry I

CHEM C223: Organic Chemistry II

(h.) CTE classes with workforce data (wage/high demand)

Not Applicable

(i.) Number of students at first day and census, previous year

Course Enrollment: 119 Students

Course Retention: 112 Students

2000 Category - Classified Staff

Laboratory Technician

Location:

Ridgecrest/IWV

Salary Grade:

39.5

Number of Months:

11

Number of Hours per Week:

40

Salary Amount:

$3,346 per month to $4,728 per month

Justification:

The Science department's full-time Laboratory Technician (Lab Tech I) left the college before the start of the Fall 2019 semester. A full-time replacement position is currently being advertised. If the search for a replacement Lab Tech fails this academic year, then the search will need to continue until a qualified applicant is hired.

(1.) Explain why the work of this position cannot be assigned to current staff.

The Lab Tech is primarily responsible for ensuring that the Chemistry, Biology, and Physical Science lab supplies, equipment, and facilities are properly prepared and maintained for all the Science department courses at all campuses. The Lab Tech also helps coordinate the overlapping lab supply and equipment needs of all Science instructors at all campuses. The Lab Tech also helps ensure the safety of the students, lab supplies, equipment, and facilities at all campuses. The Lab Tech is also in charge of the purchasing process for the entire Science department.

This Lab Tech position needs a person who has dedicated focus on all the various aspects of the Science department mentioned above. Furthermore, this Lab Tech position requires subject matter knowledge in Chemistry, Biology, and Physical Science.

(2.) Describe the impact on the college if the position is not filled.

If the Lab Tech position is not filled, the Science department's lab supplies, equipment, and facilities will slowly deteriorate in reliability, availability, and safety.

Also, if the Lab Tech position is not filled, it will become more-and-more difficult to hire and maintain reliable adjunct instructors in the Science department. This potential adjunct issue is due to the fact that adjunct instructors need more Lab Tech assistance than full-time instructors, because adjunct instructors are not compensated for their lab preparation time.

(3.) Is a temporary employee currently performing the work of this position? (Y/N)

The Science department currently has a temporary Lab Tech working only 10-hours per week. The full-time Lab Tech position is a 40-hour per week, 11-months per year position.

(4.) How is the work assigned to this position presently accomplished?

The Dean of Instruction is the Lab Tech's direct supervisor. Day-to-day interactions are between the Lab Tech and the Science faculty members.