

Science and Engineering Department

AUP for Academic Year 2022-2023

October 2021

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 Last Year

The Science department adopted the following collegewide Student Success Initiatives.

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.

Gaps to be Addressed

The **Student Success gaps** identified in the Science department are as follows.

We define a gap in Student Success as being more than 5% lower than the collegewide success rate of 79%.

Student Success Gaps in Chemistry:

During the 2020-21 academic year, **Chemistry students** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 73%. There were 154 students in this group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, **Female students** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 71%. There were 95 students in this group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, **American Indian students** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 0%. There was 1 student in this group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, **Hispanic / Latino students** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 64%. There were 61 students in this group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, students within the **20-24 age group** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 61%. There were 36 students in this age group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, students within the **25-29 age group** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 69%. There were 26 students in this age group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, students within the **30-34 age group** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 73%. There were 22 students in this age group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, students within the **40-49 age group** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 71%. There were 7 students in this age group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, **First Generation students** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 70%. There were 27 students in this group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, **Final Aid Recipient students** achieved a success rate that was more than 5% lower than the collegewide success rate in Chemistry. The success rate for these students was 65%. There were 91 students in this group. The collegewide success rate for all students was 79%.

Student Success Gaps in Physics:

During the 2020-21 academic year, **Hispanic / Latino students** achieved a success rate that was more than 5% lower than the collegewide success rate in Physics. The success rate for these students was 73%. There were 22 students in this group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, students within the **20-24 age group** achieved a success rate that was 5% lower than the collegewide success rate in Physics. The success rate for these students was 74%. There were 23 students in this age group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, students within the **40-49 age group** achieved a success rate that was more than 5% lower than the collegewide success rate in Physics. The success rate for these students was 50%. There were 2 students in this age group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, **First Generation students** achieved a success rate that was more than 5% lower than the collegewide success rate in Physics. The success rate for these students was 63%. There were 8 students in this group. The collegewide success rate for all students was 79%.

Student Success Gaps in Biology:

During the 2020-21 academic year, **African American students** achieved a success rate that was 5% lower than the

collegewide success rate in Biology. The success rate for these students was 74%. There were 35 students in this group. The collegewide success rate for all students was 79%.

During the 2020-21 academic year, **American Indian students** achieved a success rate that was more than 5% lower than the collegewide success rate in Biology. The success rate for these students was 50%. There were 6 students in this group. The collegewide success rate for all students was 79%.

Student Success Gaps in Physical Science:

During the 2020-21 academic year, **students of Two or More Races** achieved a success rate that was more than 5% lower than the collegewide success rate in Physical Science. The success rate for these students was 72%. There were 29 students in this group. The collegewide success rate for all students was 79%.

The **Student Completion gaps** identified in the Science department are as follows.

We define a gap in Student Completion as being more than 5% lower than the collegewide completion rate of 90%.

Student Completion Gaps in Chemistry:

During the 2020-21 academic year, **Chemistry students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 83%. There were 154 students in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **Female students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 81%. There were 95 students in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **American Indian students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 0%. There was 1 student in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **Hispanic / Latino students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 77%. There were 61 students in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **White students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 83%. There were 59 students in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, students within the **20-24 age group** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 78%. There were 36 students in this age group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, students within the **25-29 age group** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 77%. There were 26 students in this age group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, students within the **40-49 age group** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 71%. There were 7 students in this age group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **First Generation students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 81%. There were 27 students in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **Final Aid Recipient students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Chemistry. The completion rate for these students was 76%. There were 91 students in this group. The collegewide completion rate for all students was 90%.

Student Completion Gaps in Physics:

During the 2020-21 academic year, students within the **20-24 age group** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Physics. The completion rate for these students was 83%. There were 23 students in this age group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, students within the **40-49 age group** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Physics. The completion rate for these students was 50%. There were 2 students in this age group. The collegewide completion rate for all students was 90%.

Student Completion Gaps in Biology:

During the 2020-21 academic year, **African American students** achieved a completion rate that was 5% lower than the collegewide completion rate in Biology. The completion rate for these students was 83%. There were 35 students in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **American Indian students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Biology. The completion rate for these students was 67%. There were 6 students in this group. The collegewide completion rate for all students was 90%.

Student Completion Gaps in Physical Science:

During the 2020-21 academic year, **Pacific Islander students** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Physical Science. The completion rate for these students was 80%. There were 5 students in this group. The collegewide completion rate for all students was 90%.

During the 2020-21 academic year, **students of Two or More Races** achieved a completion rate that was more than 5% lower than the collegewide completion rate in Physical Science. The completion rate for these students was 79%. There were 29 students in this group. The collegewide completion rate for all students was 90%.

Outcomes Assessment: Loop-Back Improvements Made

Outcomes Assessment: Results of Last Year's Assessments

Outcomes Assessment: Missed Targets

Outcomes Assessment: Schedule of This Year's Assessments

Program Review

Last Year's Initiatives

Hire a Replacement Full-Time Chemistry Faculty Member

A full-time chemistry faculty member was hired.

Write the Science Department's Next Program Review

In progress

Reminder of Initiatives for the Current Year

Reminder of Initiatives for the Current Year

Develop Additional Online Science Courses

Upload Student Learning Outcomes (SLO) Data to the College's Central Database

Plan Initiatives for Next Year

Initiatives for Next Academic Year

Provide more Introductory Science Courses Online

Is this part of a multiyear initiative?

Yes

Specific Action Steps to be Taken:

Prior to the COVID-19 pandemic, the majority of the Science department's courses were only offered on-ground. Because the pandemic emergency necessitated that the Science department offer all of its courses online, the Science department now has a better understanding about what courses can be successfully offered online once the pandemic is over. The Science department will modify the course outline of records (CORs) for these courses so that they can be offered online.

Early Observational Data, or "Lead" Measure(s):

The CORs for the affected Science courses will be brought through the Curriculum Instruction Committee (CIC).

Does the department request help developing these instruments?

No

Institutional Performance Data, or "Lag" Measure(s):

The affected Science courses will be offered online.

Person Responsible:

The faculty expert(s) for each of the affected courses.

Unit gap or institutional goals addressed:

It addresses a Strategic Plan goal or objective

Create a Long Term Schedule of Science Courses for the Tehachapi Campus

Is this part of a multiyear initiative?

Yes

Specific Action Steps to be Taken:

The Tehachapi campus currently lacks consistently offered on-ground Science courses. The Science department will create a long term schedule of Science courses for the Tehachapi campus. Note that the courses offered will largely be a function of the available instructors and resources at the Tehachapi campus.

Early Observational Data, or "Lead" Measure(s):

The Science department and the local Tehachapi administrators will determine a long term schedule for the Tehachapi campus.

Does the department request help developing these instruments?

No

Institutional Performance Data, or "Lag" Measure(s):

The Science department will create a long term schedule of Science courses for the Tehachapi campus.

Person Responsible:

The faculty expert(s) for each of the affected courses.

Unit gap or institutional goals addressed:

It addresses a Strategic Plan goal or objective

Evaluate Resource Needs

Facilities

IWV Main Building:

(1.) Theoretically, the Science department will one day purchase a dedicated washer and dryer for the Chemistry and Biology lab coats. If this purchase is made, then the Science department will need a location to install and operate them. Ideally, M&O can help the Science department determine where a washer and dryer could be installed on the IWV campus.

(2.) 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 (at least prior to the pandemic), the main vacuum pump must be scheduled in advance to automatically turn on and off at specific times.

Astronomy Observatory:

(1.). The north-east dome requires repairs or removal. Based on conversations with Cody Pauxtis, it was decided that this dome should be removed.

(2.) The three wooden storage sheds require repair or replacement. Based on conversations with Cody Pauxtis, it was decided that these sheds should be removed and replaced with a shipping container.

Information Technology

None

Marketing

None

Professional Development

None

Other Needs

Request for a One-time Purchase of Instruction Items for ESCC:

The Eastern Sierra College Center is severely lacking the anatomical models required to effectively teach its human anatomy class. The following list of anatomical models are ones that we do not have in lab but are desperately needed. Obtaining these models would go a long way in improving our ability to teach Human anatomy at this site location.

	Description	Cost (\$)	Link
1	3B Scientific® MICROanatomy™ Muscle Fiber Model	399	https://www.wardsci.com/store/product/8865166/3b-scientific-muscle-fiber-model
2	Anatomy Lab Skin and Hair Block Anatomy Model	69	https://anatomywarehouse.com/anatomical-models/organs-systems/skin-anatomical-models/
3	Axis Scientific Life-Size Regional 2-Part Human Brain	179	https://anatomywarehouse.com/axis-scientific-life-size-regional-brain-a-104278
4	Axis Scientific 3-Part Life-Size Didactic Human Skull Anatomy Model	99	https://anatomywarehouse.com/axis-scientific-3-part-life-size-didactic-human-skull-a-104271
5	Axis Scientific Enlarged Spinal Cord Model with Nerves 8x Life Size	124	https://anatomywarehouse.com/axis-scientific-enlarged-spinal-cord-model-with-nerves-8x-life-size-a-105871
6	Axis Scientific 7-Part Human Lung and Respiratory System (3/4 Life-Size)	288	https://anatomywarehouse.com/axis-scientific-7-part-human-lung-and-respiratory-system-3-4-life-size-a-105184
7	Axis Scientific Kidney Model with Adrenal Gland	54	https://anatomywarehouse.com/axis-scientific-kidney-model-with-adrenal-gland-a-105870
8	Axis Scientific Human Bone Microstructure with Long Bone Osteon	189	https://anatomywarehouse.com/axis-scientific-human-bone-microstructure-with-long-bone-osteon-a-109186
	total	1401	

Staffing Requests

1000 Category - Certificated Positions

2000 Category - Classified Staff