

Science and Engineering Department
Annual Unit Plan for Academic Year 2016-2017
October 2015

Describe Department/Unit

Mission/Connection to College Mission

The mission of the Science and Engineering Department is to provide the rigorous science and engineering 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

Under-represented in department (37% vs 38% Collegewide))

Population:

Gender: Male

Analysis and Plan:

Science dept. and college has a strong gender gap favoring females. Dept. expects this gap to close as more males are attracted to traditionally female programs like nursing and child development.

Under-represented in department (27% vs 41% collegewide). Retention is very slightly less than College (81% vs 83%).

Population:

Age: 40 or older

Analysis and Plan:

Retention and success of older students in Science is very similar to College. Retention is very slightly less than College (81% vs 83%).

Slightly under-represented in department (2% vs 5% College).

Population:

Ethnicity: African American

Analysis and Plan:

For African Americans, success is much higher than College (59%/42%). Retention well above College (80% vs 71%).

Outcomes Assessment: Overall Report

First-day Student Survey forms have been implemented in many science classes. Early results indicate that these have guided instructors in determining need for LAC assistance with English or math basic skills, or specific weaknesses, such as inadequate chemistry or biology preparation.

Faculty member, Guck Ooi, has prepared an instructional video series to assist incoming students with weak preparatory work in the sciences. Topics include: "How to Read a Science Textbook". Other videos are in planning and production stages.

Outcomes Assessment: Gaps Identified in Prior Year's Assessments

BIOL C255 Relate cellular chemistry to cellular metabolism and functions.

Type:

SLO

Target Missed/Gap Detected:

58% of students successfully met this SLO. Target is 75%

Type of Gap:

Limited capacity/infrastructure. Need to alter/refine course content. Need to alter/refine instructional techniques.

Analysis and Plan:

Class surveys indicate that many students have no chemistry background. Students seem to have the most difficulty with the organic chemistry involved with a comprehension of cellular respiration. We will be directing students who lack chemistry to seek additional tutoring and help during instructor office hours.

BIOL C255 Apply an understanding of how cell and tissue structures dictate their functions.

Type:

SLO

Target Missed/Gap Detected:

68% of students successfully met this SLO. Target is 75%.

Type of Gap:

Impact of course delivery mode. Need to alter/refine course content. Need to alter/refine instructional techniques.

Analysis and Plan:

Students have the most difficulty understanding the structure and function of epithelial and connective tissues. These topics are covered very early in the semester. We will try to refer back to these tissues throughout the course.

PHSC C105

Type:

SLO

Target Missed/Gap Detected:

Summarize the conditions that cause such natural hazards as floods, storms, earthquakes, landslides, volcanoes, and coastal erosion, and explain their impact on humans.

Type of Gap:

Impact of course delivery mode. Need to alter/refine instructional techniques.

Analysis and Plan:

Students had the most trouble identifying the impact of natural hazards on humanity. This impact needs to be better integrated into the course when each natural hazard is covered during lecture and homework.

PHSC C105**Type:**

SLO

Target Missed/Gap Detected:

Analyze the impact of humans on the natural environments and research such local environmental issues as earthquake hazards, flash flooding, air pollution, groundwater pollution, and environmental planning.

Type of Gap:

Impact of course delivery mode. Need to alter/refine instructional techniques. Student unpreparedness in computer literacy.

Analysis and Plan:

Students had the most trouble identifying how humanity affects groundwater quality, natural flow of water, and coastal erosion. These affects need to be better integrated into the hydrosphere and oceanography section of the course.

BIOL C262 Compare and contrast different mechanisms used by various pathogens to invade host organ systems and cause disease.**Type:**

SLO

Target Missed/Gap Detected:

73% of students successfully met this SLO. Target is 75%.

Type of Gap:

Impact of course delivery mode. Need to alter/refine instructional techniques.

Analysis and Plan:

We are very close to the target. More time will be spent referring students to tutoring and office hours help.

BIOL C262 Relate current molecular and biochemical technologies to their uses in medical research.

Type:

SLO

Target Missed/Gap Detected:

73% of students successfully met this SLO. Target is 75%.

Type of Gap:

Impact of course delivery mode. Need to alter/refine instructional techniques.

Analysis and Plan:

We are very close to the target. More time will be spent referring students to tutoring and office hours help.

BIOL C262 Compare and contrast different mechanisms used by various pathogens to invade host organ systems and cause disease.

Type:

SLO

Target Missed/Gap Detected:

73% of students successfully met this SLO. Target is 75%.

Type of Gap:

Impact of course delivery mode. Need to alter/refine instructional techniques.

Analysis and Plan:

Progress Made on Program Review

Liberal arts, Math and Science

Year of Last Program Review:

Progress in the last year on two-year strategies:

Progress in the last year on five-year strategies:

Science and Engineering

Year of Last Program Review:

Progress in the last year on two-year strategies:

Program is being deleted.

Progress in the last year on five-year strategies:

Program is being deleted.

Progress Made on Prior Year Initiatives

Continue to build a ranked, all encompassing, forward-looking list of equipment needed by the Science and Engineering Department over the next five years taking all disciplines and college sites into account.

Equipment list is completed and will be maintained by the current department chair.

Develop CI-D courses for all applicable courses in the department.

PHYS C111, PHYS C113, PHYS C221 are CI-D approved.

CHEM C101, CHEM C111, CHEM C113, CHEM C221, CHEM C223 have been submitted; we are awaiting approval.

BIOL C251 is CI-D approved. BIOLC255 was rejected and has been resubmitted with changes.

BIOL C111 and BIOL C112 are being prepared for submission.

Develop TMC degrees as soon as degree pathways are defined for the emphases which apply: Physics, Chemistry, Biology and Engineering

We will continue to develop C-ID identification for courses. CHEM C101, CHEM C111, CHEM C113, CHEM C221, CHEM C223 were submitted for approval in 2014 and we are still waiting for approval. BIOL C251 and BIOL C255 were submitted and rejected. They will be resubmitted with modifications (addition of lab manual). The department recommends, however, that with the high degree of uncertainty regarding these degrees, no direct action to develop ADTs be taken at this time. We would prefer to wait and see what happens in regard to unit relief and UC transferability.

Plan Initiatives for Next Year

Initiatives for Next Academic Year

Department faculty will strive to become more familiar with the skills advocated by the Academy for College Excellence.

Action Plan:

Pending financial support, at least one Science dept. faculty (John Stenger-Smith has volunteered) will attend the 5 day Academy for College Excellence (ACE) immersion seminar. The attending faculty will submit a report of the experience to other members of the department.

Measure of Success:

Seminar is attended and report submitted to department.

Person Responsible:

Department chair and John Stenger-Smith

It addresses a gap in student equity

African Americans

The department will investigate the possibility of developing an Undergraduate Research Program.

Action Plan:

Students will develop and pursue independent research projects under the supervision of department faculty. We are proposing that the first-year pilot project take place in the Chemistry Dept. under the supervision of John Stenger-Smith.

Measure of Success:

A pilot project in the Chemistry department is launched.

Person Responsible:

It directly addresses a college Strategic Goal or Objective

Strategic Goal #1: Student Success

Strategic Goal #4: Community Connections

Provide Workforce and Economic Development Programs that Respond to Local Industry Increase college prominence in local workforce development.

The department will oversee remodel of science labs at KRV, Tehachapi, and ESCC.

Action Plan:

The department will oversee remodel of science labs at KRV, Tehachapi, and ESCC to assure that the new facilities meet the needs of students and instructors in terms of safety and effectiveness.

Measure of Success:

The remodel work is completed and satisfactory.

Person Responsible:

Department chair

It directly addresses a college Strategic Goal or Objective

Strategic Goal #1: Student Success

Evaluate Resource Needs

Facilities

Science laboratory at ESCCM will be expanded to 32 lab spaces, additional storage, and prep area.

Science laboratory at KRV will be completely remodeled and outfitted with movable lab benches.

Science laboratory at Tehachapi will be completely remodeled and outfitted with movable lab benches.

Information Technology

None.

Marketing

None.

Professional Development

Department member/s will attend the 5-day Academy for College Excellence (ACE) workshop, pending financial support from the college.

Staffing Requests

1000 Category - Certificated Positions

None

Location:

Justification:

None

Location:

Justification:

2000 Category - Classified Staff

None

Location:

Salary Grade:

Number of Months:

Number of Hours per Week:

Salary Amount:

Justification: