

Full-time Faculty Headcount	Part-time Faculty Headcount	Overload Faculty Headcount	Total Faculty Headcount
Physical Sciences: 0	Physical Sciences: 1	Physical Sciences: 0	Physical Sciences: 1
Engineering: 0	Engineering: 0	Engineering: 1	

Program Review Overview - Faculty Workload LHE per Faculty : Version by Rutan, Craig on 11/22/2019 02:18

Please note that the data presented is for the last year of the program review cycle (2017-18). The single engineering course offered in 2017-18 was taught by Dr. Craig Takahashi, full time engineering faculty at SAC. Beginning with the spring of 2019, SCC engineering courses are being taught by part-time faculty.

Full-time LHE per Faculty	Part-time LHE per Faculty	Overload LHE per Faculty	Total LHE per Faculty
Physics: 20.0	Physics: 14.67	Physics 4.00	Physics: 18.40
Physical Sciences: 0.0	Physical Sciences: 5.7	Physical Sciences: 0.0	Physical Sciences: 5.7
Engineering: 0.0	Engineering: 0.0	Engineering: 3.0	Engineering: 3.0

Program Review Overview - Faculty Workload FTEF (LHE/30) : Version by Rutan, Craig on 11/22/2019 02:18

Please note that the data presented is for the last year of the program review cycle (2017-18). The single engineering course offered in 2017-18 was taught by Dr. Craig Takahashi, full time engineering faculty at SAC. Beginning with the spring of 2019, SCC engineering courses are being taught by part-time faculty.

Full-time FTEF	Part-time FTEF	Overload FTEF	Total FTEF
Physics: 1.33	Physics: 1.47	Physics: 0.27	Physics: 3.07
Physical Sciences: 0.0	Physical Sciences: 0.19	Physical Sciences: 0.0	Physical Sciences: 0.19
Engineering: 0.00	Engineering: 0.00	Engineering: 0.10	

Program Review Overview - Faculty Workload FTES and Efficiency : Version by Rutan, Craig on 11/22/2019 02:18

Please note that the data presented is for the last year of the program review cycle (2017-18).

Total FTES	Overall Efficiency (FTES/FTEF)
Physics 110.10	Physics 35.86
Physical Sciences: 6.24	Physical Sciences: 32.84
Engineering: 1.18	

Goals and Objectives

Program Review Goals & Objectives - Process and Mission Statement Alignment : Version by Rutan, Craig on 11/22/2019 02:18

What processes does your program/service area follow to create, evaluate, and update annual plan goals?

The goals and activities listed in the DPP are reviewed at the beginning of each academic year. These goals were developed after looking at the program's course assessment data, course completion rates, class fill rates, and degree completion data. When reviewing the course assessment data each semester, new activities are considered that might enhance the program's progress towards meeting its goals. As the program has continued to expand, different objectives have been developed but the overall goals of the program have remained the same.

How is SCC's mission statement (<https://www.sccollege.edu/About/Pages/CollegeMissionStatement.aspx>) reflected in your goals?

Our goals are about improving the skills of our students and improving their ability to achieve their transfer and degree completion goals. As we strive to improve their problem solving and data analysis skills, we improve their ability to learn and think critically, while providing them will skills that they will be able to apply to future courses and their future careers. Additionally, improving laboratory skills will improve the ability of students to work collaboratively and to communicate the results of their work.

Program Review Goals & Objectives - Annual Plan Goals Not Aligned with EMP Goals

Annual Plan Goal
undefined

Data Analysis

Program Review Data Analysis - 1 to 4 : Version by Rutan, Craig on 11/22/2019 02:18

What is the successful course completion rate (grades of A, B, C, Credit or Pass) for courses within the program and how does this compare to the institution-set standard for successful course completion of 63%?

Discipline	2014-15	2015-16	2016-17	2017-18
Physics	78.2%	86.3 %	76.9 %	77.1%
Physics/ Science	69.6 %	77.8 %	90.0 %	89.7 %
Engineering	-	-	-	63.6 %

Physics success rates have consistently been around 75% for many years. The physical sciences success rates remain above the institution set standard despite offering only one section each year. It is too soon to know how engineering success rates will look relative to the institution set standard.

What is the successful course completion rate in basic skills courses (grades of A, B, C, Credit or Pass) within the program?

Not Applicable

What is the course retention rate (any grade except W) for courses within the program?

Discipline	2014-15	2015-16	2016-17	2017-18
Physics	84.7 %	90.8 %	85.2 %	83.8 %
Physics/ Science	69.6 %	92.6 %	90.0 %	93.1 %
Engineering	-	-	-	72.7 %

All of the retention rates continue to look strong. Students enrolled in most of these courses are required to take those specific courses for their major, so they tend to be less likely to drop the course during the semester.

What is the course retention rate in basic skills courses (any grade except W) within the program?

Not applicable

Program Review Data Analysis - 5 : Version by Rutan, Craig on 11/22/2019 02:18

The program hopes to have a new degree for physics majors hoping to transfer to a UC campus during the next program review cycle. There are no plans to develop an engineering degree during the next program review cycle, but it could be developed in the future if there is student demand.

Number of Awards in the Following Programs:	2014-2015	2015-2016	2016-2017	2017-2018
Physics, AS-T	18	35	38	43

Program Review Data Analysis - 6 to 13 : Version by Rutan, Craig on 11/22/2019 02:18

Are there any patterns, trends, or anomalies in the Student Demographic Data (Ethnicity, Age, Gender, Veteran Status, etc.)?

Physics

Group	14-15	15-16	16-17	17-18
Male	70.8	73.2	73.2	73.8
Female	70.3	72.9	73.0	74.4
White	82.7	89.1	82.3	84.9
LatinX	73.0	79.0	70.3	69.4
African American	60.0	75.0	100	80
Asian	82.1	92.9	76.6	82.6

Physical Sciences

Group	14-15	15-16	16-17	17-18
Male	62.5	66.7	100	88.9
Female	73.3	83.3	86.7	90.0
White	76.9	85.7	100	90.9
LatinX	40.0	71.4	88.9	86.7
Asian	100	100	N/A	N/A

The examination of the physical sciences data does not show any disturbing trends. The data set is small (only one section offered each year), but it is positive to see an increase in the performance of LatinX student since 2014-15. All groups are succeeding at a higher rate than the institution set standard for course success.

There may be an issue with the physics performance of LatinX students. These students reached a 79 % success rate (compared to the 89.1% rate for White students) in 2015-16; however, they only succeeded at 69.4 % rate (compared to 84.9 % for White students) in 2017-18. While other demographic groups have also seen a drop in success rates since supplemental instruction was lost for physics, it is possible that the LatinX students are experiencing the largest impact. This will need to continue to be monitored to ensure there isn't a disproportionate impact on these students.

With only one section offered, it is too soon to examine any trends for engineering students.

Labor market trends and needs: Review the labor market data on the [California Employment Development Department \(http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=1011\)](http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=1011) website for jobs related to your program.

1. What occupations are related to your program?
2. What are the occupational projections for employment?
3. How do these projections affect planning for your program?

Physics

1. Physicist – projected growth of 18.4%
2. Physics Teacher – projected growth of 15.4 %

3. Atmospheric/Space Sciences Teacher – projected growth of 10.5 %
4. Biological Science Teacher – projected growth of 17.5 %
5. Chemical Engineer – projected growth of 21.7 %
6. Education Administrator – projected growth of 15.8 %
7. Engineering Teachers – projected growth of 11.1 %
8. Geoscientists – projected growth of 22.4 %
9. Mathematical Science Teachers – projected growth of 8.6 %
10. Occupational Health and Safety Specialists – projected growth of 23.6 %
11. Philosophy and Religion Teachers – projected growth of 20.8 %
12. Secondary School Teachers – projected growth of 6.5 %
13. Soil and Plan Scientist – projected growth of 35.0 %

Engineering

1. Aerospace Engineering – 13.3 % growth
2. Biomedical Engineers – 67.5 % growth
3. Chemical Engineers – 15.8 % growth
4. Civil Engineers – 12.6 % growth
5. Computer and Information Research Scientists – 19 % growth
6. Computer Programmers – 10.8 % growth
7. Computer Systems Analysts – 17.8 % growth
8. Electrical and Electronic Drafters – 10 % growth
9. Electronics Engineers – 12.9 % growth
10. Engineering Teachers – 12.9 % growth
11. Engineers, All Other – 11.9 % growth
12. Environmental Engineers – 25 % growth
13. Industrial Engineers – 11.1 % growth
14. Materials Engineers – 17.2 % growth
15. Mechanical Drafters – 10.4 % growth
16. Mechanical Engineers – 9.8 % growth
17. Sales Engineers – 23.5 % growth
18. Semiconductor Processors – 2.3 % growth
19. Software Developers, Applications – 27.7 % growth
20. Software Developers, Systems Software – 31.9 % growth

The program has been designed to support the needs of transfer students in STEM and for future elementary school teachers. There continues to be a need for elementary teachers and there is increased need for physics teachers with the adoption of the new California Science Standards that encourage students to take physics during high school. The top growth fields in STEM are in biotechnology and computer science. The number of computer science majors enrolling in Physics 250ABC has increased since the last program review cycle, with some students required to take all three semesters and others only being required to take the first two. The number of students enrolling in Physics 150AB has increased since the last cycle, so it appears that this sequence is continuing to meet the needs of biology majors. Ideally, the program would see greater enrollment in engineering courses, but it has been difficult to get these courses started at SCC. The college will need to determine how to increase enrollment in these courses to ensure that students do not feel like they need to enroll at other local campuses to meet their transfer needs.

Please provide comment on the rates of progress through the basic skills course sequence within your program using the California Community College Chancellor’s Office Data Mart [Basic Skills Progress Tracker \(http://datamart.cccco.edu/Outcomes/BasicSkills_Cohort_Tracker.aspx\)](http://datamart.cccco.edu/Outcomes/BasicSkills_Cohort_Tracker.aspx).

Not applicable

Please provide comment on student survey results administered by the program, if any.

The program does not give any surveys to students.

Please provide comment on program exit exams or other assessments of graduating students, if any.

Students are not given any exit exams or other assessments.

Please provide the number of students who take and pass external license examinations, if relevant to the program.

There are no external license exams for the program.

Please provide data on former students’ post-SCC experiences (e.g. transfer success, career advances, post-graduation surveys), if any.

With the exception of physics 100, physics students transfer at a nearly 100% rate and are transferring to universities like the University of California Berkeley, Los Angeles, San Diego, and Irvine. The most popular campuses (based on communication with students) are Cal Poly Pomona, UCLA, UCSD, and UCI.

Please provide data pertaining to the instruction or delivery of service, if any.

No data is available.

Outcomes Assessment

Program Review Outcomes Assessment - Course and Section Count : Version by Rutan, Craig on 11/22/2019 02:18

Courses	Section Count

Program Review Outcomes Assessment - CSLOs : Version by Rutan, Craig on 11/22/2019 02:18

Student Learning Outcomes	CSLO Count	CSLOs Measured
ENGR220 - Statics		
Analyze and solve equilibrium conditions for a particle, rigid body, or a beam in two or three dimensions.		