Physical Sciences

Annual Program Planning Report
Astronomy
Chemistry
Physics

Comprehensive Program Plan Report
Earth and Ocean Science (formerly Geology)

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2022 INSTRUCTIONAL ANNUAL PROGRAM PLANNING WORKSHEET

CURRENT YEAR: 2021-2022 **PROGRAM: ASTRONOMY**
CLUSTER: 1 **LAST YEAR CPPR COMPLETED: 2018-2019**
NEXT SCHEDULED CPPR: 2023-2024 **CURRENT DATE: 2/4/2022**

The Annual Program Planning Worksheet (APPW) is the process for:

- reviewing, analyzing and assessing programs on an annual basis
- documenting relevant program changes, trends, and plans for the upcoming year
- identifying program needs, if any, that will become part of the program's resource plan
- highlighting specific program accomplishments and updates since last year's APPW
- tracking progress on a Program Sustainability Plan if established previously

Note: Degrees and/or certificates for the ***same*** program ***may be consolidated*** into one APPW.
This APPW encompasses the following degrees and/or certificates:
N/A.

GENERAL PROGRAM UPDATE

Describe significant changes, if any, to program mission, purpose or direction. *If there are not any, indicate: NONE.*
NONE.

PROGRAM SUSTAINABILITY PLAN UPDATE

Was a Program Sustainability Plan established in your program's most recent Comprehensive Program Plan and Review?

Yes ☐ If yes, please complete the Program Sustainability Plan Progress Report below.
No ☒ If no, you do not need to complete a Progress Report.

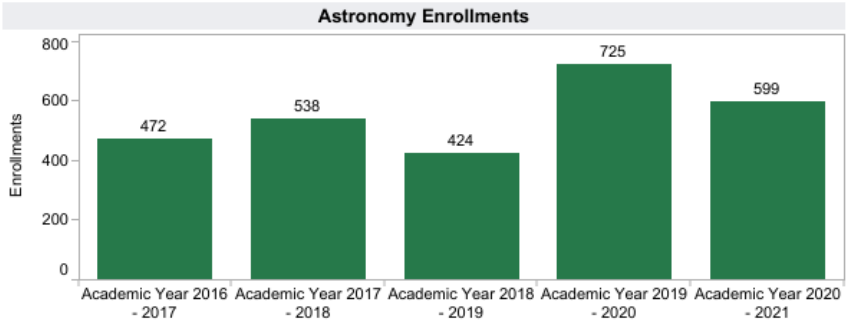
If you selected yes, please complete the Program Sustainability Plan Progress Report below after you complete the Data Analysis section. That data collection and analysis will help you to update, if necessary, your Program Sustainability Plan.

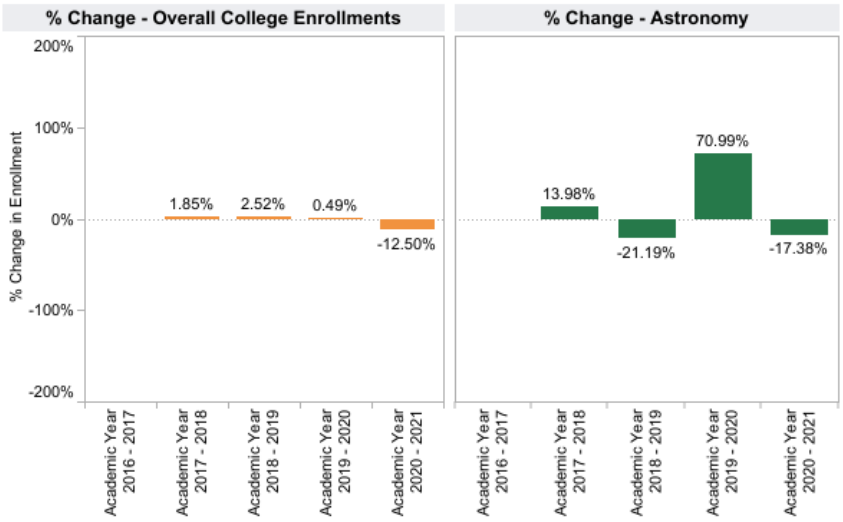
DATA ANALYSIS AND PROGRAM-SPECIFIC MEASUREMENTS

Your responses to the prompts for the data elements below should be for the entire program. If this APPW is for multiple degrees and/or certificates, then you MAY want to comment on each degree and/or certificate or discuss them holistically for the entire program being sure to highlight relevant trends for particular degrees and/or certificates if necessary. Responses in this document need only reference the most recent year's available data.
General Enrollment (Insert Aggregated Data Chart)

SLOCCCD Program Review Data - Enrollment

Department:	Course:	Dual Enrollment:	Prison:
Astronomy	All	All	All

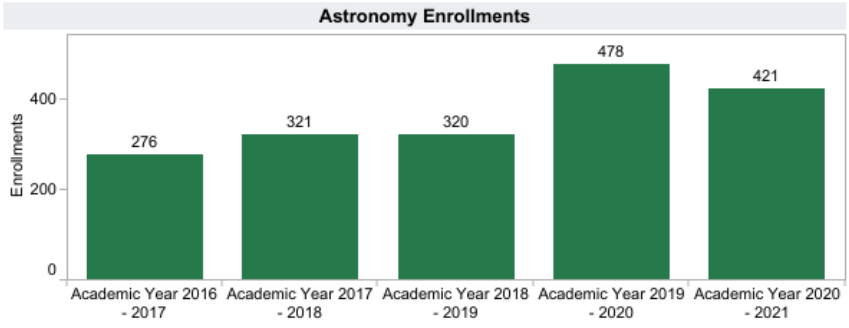


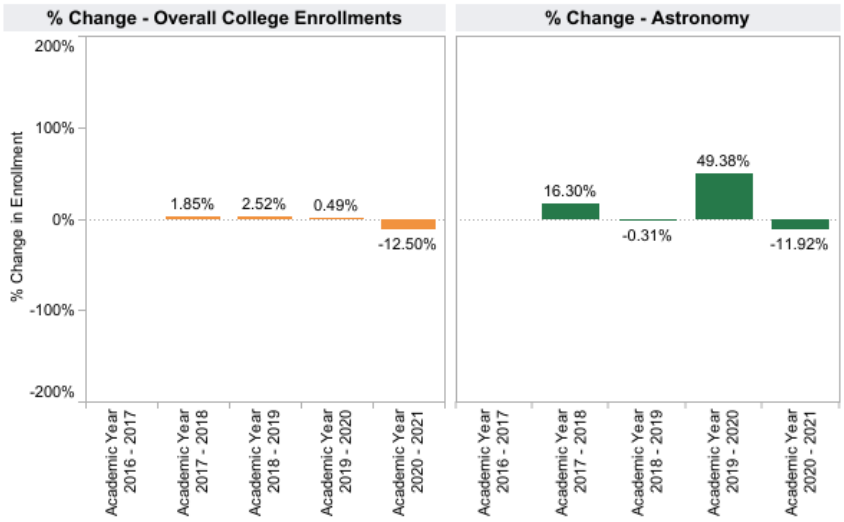


Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

SLOCCCD Program Review Data - Enrollment

Department:	Course:	Dual Enrollment:	Prison:
Astronomy	ASTR 210	All	All

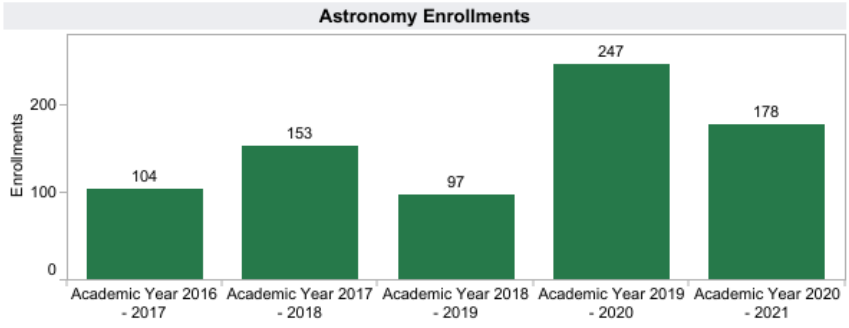


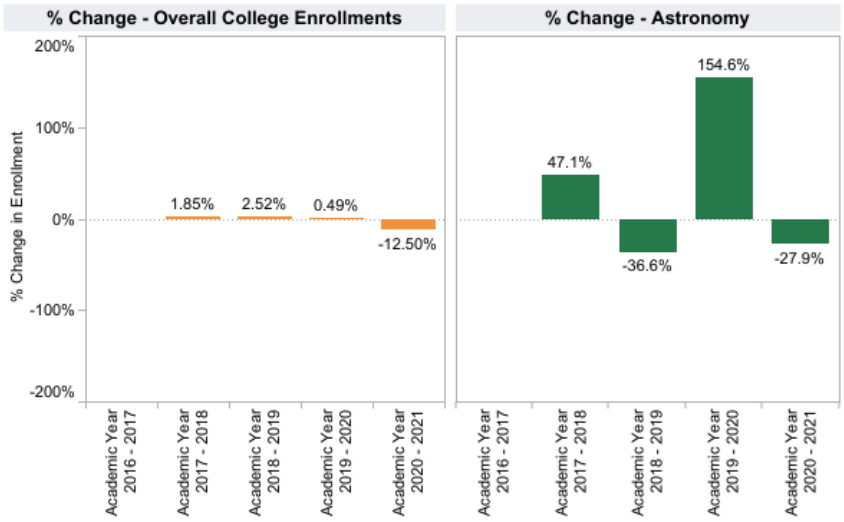


Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

SLOCCCD Program Review Data - Enrollment

Department:	Course:	Dual Enrollment:	Prison:
Astronomy	ASTR 210L	All	All

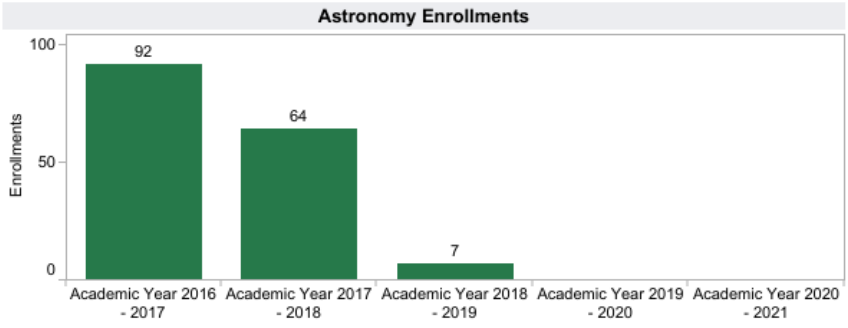


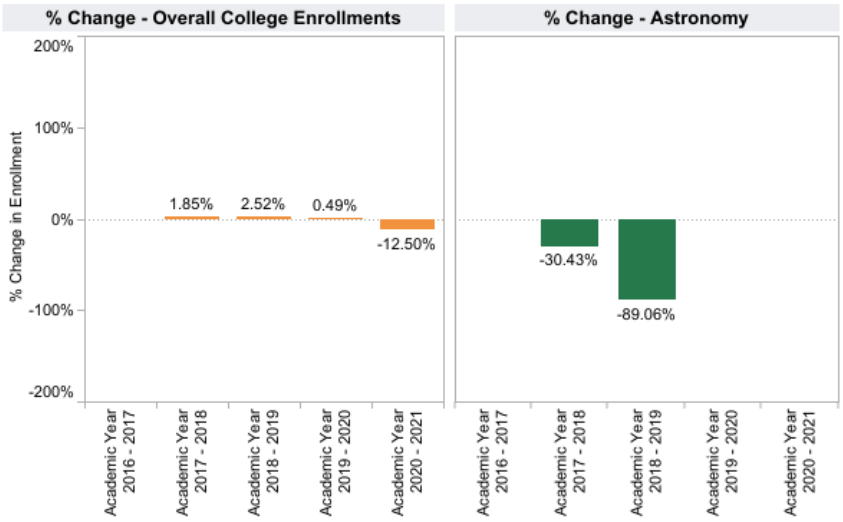


Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

SLOCCCD Program Review Data - Enrollment

Department:	Course:	Dual Enrollment:	Prison:
Astronomy	ASTR 299	All	All



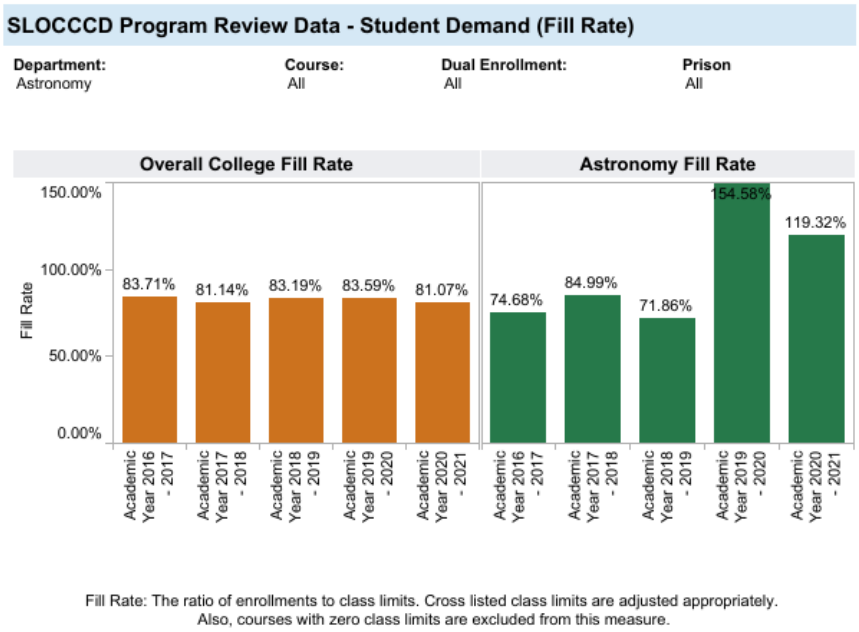


Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

Overall ASTR 210 and ASTR 210L enrollments have been relatively steady, with a notable increase in 2019-2020 for both courses compared to the college overall, and a similar downturn for 2020-2021. Positive and negative change fluctuations occurred in ASTR 210L enrollments due to a high degree of variability in the NC campus section enrollment, which is also offered only intermittently at that campus.

The large enrollment numbers for ASTR 299 in 2016-2017 and 2017-2018 is when it was made available as a distance education course; however the steep decline in 2018-2019 and the zero enrollment in 2019-2020 onwards is due to it no longer being offered from the lack of part-time faculty available to teach that course.

General Student Demand (Fill Rate) (Insert Aggregated Data Chart)

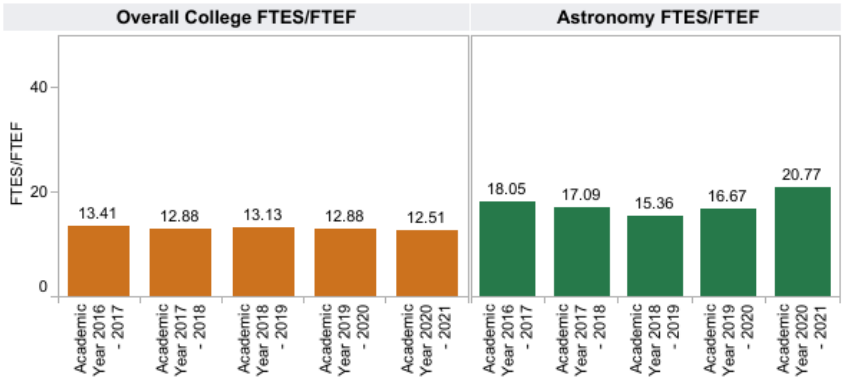


Overall, astronomy fill rates mirror the District's overall fill rate, with a much higher fill rates for 2019-2020 (153.52%), and for 2020-2021 (119.32%).

General Efficiency (FTES/FTEF) (Insert Aggregated Data Chart)

SLOCCCD Program Review Data - Efficiency (FTES/FTEF)

Department:	Course:	Dual Enrollment:	Prison:
Astronomy	All	All	All



FTES/FTEF: The ratio of total FTES to Full-Time Equivalent Faculty
(SXD4 Total-Hours/17.5)/XE03 FACULTY-ASSIGNMENT-FTE)

The overall efficiency of astronomy courses is very high compared to the District efficiency over the past five-year history, due to large lectures of 45-60 students in each ASTR 210 lecture section, and many ASTR 210L lab sections being run at/or near capacity (24-28 students).
Student Success—Course Completion by Modality (Insert Data Chart)

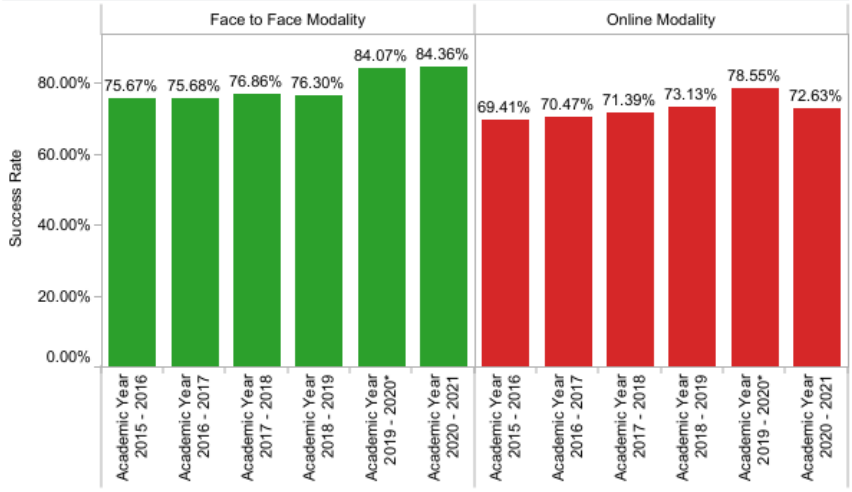
SLOCCCD Program Review Data: Successful Course Completion

Select Department:
All

Course:
All

Legend:
Face to Face Modality
Online Modality

Successful Course Competion by Modality -All



Successful Course Competion by Modality Table - All

		Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Face to Face Modality	Department Success Rate	75.67%	75.68%	76.86%	76.30%	84.07%	84.36%
	Total Department Enrollm..	52,399	53,121	53,586	52,830	51,888	11,702
Online Modality	Department Success Rate	69.41%	70.47%	71.39%	73.13%	78.55%	72.63%
	Total Department Enrollm..	9,950	10,438	12,311	14,888	16,965	48,503

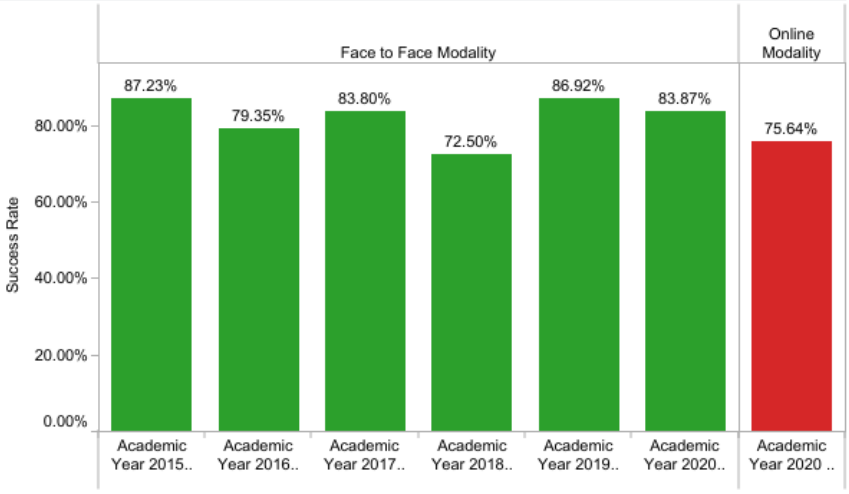
SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Astronomy

Course:
ASTR210

Legend:
Face to Face Modality
Online Modality

Successful Course Competion by Modality -Astronomy



Successful Course Competion by Modality Table - Astronomy

		Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Face to Face Modality	Department Success Rate	87.53%	80.00%	86.50%	76.50%	90.20%	84.21%
	Total Department Enrollm..	449.0	380.0	474.0	418.0	725.0	120.0
Online Modality	Department Success Rate	82.50%	91.30%	73.44%	71.43%		78.06%
	Total Department Enrollm..	40.0	92.0	64.0	7.0		479.0

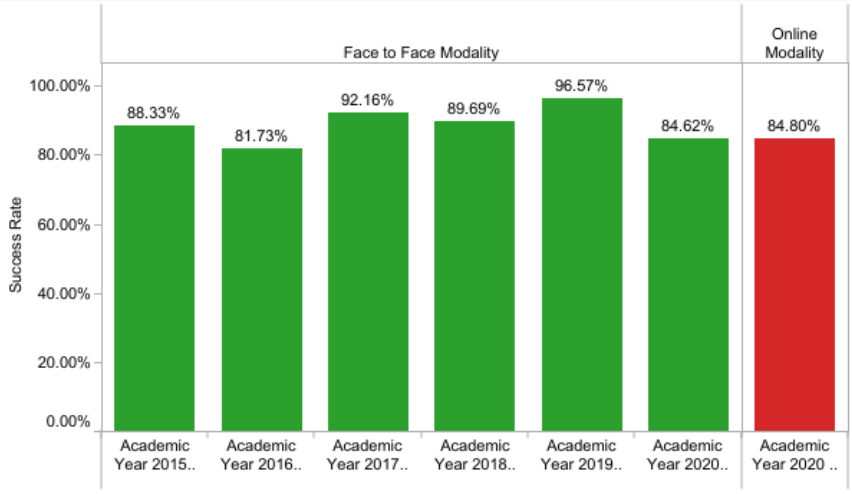
SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Astronomy

Course:
ASTR210L

Legend:
Face to Face Modality
Online Modality

Successful Course Competion by Modality -Astronomy



Successful Course Competion by Modality Table - Astronomy

		Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
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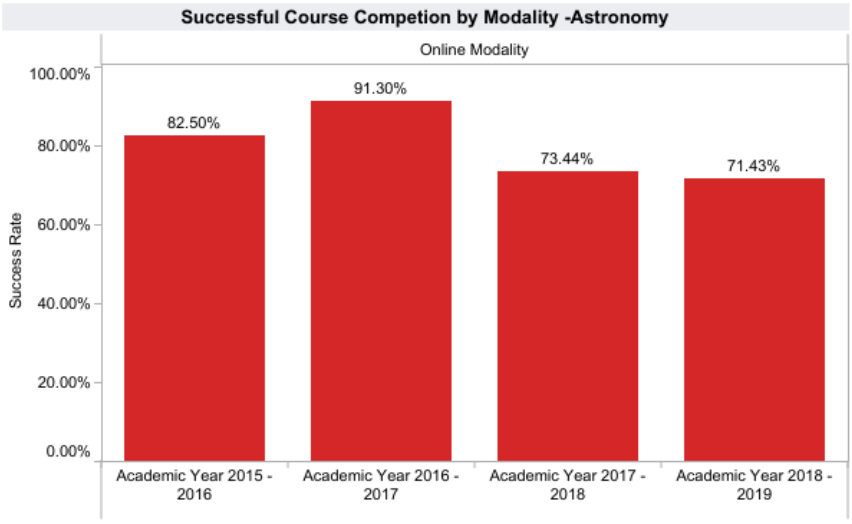
SLOCCCD Program Review Data: Successful Course Completion

Select Department: Astronomy

Course: ASTR299

Legend: Online Modality



Successful Course Competion by Modality Table - Astronomy

		Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
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Online Modality	Department Success Rate	82.50%	91.30%	73.44%	71.43%		78.06%
	Total Department Enrollm..	40.0	92.0	64.0	7.0		479.0

Compared to the District, all astronomy courses have comparable successful course completion rates. ASTR 210 and ASTR 210L were only offered in face-to-face modality in the first half of the spring 2020 semester, and completely online for the second half of the spring 2020 semester, resulting in comparable success rates.
ASTR 299 was only offered as a distance-learning course (starting in 2014-2015, and ending in 2018-2019), so there is no modality comparison within that course.

Degrees and Certificates Awarded (Insert Data Chart)
(Not applicable; Cuesta College has no degree/certificate programs for astronomy.)
General Student Success – Course Completion (Insert Aggregated Data Chart)

Review the Disaggregated Student Success charts; include any charts that you will reference. Describe any departmental or pedagogical outcomes that have occurred as a result of programmatic discussion regarding the data presented.

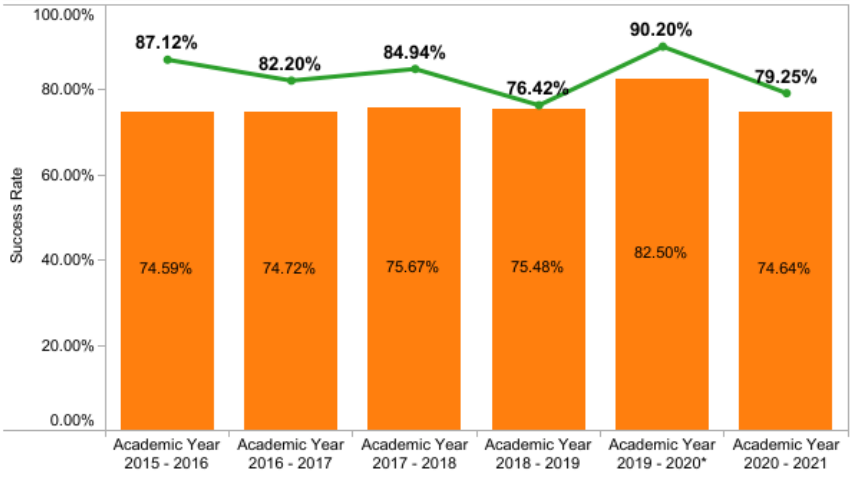
SLOCCCD Program Review Data: Successful Course Completion

Select Department: Astronomy

TERM All

COURSE All

Measure Names
- Department Success Rate
- Overall College Success Rate

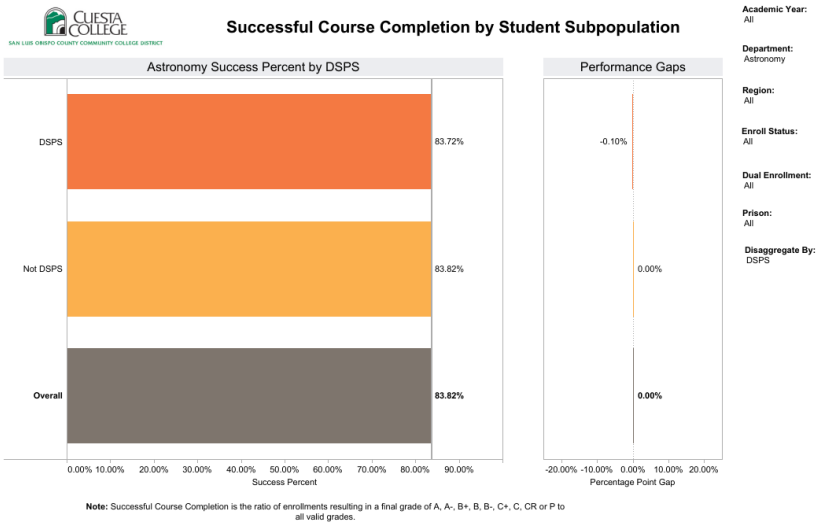


Astronomy Success Rate Table

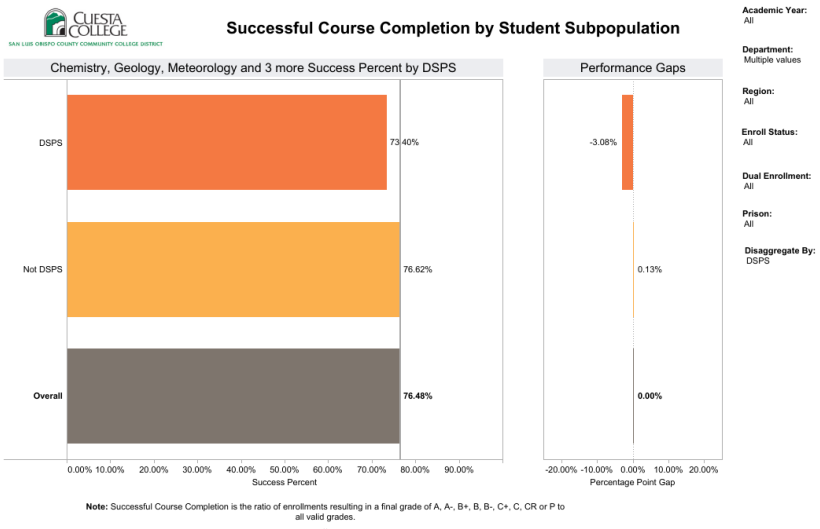
	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Department Success..	87.12%	82.20%	84.94%	76.42%	90.20%	79.25%
Total Enrollments	489	472	538	425	725	599

Success: The Percentage of student enrollments resulting in a final grade of "C" or better

The student success rate in astronomy courses is higher than the college-wide rate.

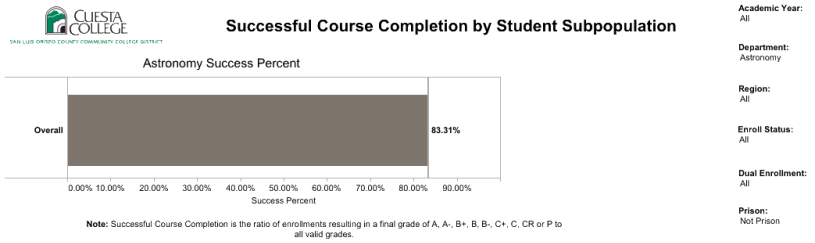


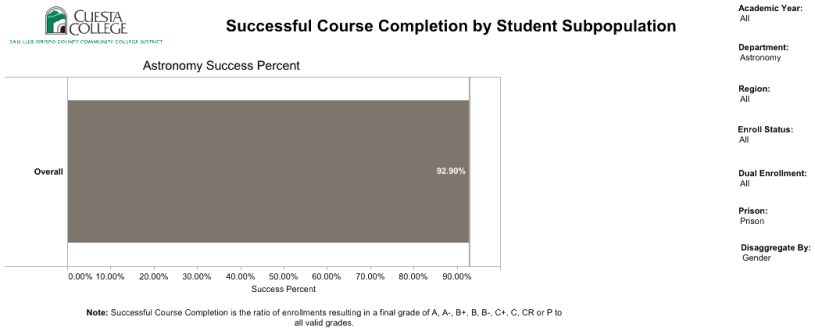
For all astronomy classes there is no meaningful difference in completion rate for DSPS students vs. non-DSPS ASTR students.



However, for all other Physical Sciences Division classes, there is a comparable slightly lower completion rate for DSPS students vs. non-DSPS students.

Astronomy: 2015-2016 through 2020-2021
DSPS: 90 students (2/88% of overall), success rate = 83.72%
Not DSPS: 3,158 students (97.23% of overall), success rate = 83.82%
Overall: 3,248 students
Chemistry, Geology, Meteorology, Oceanography, Physical Sciences, Physics: 2014-2015 through 2015-2016 through 2020-2021
DSPS: 618 students (4.18% of overall), success rate = 73.40%
Not DSPS: 14,158 students (95.82% of overall), success rate = 76.62%
Overall: 14,775 students
Also the completion rate of both DSPS and non-DSPS astronomy students is slightly higher than all other Physics Sciences Division classes.
Currently (spring semester 2022) ASTR 210 and ASTR 210L are the only lab sciences offered to incarcerated Cuesta College students to meet the requirements for the AS transfer degree in sociology. The success rate for non-prison DE students in astronomy is 83.31%. The success rate for prison DE students in astronomy is 92.90%.





OTHER RELEVANT PROGRAM DATA (OPTIONAL)

Provide and comment on any other data that is relevant to your program such as state or national certification/licensure exam results, employment data, etc. If necessary, describe origin and/or data collection methods used.
(N/A)

PROGRAM OUTCOMES ASSESSMENT CHECKLIST AND NARRATIVE

CHECKLIST:

☒ SLO assessment cycle calendar is up to date.

☒ All courses scheduled for assessment have been assessed in eLumen.

☐ Program Sustainability Plan progress report completed (if applicable).

NARRATIVE:

Briefly describe program changes, if any, which have been implemented in the previous year as a direct result of the Program or Student Services Learning Outcomes Assessment. *If no program changes have been made as results of Program or Student Services Learning Outcomes Assessment, indicate: NONE.*

PROGRAM PLANNING / FORECASTING FOR THE NEXT ACADEMIC YEAR

Briefly describe any program plans for the upcoming academic year. These may include but are not limited to the following: *(Note: you do not need to respond to each of the items below)*. *If there are no forecasted plans for the program, for the upcoming year, indicate: NONE.*

D. Facilities Changes

Currently no ADA-compliant pedestrian access to the NC campus telescope shelter. No public events are currently being held past twilight at the telescope shelter, due to these safety concerns. If funding is provided, an ADA-compliant pathway connecting telescope shelter to pad around N1000/N1100 building should be constructed, and to provide additional LED lighting both outside and inside of the shelter.

The 14" Meade reflector at the Bowen Observatory on top of the 2401/2402 science forum building is now 14 years old, and should be refurbished and realigned. A continuing problem is that the mechanism for opening and closing the slit doors for the dome continue to deteriorate, and this require constant repairs when parts fail. If funding is provided, an assessment and refurbishment of the telescope and the mechanism should be executed.

If funding is provided, the addition of a second digital projector in the N2401 classroom would enable viewing of multiple screens of instruction, as is done in every other classroom where ASTR 210 and 210L has been or is currently offered (2609, 2401, 2402, 2101, 2105, 2108, N2409, N2439).

If funding is provided, the opening of a doorway between the chemistry and physics/astronomy labs in the N2400 building would facilitate direct access to cross-disciplinary equipment during labs.

PROGRAM SUSTAINABILITY PLAN PROGRESS REPORT

This section only needs to be completed if a program has an existing Program Sustainability Plan. Indicate whether objectives established in your Program Sustainability Plan have been addressed or not, and if improvement targets have been met.

Area of Decline or Challenge	**Identified Objective (Paste from PSP)**	**Planning Steps (Check all that apply)**	**Has the Improvement Target Been Met?**
Enrollment		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Demand (Fill Rate)		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Efficiency (FTES/FTEF)		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Success – Course Completion		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Success — Course Modality		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Degrees and Certificates Awarded		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one

If Program Sustainability Plan is still necessary, provide a brief description of how you plan to continue your PSP and update your PSP to remove any objectives that have been addressed and include any new objectives that are needed.

2022 INSTRUCTIONAL ANNUAL PROGRAM PLANNING WORKSHEET

CURRENT YEAR: 2022 **PROGRAM: CHEMISTRY**
CLUSTER: CLUSTER 1 **LAST YEAR CPPR COMPLETED: 2019**
NEXT SCHEDULED CPPR: 2024 **CURRENT DATE: 2/16/2022**

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Note: Degrees and/or certificates for the ***same*** program ***may be consolidated*** into one APPW.
This APPW encompasses the following degrees and/or certificates:
AS Chemistry, CA Premedical Studies

GENERAL PROGRAM UPDATE

Describe significant changes, if any, to program mission, purpose or direction. *If there are not any, indicate: NONE.*
The only significant change is that some courses that were being taught virtually due to COVID have returned to the in-person format, or hybrid/blended formats.

PROGRAM SUSTAINABILITY PLAN UPDATE

Was a Program Sustainability Plan established in your program's most recent Comprehensive Program Plan and Review?

Yes ☐ If yes, please complete the Program Sustainability Plan Progress Report below.
No ☒ If no, you do not need to complete a Progress Report.

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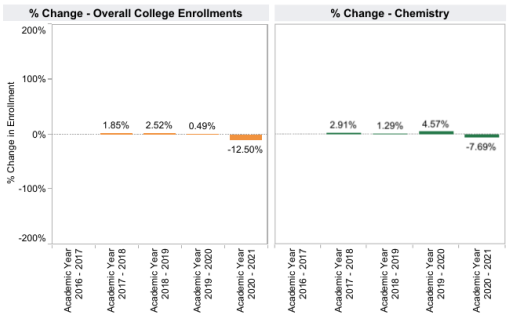
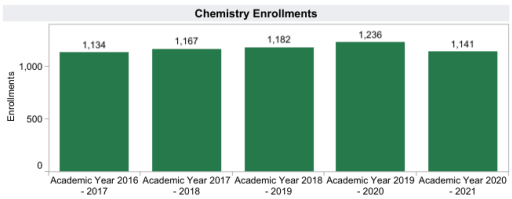
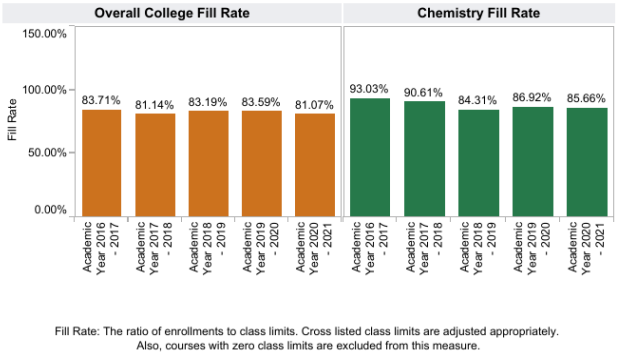


Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.



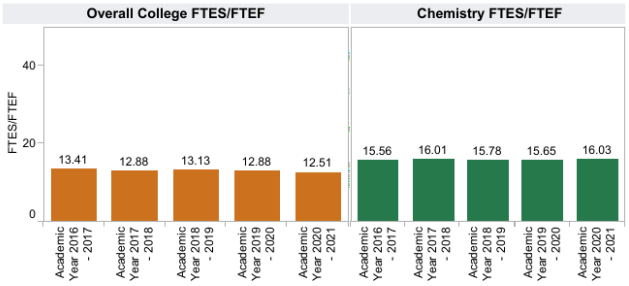
The trend for the chemistry program enrollments mirrors the overall college data fairly well, experiencing more growth (2017-2020) and less reduction (2020-2021). The reduction in enrollment from the global pandemic was less acute for the chemistry program than for the rest of the college.

General Student Demand (Fill Rate) (Insert Aggregated Data Chart)



Fill rates for the chemistry program are consistently higher than the rest of the college. We believe our careful schedule analysis and planning in response to student demand keep our fill rates steady.

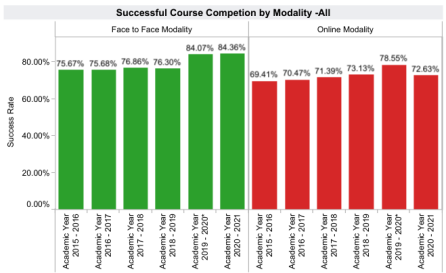
General Efficiency (FTES/FTEF) (Insert Aggregated Data Chart)

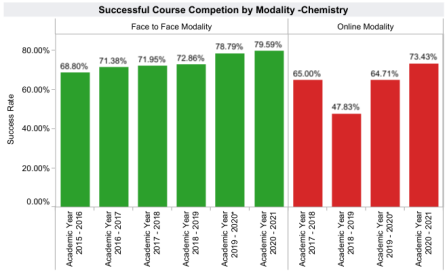


FTES/FTEF: The ratio of total FTES to Full-Time Equivalent Faculty
(SXD4 Total-Hours/17.5)/XE03 FACULTY-ASSIGNMENT-FTE)

While the overall College trends downward, our efficiency has remained above average and even increased during the academic years affected by the global pandemic. Chemistry faculty consider efficiency when planning course schedules. One way that we increase efficiency is to routinely combine sections into larger enrollment lectures (doubles and triples) with less load assigned instead of offering smaller, single sections of lecture. This allows more students to enroll in the classes that they need to be successful. Another increase to efficiency is that faculty are loaded less for teaching labs than for lecture.

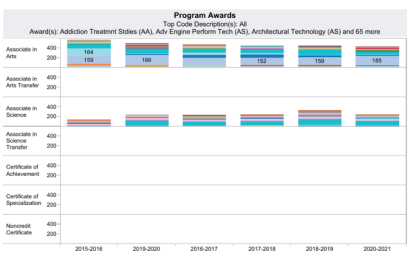
Student Success—Course Completion by Modality (Insert Data Chart)

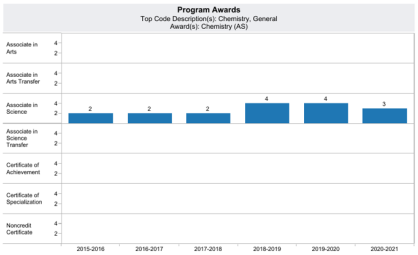




It is challenging to make any comparison between modalities yet because the only courses that were offered fully online before Spring 2020 were single sections of CHEM 201A and CHEM201P. However, we are encouraged by the upward trend in student success in the department, particularly that the success in the online modality was higher in 2020-2021 than the rest of the college. We believe that this is largely due to the effort we put into developing the online offerings.

Degrees and Certificates Awarded (Insert Data Chart)

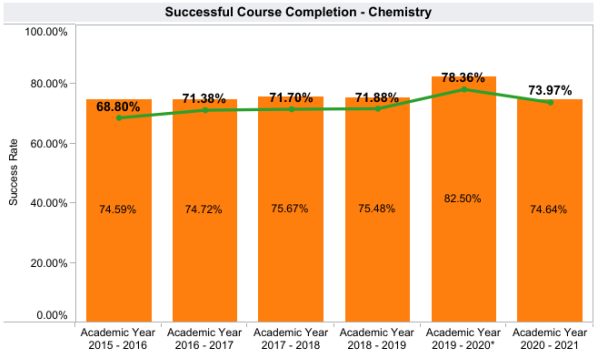




Commented [KG1]: This was a tough one to figure out how to compare to the college. I went with just the AA and AS but still don't think there's a lot useful to glean from this. There must be a useful way to narrow down further.

We primarily offer service courses (most of our students aren't majors) so it makes sense that our awarded degree totals are rather low. While an ADT in chemistry would be beneficial, the current unit totals in courses outside of our department (and division) will not allow for it. There is talk at the state level of increasing transferability to the UCs and CSUs from the community colleges which will hopefully lead to changes in unit requirements and allow us to offer some version of an ADT (or what the new iteration would be called).

General Student Success – Course Completion (Insert Aggregated Data Chart)

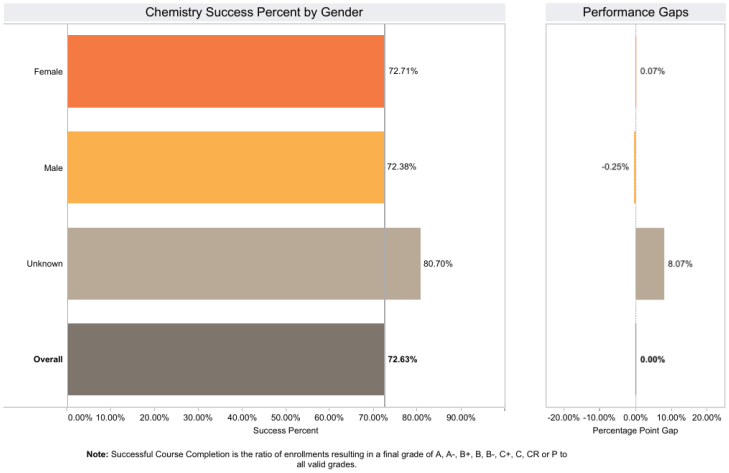


Chemistry Success Rate Table

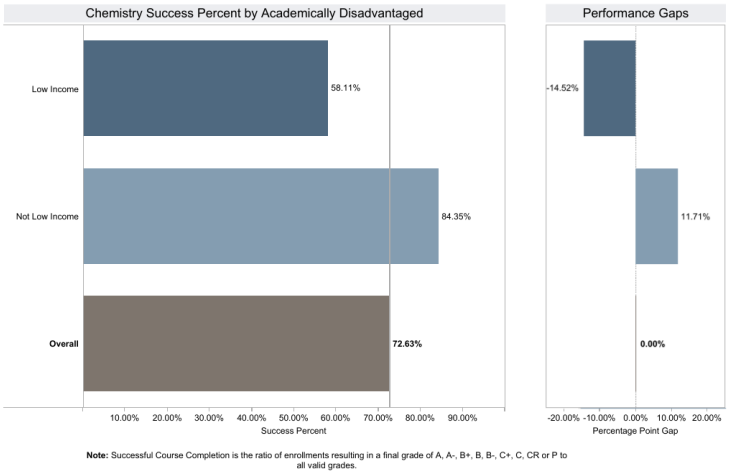
	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Department Success..	68.80%	71.38%	71.70%	71.88%	78.36%	73.97%
Total Enrollments	1,174	1,119	1,145	1,170	1,223	1,141

Excluding the anomalous 2019-2020 academic year, course completion has increased every year. Course completion significantly increased from the 2018-2019 year to the 2020-2021 year regardless of courses and student services being primarily provided online. We are encouraged by this data and will continue to work to provide students the services and quality instruction that they need to succeed.

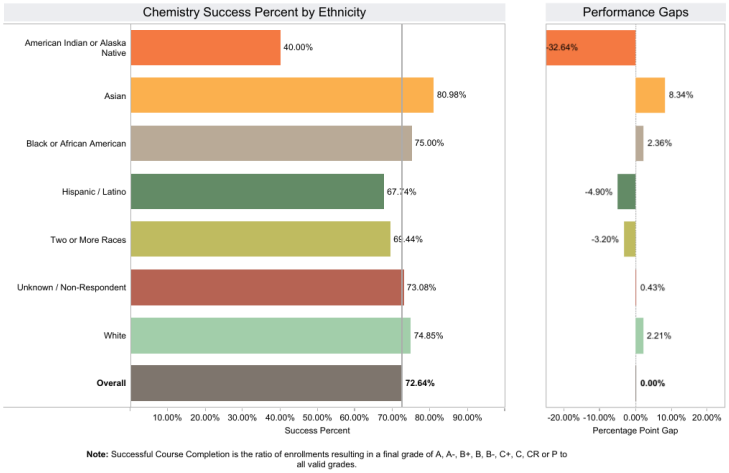
Review the Disaggregated Student Success charts; include any charts that you will reference. Describe any departmental or pedagogical outcomes that have occurred as a result of programmatic discussion regarding the data presented.



There does not seem to be an equity gap by gender. This is encouraging. It may be beneficial that there is balanced representation of females and males among the chemistry faculty.



There is a very large equity gap between low income and not low income. The gap is similar to that of the entire college. The gap has been roughly the same size over the years. Science classes require a considerable financial cost for textbooks and other supplies as well as time commitment for high-unit lectures and low-unit/time-intensive hours. However, given that the college as a whole has similar income equity gaps, there must be other factors involved. The department has been moving toward low cost or no cost textbooks, online homework systems, and lab manuals.

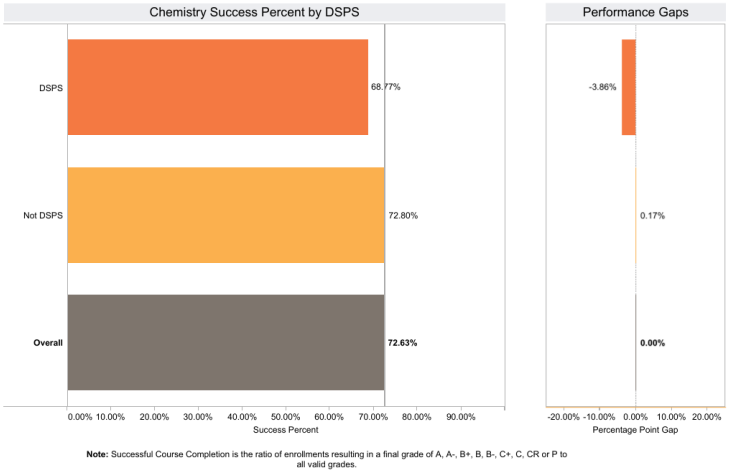


The equity gap for Hispanic/Latinx students is a little larger for the chemistry department (-4.90%) than for the college (-3.70%). Given that this is the largest minoritized population at Cuesta, the chemistry department should focus our equity efforts on reducing the equity gap for Hispanic/Latinx students. We recognize that the distribution of faculty in the chemistry department is does not reflect the ethnicity of Hispanic/Latinx students. Representation is an important factor to student success, particularly of minoritized students. This is a nationwide issue for chemistry. We have the responsibility to work toward improving this.

Current practices and ideas for addressing this equity gap are:

- Reviewing Course Outlines of Record for inclusion of culturally relevant content
- Flexible due dates and late policies
- Including culturally relevant content in courses, such as including images and examples the demonstrate representation
- Attending professional development in equity
- Equity discussions in the division
- Consciously building community in the classroom, demonstrating empathy and understanding

Equity Gaps for Hispanic/Latinx students in chemistry over the years:
2015-2016: -5.45%
2016-2017: -4.97%
2017-2018: -5.69%
2018-2019: -8.23%
2019-2020: -3.93%
2020-2021: -2.87%



The equity gap for DSPS students is larger for the chemistry department (-3.86%) than for the college (-2.43%). Further analysis of the data reveals that the equity gap and number of DSPS students in chemistry has fluctuated over the years making it difficult to interpret this data.

OTHER RELEVANT PROGRAM DATA (OPTIONAL)

Provide and comment on any other data that is relevant to your program such as state or national certification/licensure exam results, employment data, etc. If necessary, describe origin and/or data collection methods used.

PROGRAM OUTCOMES ASSESSMENT CHECKLIST AND NARRATIVE

CHECKLIST:

☒ SLO assessment cycle calendar is up to date.

☐ All courses scheduled for assessment have been assessed in eLumen.

The Pandemic, particularly transitioning almost all chemistry classes from fully in person to fully Distance Education, put us a bit behind in completing the scheduled assessment. We are committed to getting back on track.

☐ Program Sustainability Plan progress report completed (if applicable).

NARRATIVE:

Briefly describe program changes, if any, which have been implemented in the previous year as a direct result of the Program or Student Services Learning Outcomes Assessment. *If no program changes have*

been made as results of Program or Student Services Learning Outcomes Assessment, indicate: NONE.
NONE

PROGRAM PLANNING / FORECASTING FOR THE NEXT ACADEMIC YEAR

Briefly describe any program plans for the upcoming academic year. These may include but are not limited to the following: *(Note: you do not need to respond to each of the items below)*. *If there are no forecasted plans for the program, for the upcoming year, indicate: NONE.*

A. New or modified plans for achieving program-learning outcomes
B. Anticipated changes in curriculum, scheduling or delivery modality
C. Levels, delivery or types of services
D. Facilities changes
E. Staffing projections
F. Other

- We will be recruiting for a part-time chemistry faculty position to meet student need
- We anticipate changing delivery from largely online to largely face-to-face or blended/hybrid
- We will be updating the Course Outlines of Record for Chem 201A, Chem 201B, Chem 212A, and Chem 212B to align with C-ID updates for these courses
- We will continue to work with physics, math, and biology to schedule courses at times that work for students' schedules
- Update mapping of SLOs to PLOs

PROGRAM SUSTAINABILITY PLAN PROGRESS REPORT

This section only needs to be completed if a program has an existing Program Sustainability Plan. Indicate whether objectives established in your Program Sustainability Plan have been addressed or not, and if improvement targets have been met.

Area of Decline or Challenge	Identified Objective (Paste from PSP)	Planning Steps (Check all that apply)	Has the Improvement Target Been Met?
Enrollment		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Demand (Fill Rate)		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Efficiency (FTES/FTEF)		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Success – Course Completion		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Success — Course Modality		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Degrees and Certificates Awarded		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one

If Program Sustainability Plan is still necessary, provide a brief description of how you plan to continue your PSP and update your PSP to remove any objectives that have been addressed and include any new objectives that are needed.

2022 INSTRUCTIONAL ANNUAL PROGRAM PLANNING WORKSHEET

CURRENT YEAR: 2022 **PROGRAM: PHYSICS**
CLUSTER: 1 **LAST YEAR CPPR COMPLETED: 2019**
NEXT SCHEDULED CPPR: 2024 **CURRENT DATE: 2/15/2022**

The Annual Program Planning Worksheet (APPW) is the process for:

- reviewing, analyzing and assessing programs on an annual basis
- documenting relevant program changes, trends, and plans for the upcoming year
- identifying program needs, if any, that will become part of the program's resource plan
- highlighting specific program accomplishments and updates since last year's APPW
- tracking progress on a Program Sustainability Plan if established previously

Note: Degrees and/or certificates for the ***same*** program ***may be consolidated*** into one APPW.
This APPW encompasses the following degrees and/or certificates:
AS-T – Physics, AS - Physics

GENERAL PROGRAM UPDATE

Describe significant changes, if any, to program mission, purpose or direction. *If there are not any, indicate: NONE.*
None

PROGRAM SUSTAINABILITY PLAN UPDATE

Was a Program Sustainability Plan established in your program's most recent Comprehensive Program Plan and Review?

Yes ☐ If yes, please complete the Program Sustainability Plan Progress Report below.
No ☒ If no, you do not need to complete a Progress Report.

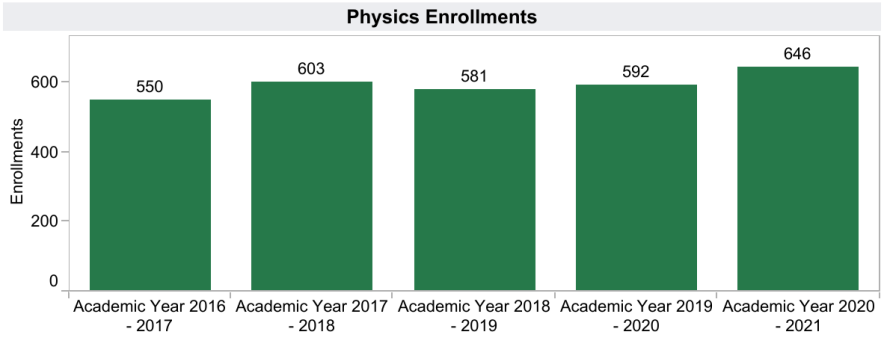
If you selected yes, please complete the Program Sustainability Plan Progress Report below after you complete the Data Analysis section. That data collection and analysis will help you to update, if necessary, your Program Sustainability Plan.

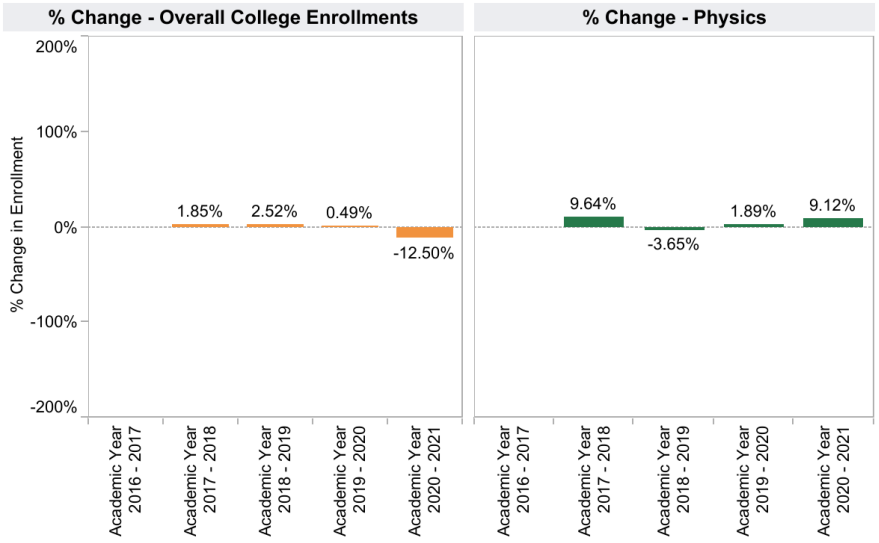
DATA ANALYSIS AND PROGRAM-SPECIFIC MEASUREMENTS

Your responses to the prompts for the data elements below should be for the entire program. If this APPW is for multiple degrees and/or certificates, then you MAY want to comment on each degree and/or certificate or discuss them holistically for the entire program being sure to highlight relevant trends for particular degrees and/or certificates if necessary. Responses in this document need only reference the most recent year's available data.

SLOCCCD Program Review Data - Enrollment

Department:	Course:	Dual Enrollment:	Prison:
Physics	All	All	All

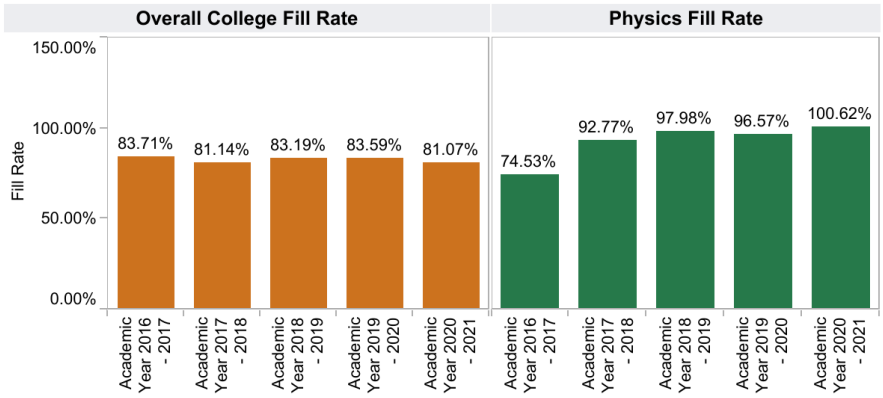




Physics enrollments have been rather steady during the past five years. Demand for physics courses has decreased slightly on the San Luis Obispo Campus, but has been offset by dual enrollment offerings at local high schools. These dual enrollment sections are taught by Cuesta faculty. Dual enrollment accounts for 95 students on average per year. The recent increase in headcount is largely due to the addition of two new local high school sites.

SLOCCCD Program Review Data - Student Demand (Fill Rate)

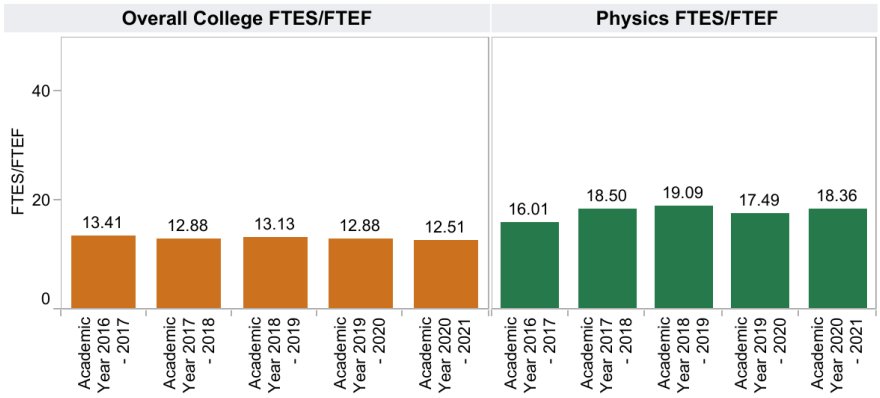
Department:	Course:	Dual Enrollment:	Prison
Physics	All	All	All



Demand for Physics courses has increased dramatically during the past four years. This coincides with the addition of dual enrollment offerings at local high schools and a shift in sections. Demand for physics courses is greater than the department's ability to offer sections due to lack of qualified faculty.

SLOCCCD Program Review Data - Efficiency (FTES/FTEF)

Department:	Course:	Dual Enrollment:	Prison:
Physics	All	All	All



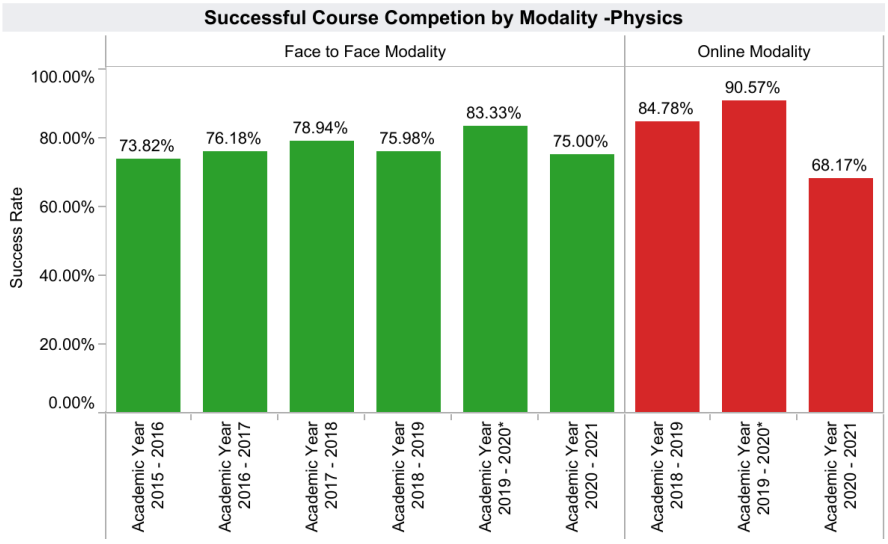
The efficiency in Physics is much higher than the college. This is largely due to the fact that multiple labs are paired with single lectures. It should be noted that the efficiency is high despite running PHYS 208C which is a traditionally low-efficiency course. Despite the fact that most courses in chemistry and physics pair multiple labs with single lectures, faculty and staff often feel that they are underappreciated for taking on the higher workload while faculty in other departments across the district enjoy lower headcounts.

SLOCCCD Program Review Data: Successful Course Completion

Select Department: Physics

Course: All

Legend: Face to Face Modality, Online Modality



Successful Course Competion by Modality Table - Physics

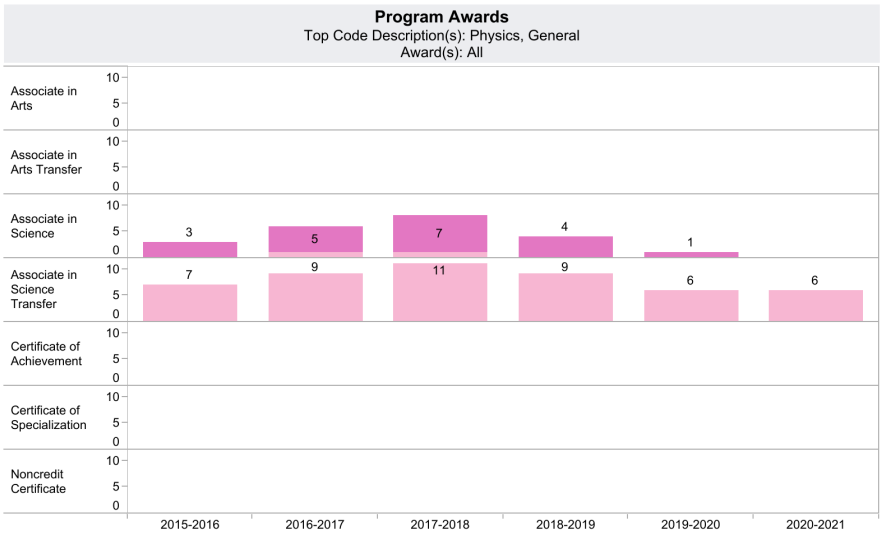
		Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Face to Face Modality	Department Success Rate	73.82%	76.18%	78.94%	75.98%	83.33%	75.00%
	Total Department Enrollm..	592.0	550.0	603.0	535.0	539.0	36.0
Online Modality	Department Success Rate				84.78%	90.57%	68.17%
	Total Department Enrollm..				46.0	53.0	610.0

The course success rate for physics courses are near the college average. Prior to 2020-21, the success rate for physics courses taught online is considerably higher than the college average. During that time, the only physics courses offered online were dual enrolled courses. Students in these courses receive more resources and have more time to complete the course. This, coupled with a high percentage of students who are more prepared academically, results in a success rate that is over 10% higher than the college success rate. During the past year, the online success rates dropped. This is due to all sections offered being offered online. All program faculty agree that a fully online modality is not conducive to student success in physics courses.

SLOCCCD Program Review Data: Degrees and Certificates Awarded

Program:
Physics, General

Award Type:
All



Program Awards Table

Award Type	Award	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Associate in Science	Physics (AS)	3	5	7	4	1	
	Physics (AST)		1	1			
	Total	3	6	8	4	1	
Associate in Science Transfer	Physics (AST)	7	9	11	9	6	6
	Total	7	9	11	9	6	6

Program Awards: The number of degress and certificates awarded by program type

There are relatively few degrees awarded in physics. This is largely due to the fact that students who take physics are doing so to fulfill pre-requisite or general education requirements.

SLOCCCD Program Review Data: Successful Course Completion

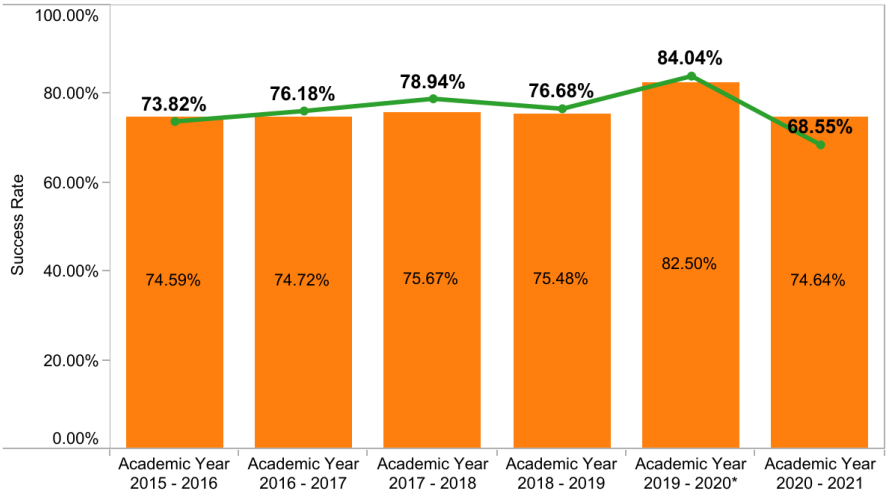
Select Department:
Physics

TERM
All

COURSE
All

Measure Names
- Department Success Rate
- Overall College Success Rate

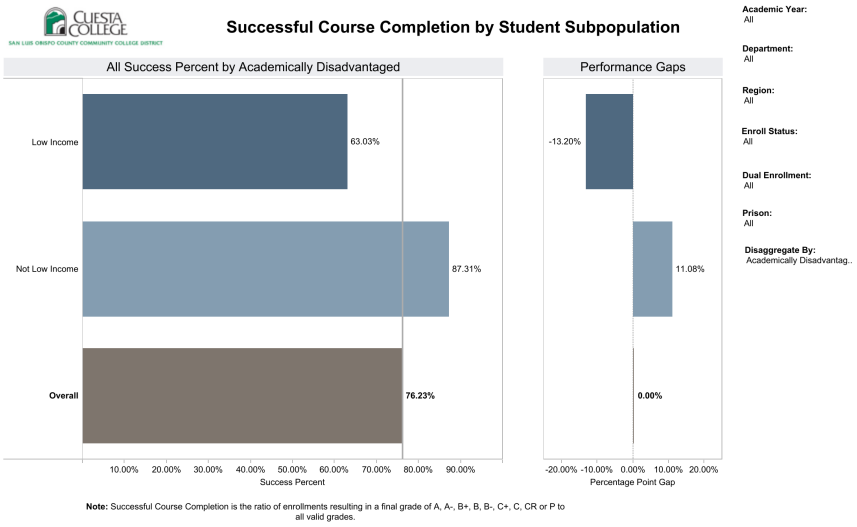
Successful Course Completion - Physics



Physics Success Rate Table

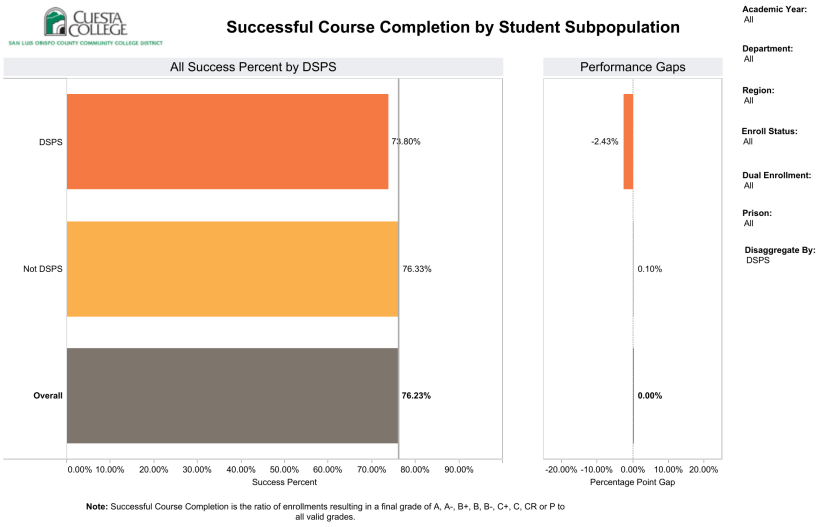
	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Department Success..	73.82%	76.18%	78.94%	76.68%	84.04%	68.55%
Total Enrollments	592	550	603	581	592	646

The course success rate was slightly above the district average prior to the COVID-19 pandemic. It was also trending slightly higher prior to that point. As previously stated, the shift to fully online classes has caused a sharp decline in success. Students did not engage in the material, nor did they ask questions in class and in office hours the same way that they had when they were face-to-face. This, coupled with less effective tutoring, has resulted in the reduction.



There i

There is a large performance gap between low income and non-low income students in physics. This gap has closed recently, bringing the low income success rate up by five percent from 2019. There is still work to do in this area, however. Physics courses take a considerable amount of student time. Most successful students require 20 hours per week in PHYS 208. Students who have other time commitments (like work or child care) often struggle in these courses, especially if they are taking several other courses during the same term.



The performance gap for DSPS students in physics courses is fairly small. We will continue to strive to ensure that all students have the same opportunity for success.

OTHER RELEVANT PROGRAM DATA (OPTIONAL)

Provide and comment on any other data that is relevant to your program such as state or national certification/licensure exam results, employment data, etc. If necessary, describe origin and/or data collection methods used.

PROGRAM OUTCOMES ASSESSMENT CHECKLIST AND NARRATIVE

CHECKLIST:

☒ SLO assessment cycle calendar is up to date.

☐ All courses scheduled for assessment have been assessed in eLumen.

☐ Program Sustainability Plan progress report completed (if applicable).

NARRATIVE:

Briefly describe program changes, if any, which have been implemented in the previous year as a direct result of the Program or Student Services Learning Outcomes Assessment. *If no program changes have been made as results of Program or Student Services Learning Outcomes Assessment, indicate: NONE.*

PROGRAM PLANNING / FORECASTING FOR THE NEXT ACADEMIC YEAR

Briefly describe any program plans for the upcoming academic year. These may include but are not limited to the following: *(Note: you do not need to respond to each of the items below). If there are no forecasted plans for the program, for the upcoming year, indicate: NONE.*

G. New or modified plans for achieving program-learning outcomes

We will use the experience gained in online assignments and labs during the COVID-19 pandemic to determine the best balance of online and face-to-face instruction and assignments to improve student success.

H. Anticipated changes in curriculum, scheduling or delivery modality

The long-term impact of the COVID-19 pandemic on student demand is unknown, but it is anticipated that it will impact scheduling and modality.

I. Levels, delivery or types of services

None.

J. Facilities changes

We continue to require lecture spaces that can accommodate the large lecture sizes and technology required for physics classes.

K. Staffing projections

In order to meet student demand, especially from our high schools, we require a full-time, tenure-track faculty member.

L. Other

None.

PROGRAM SUSTAINABILITY PLAN PROGRESS REPORT

This section only needs to be completed if a program has an existing Program Sustainability Plan. Indicate whether objectives established in your Program Sustainability Plan have been addressed or not, and if improvement targets have been met.

Area of Decline or Challenge	Identified Objective (Paste from PSP)	Planning Steps (Check all that apply)	Has the Improvement Target Been Met?
Enrollment		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Demand (Fill Rate)		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Efficiency (FTES/FTEF)		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Success – Course Completion		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Success — Course Modality		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Degrees and Certificates Awarded		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one

If Program Sustainability Plan is still necessary, provide a brief description of how you plan to continue your PSP and update your PSP to remove any objectives that have been addressed and include any new objectives that are needed.

INSTRUCTIONAL COMPREHENSIVE PROGRAM PLANNING AND REVIEW (CPPR) FOR 2022

Only to be completed by those programs scheduled for the year according to the institutional comprehensive planning cycle for instructional programs (i.e., every four years for CTE programs and five years for all other instructional programs), which is produced by the Office of Instruction. Faculty should meet with their dean prior to beginning this process. Training is available to support faculty completing this work.

Cluster: ??? **Program:** Earth and Ocean Sciences **Current Academic Year:** 2021-2022
Last Academic Year CPPR Completed: 2017 **Current Date:** 3/4/2022

NARRATIVE: INSTRUCTIONAL CPPR

Please use the following narrative outline:

I. GENERAL PROGRAM INFORMATION

C. Program Mission (optional)

The mission of the Earth and Ocean Science Program at Cuesta College is to provide students a broad understanding of how physical processes have created and are continuing to modify the solid earth, ocean and atmosphere. The Program contributes to a scientifically literate citizenry with both a rich disciplinary content and challenging critical thinking assessments. The Program also provides students with hands-on experience with many tools and strategies currently used by professionals in these disciplines.

B. Brief history of the program

The Earth and Ocean Science Program at Cuesta College continues to teach over 600 students per academic year in courses which cover topics in geology, oceanography, and meteorology. To support these programs we maintain a complete laboratory collection of rocks and minerals including an impressive collection of museum quality samples, laboratory equipment for field data collection, and an assortment of geologic maps for faculty and student use. Our program is also strengthened by the commitment of faculty to incorporate local field trips into the curriculum for our Physical Geology and Oceanography labs as well as optional field trips to enhance the curriculum in Geology 220 and 210.

Beginning in summer 2009 Ocean 210 was offered in a Distance Education modality. The Oceanography courses are now offered on SLO and NCC campuses and enrollments grew to over 300 students per year in all sections. During the past two years, one of our two primary EOS instructors was pulled away from teaching duties and has worked as the faculty union president. This has resulted in fewer enrollments in OCEN courses. The Oceanography Lab incorporates field trips to measure coastal processes and emphasizes data collection and analysis of the geochemistry of local creeks and estuaries. An MOU with the Morro Bay National Estuary Program (MBNEP) began in 2007 with a shared lab, internship opportunities for students, and MBNEP personnel providing material for two of the laboratory lectures. Equipment added in support of the Oceanography Lab includes Vernier Chemical sensors that can be taken in the field for measurements and mapping. A grant from the Cuesta College Foundation

purchased a CTD and rosette water sampler that is deployed from the Cal Poly pier to collect samples from multiple depths. This sampling equipment and the Vernier sensors provide students with a realistic experience of research and resource management. The Physical Sciences Technician provides pre- and post-lab assistance for the Oceanography Lab. He is assisted by a Chemistry technician to calibrate the Vernier sensors when they are used. Without this technical support, the analytical nature of the Oceanography Lab would be impossible. Without additional technical support, the laboratory will not be able to grow beyond a single section and will not be offered at the other campuses.

The department was awarded an NSF grant in 2018 to develop and implement a Graphic Information System (GIS) certificate program. Courses were first offered in 2019.

During the last five years, the department lost all of its full-time faculty. The combined teaching experience of these two faculty at Cuesta was in excess of forty years. In fall 2021, we hired a new full-time, tenure-track faculty member. It is anticipated that this faculty member will provide leadership and new direction to this department.

C. Include significant changes/improvements since the last Program Review

In addition to the loss of tenured full-time faculty and the addition of a new full-time faculty member, we have seen the departure of a long-serving adjunct faculty member. This faculty member was responsible for the NSF-GIS grant and served as the principle investigator on it. We also have added new adjunct faculty. The program was severely impacted by the COVID-19 pandemic. The initial campus closure necessitated that all courses (including lab courses) be moved online. In order to minimize the impact on instruction, the department purchased rock sample kits so that GEOL students could still perform observations even though they were not attending in-person lab. As we start to transition back to face-to-face offerings, the challenge will be to determine the correct mix of online and face-to-face content to meet student demand and ensure student success.

D. List current faculty, including part-time faculty

Full-time faculty: Emily Kane, Part-time faculty: Jeff Grover, Tom Hollis, Jennifer Shellhorn, and Carlye Peterson

E. Describe how the Program Review was conducted and who was involved

This program review was conducted with the input of program faculty, support staff, and the division chair. Given the recent turn-over in personnel, assistance and guidance was provided by personnel from outside the department.

II. PROGRAM SUPPORT OF DISTRICT'S MISSION STATEMENT, INSTITUTIONAL GOALS, INSTITUTIONAL OBJECTIVES, AND/OR INSTITUTIONAL LEARNING OUTCOMES

A. Identify how your program addresses or helps to achieve the District's Mission Statement.

The EOS program supports students in their efforts to build foundational skills in science. The program offers learning opportunities in multiple modalities and utilizes hands on experiences as a means for student subject mastery. The addition of an Associate's Degree for Transfer

provides for additional educational opportunities for Cuesta College students. This supports the Mission Statement in that we inspire students "to achieve their educational goals," "support students in their efforts to improve foundational skills, earn certificates or associate degrees, transfer to four-year institutions, and advance in the workforce," and "prepare students to become engaged citizens in our increasingly complex communities and world."

Our program provides articulated physical science courses that will transfer to four-year institutions. The GIS courses as well as the Oceanography lab, emphasize vocational skills and technical competence in their emphasis on measurements, analysis and graphical representation. All of our courses challenge students with activities and assessments that are based on critical analysis rather than merely recall of material. We introduce and apply basics of the sciences, including chemistry, physics and math, to the understanding of geological phenomenon. Students learn about chemical principles in their study of minerals and rocks. They learn physical processes such as convection and conduction in concepts of plate tectonics. They are taught the mathematics of water and seismic waves. The use of local geology and oceanography provides a familiar context to the concepts and makes them more accessible to the non-science major.

Our instructors encourage program consistency by working together and maintaining communication through email, telephone conversations and department meetings. We openly share our ideas and instructional techniques to encourage and promote better teaching. We all challenge students to work toward academic excellence.

B. Identify how your program addresses or helps to achieve the District's Institutional Goals and Objectives, and/or operational planning initiatives.

The Program assists the District in achieving Institutional Objectives 2A and 3A by providing AS-T degrees and general education breadth requirements for physical sciences lecture and lab. Program faculty rapidly developed the AS-T in Geology to ensure that students could complete degree requirements while minimizing unit load (Institutional Objective 4A). With the addition of the GIS certificate, students can earn the skills required to immediately be hired in the field (Institutional Objective 5A). Lastly, the NSF grant that was awarded for the development of the GIS program assists the District in Institutional Objective 7B (Measure 3).

C. Identify how your program helps students achieve Institutional Learning Outcomes.

ILO 1: Students completing program courses will demonstrate requisite skills that promote academic and professional development (a), and demonstrate professional skills necessary for success and employment (b).
ILO 2: Science courses by their nature require that students communicate and interpret complex information in a logical manner (b).

ILO 3: All of our courses require students to draw conclusions based upon the scientific method, computations or experimental and observational evidence (a), to construct and analyze statements in a formal symbolic system (b), to analyze the relationship between people's actions and the physical world (c), and to make decisions regarding environmental issues based on scientific evidence and reasoning (d).

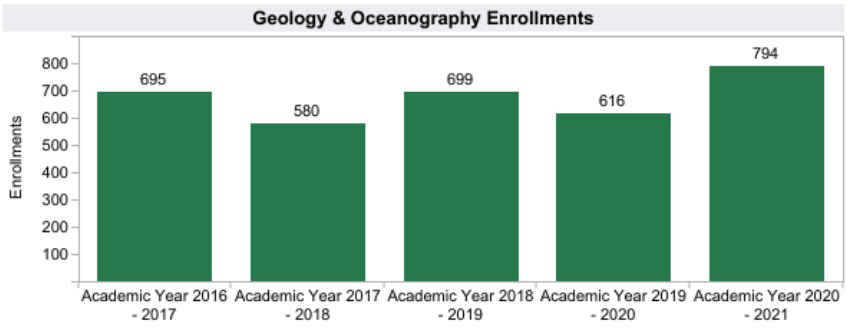
ILO 6: Our courses require students to produce and share electronic documents using modern software and technology (b).

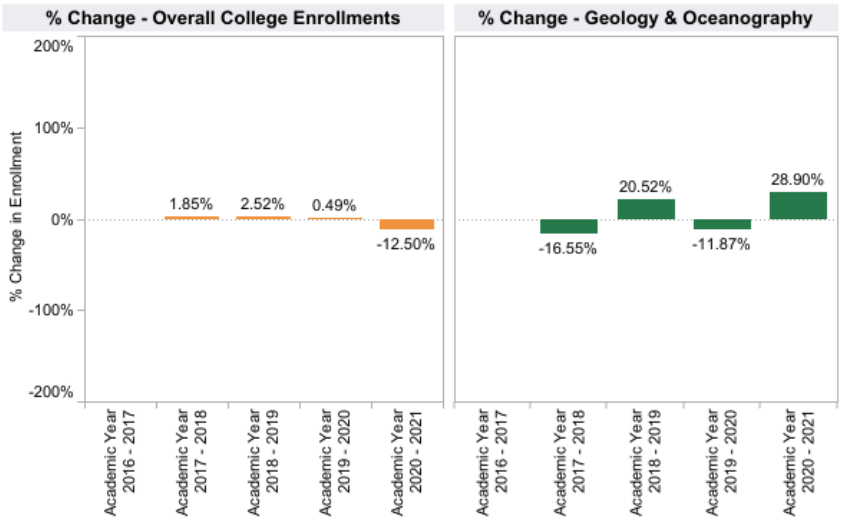
III. PROGRAM DATA ANALYSIS AND PROGRAM-SPECIFIC MEASUREMENTS (Where applicable the success metrics are aligned with the Student Success Metrics/SCFF).

General Enrollment (Insert Aggregated Data Chart)

SLOCCCD Program Review Data - Enrollment

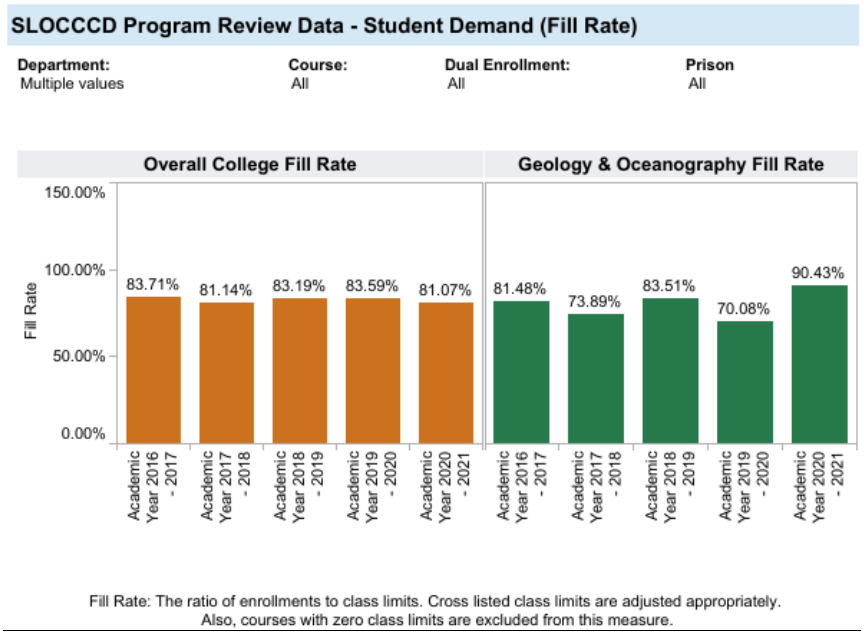
Department:	Course:	Dual Enrollment:	Prison:
Multiple values	All	All	All





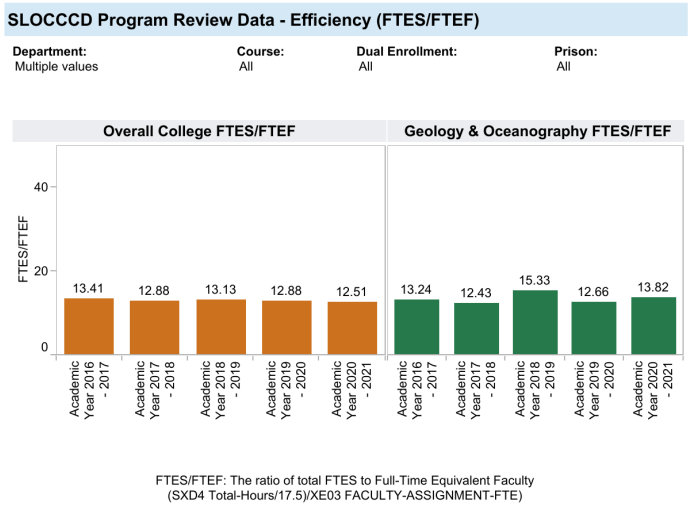
Program enrollment has been uneven. The negative percent chages occurred in years when full-time faculty retired. This likely was due to a decrease in sections offered.

General Student Demand (Fill Rate) (Insert Aggregated Data Chart)



Recent fill rates have been negatively affected by the development of the GIS certificate (required by the NSF grant), and the COVID-19 pandemic. It is anticipated that demand for GIS courses will grow with faculty stability and leadership. The COVID-19 pandemic disproportionately affected lab classes. Students who have been surveyed stated that they would prefer to wait to take lab science courses in-person over taking them while offered online (during the pandemic).

General Efficiency (FTES/FTEF) (Insert Aggregated Data Chart)



Demand for EOS courses continues to outpace the overall college. Recent fill rate increases have been achieved by offering lectures in larger classrooms, and offering courses online which can accommodate more students. During the COVID-19 pandemic, we did not run our field studies (GEOL 229) courses. These courses have low efficiency due to their nature. Although this had a positive effect on increasing efficiency, it has had a negative effect on student learning and the student experience.

Student Success—Course Completion by Modality (Insert Data Chart)

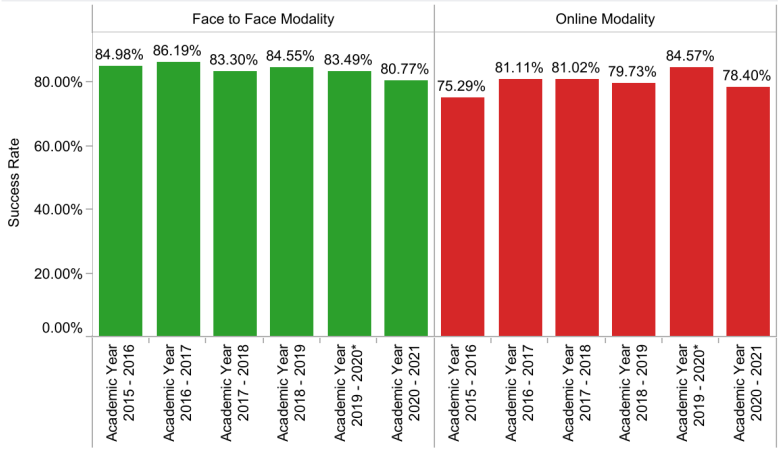
SLOCCCD Program Review Data: Successful Course Completion

Select Department: Multiple values

Course: All

Legend: Face to Face Modality, Online Modality

Successful Course Competion by Modality -Geology & Oceanography



Successful Course Competion by Modality Table - Geology & Oceanography

		Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Face to Face Modality	Department Success Rate	84.98%	86.19%	83.30%	84.55%	83.49%	80.77%
	Total Department Enrollm..	586.0	601.0	444.0	577.0	456.0	26.0
Online Modality	Department Success Rate	75.29%	81.11%	81.02%	79.73%	84.57%	78.40%
	Total Department Enrollm..	85.0	90.0	137.0	149.0	164.0	768.0

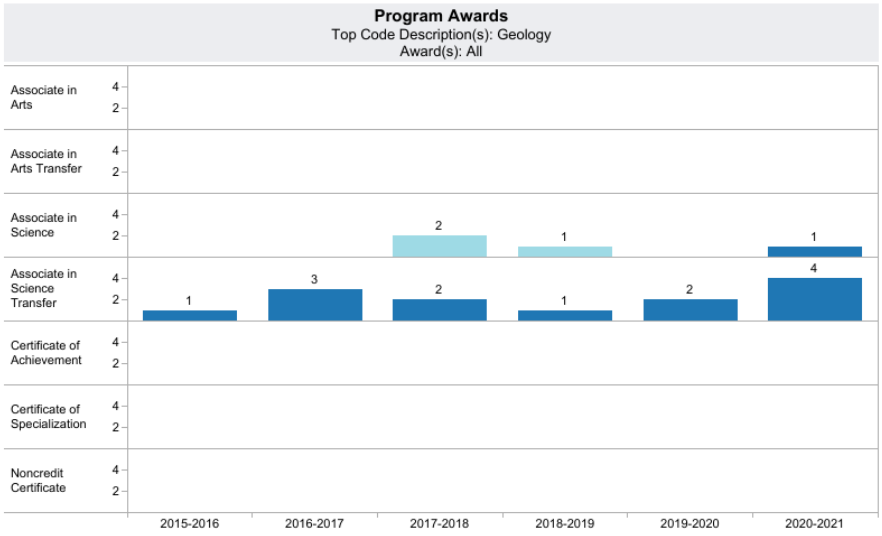
Success rates between face-to-face and online modalities in EOS courses differ from District-wide success rates (where online success rates are greater). There is a small gap between the program success rates by modality. This gap is likely due to the added benefit of students being able to physically be present for labs and for problem-solving practice where they can explore the material in greater depth under the supervision of a faculty member.

Degrees and Certificates Awarded (Insert Data Chart)

SLOCCCD Program Review Data: Degrees and Certificates Awarded

Program: Geology

Award Type: All



Program Awards Table

Award Type	Award	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Associate in Science	Geology (AS)			2	1		
	Geology (AST)						1
	Total			2	1		1
Associate in Science Transfer	Geology (AST)	1	3	2	1	2	4
	Total	1	3	2	1	2	4

Program Awards: The number of degress and certificates awarded by program type

Insert the data chart and explain observed differences between the program and the Institutional Set Standard. If your program did not meet the Institutional Set Standard, please describe how you will implement activities to meet the Institutional Set Standard.
What resources might you need to meet and exceed the Institutional Set Standard?

General Student Success – Course Completion (Insert Aggregated Data Chart)

SLOCCCD Program Review Data: Successful Course Completion

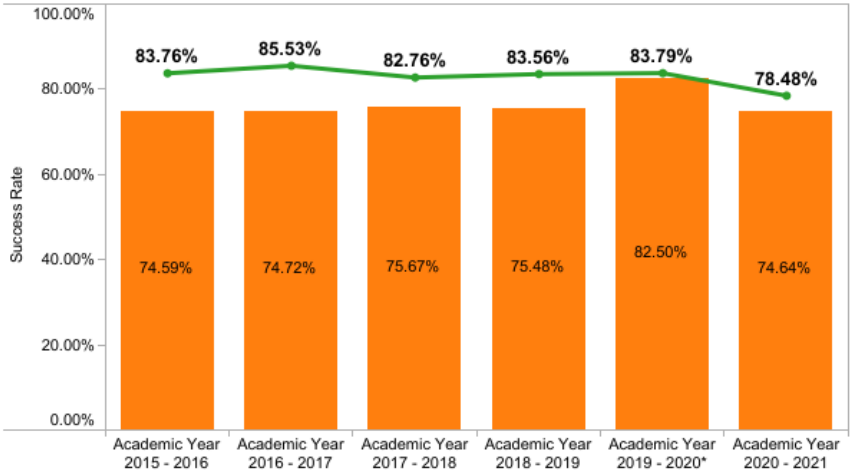
Select Department:
Multiple values

TERM
All

COURSE
All

Measure Names
Department Success Rate
Overall College Success Rate

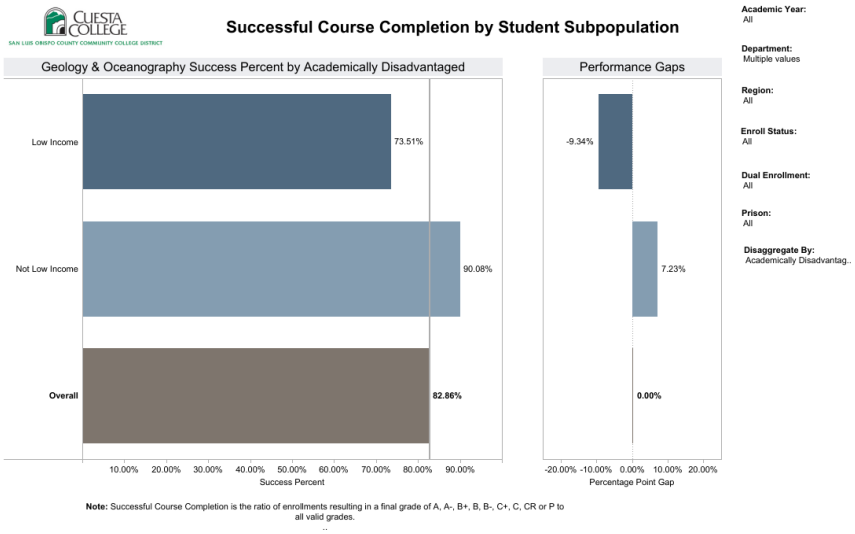
Successful Course Completion - Geology & Oceanography



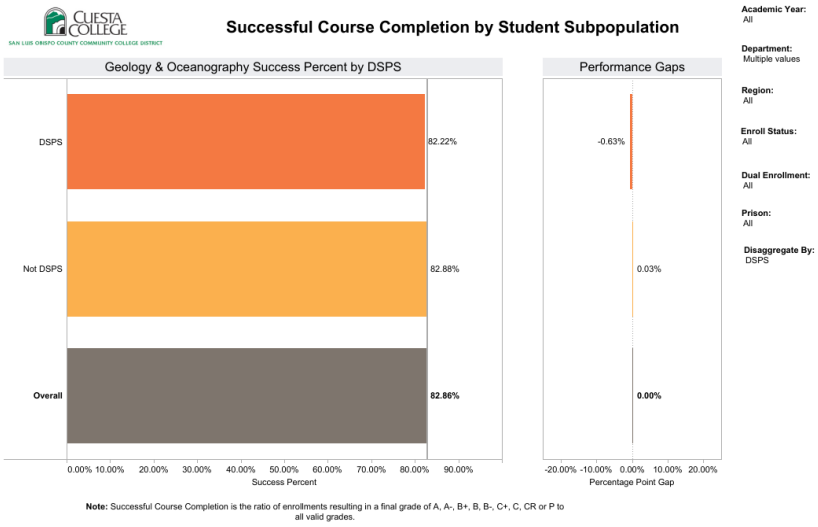
Geology & Oceanography Success Rate Table

	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021
Department Success..	83.76%	85.53%	82.76%	83.56%	83.79%	78.48%
Total Enrollments	671	691	581	726	620	794

Course completion rates have consistently exceeded the overall college success rates. There was a distinct drop in the 2020-21 academic year. This corresponded to a drop in the overall college success during the same period. This drop was anticipated given the restrictions on modalities brought upon by the COVID-19 pandemic.



Analyzing course completion by income level, there is a significant gap between low-income students and students who are not identified as low income. This performance gap is less (16.57% difference) for EOS courses when compared to the college (24.28%), program faculty recognize that the gap needs to be closed. Recently, program faculty have investigated OER texts and lab books that should decrease some of the financial strain on students. Additionally, faculty have pursued strategies to allow students to acquire copies of the textbook in advance of financial aid being distributed.



This data suggests that DSPS students are not negatively impacted in EOS courses. This is a testament to the teaching strategies employed by program faculty, the considerations given to DSPS students, and the support provided to all students in EOS courses.

Other Relevant Program Data (optional)
Provide and comment on any other data that is relevant to your program such as state or national certification/licensure exam results, employment data, etc. If necessary, describe origin and/or data collection methods used.

IV. CURRICULUM REVIEW

List all courses and degrees/certificates that have been created, modified, or deactivated (and approved by the Curriculum Committee) since the last CPPR.
Complete the Curriculum Review Template and submit the form within your CPPR.

Completing the template will provide evidence that the curriculum (including course delivery modalities) has been carefully reviewed during the past five years for currency in teaching practices, compliance with current policies, standards, regulations, and with advisory committee input. The form requires you to include evidence that the following entries on the course outline of record (CurricUNET format) are appropriate and complete:

- Course description
- Student learning outcomes

- Caps
- New DE addendum is complete
- MQDD is complete
- Pre-requisites/co-requisites
- Topics and scope
- Course objectives
- Alignment of topics and scopes, methods of evaluation, and assignments with objectives
- Alignment of SLOs and objectives with approved requirement rubrics (General Education, Diversity, Health, Liberal Arts)
- Textbooks
- CSU/IGETC transfer and AA GE information
- Degree and Certificate information

The template also includes a calendar of a five-year cycle during which all aspects of the course outline of record and program curriculum, including the list above, will be reviewed for currency, quality, and appropriate CurricUNET format.

V. PROGRAM OUTCOMES, ASSESSMENT AND IMPROVEMENTS

Attach or insert the assessment calendar for your program for the next program review cycle.

GEOL Program Assessment Calendar

CYCLE STAGE	Fall 2020	Sp 2021	Fall 2021	Sp 2022	Fall 2022	Sp 2023	Fall 2023	Sp 2024	Fall 2024
SLO Assessment	PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6	PLO 7 PLO 8	PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6	PLO 7 PLO 8	PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6	PLO 7 PLO 8
Analyze Results & Plan Improvements		PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6	PLO 7 PLO 8	PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6	PLO 7 PLO 8	PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6
Plan Implementation			PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6	PLO 7 PLO 8	PLO 1 PLO 2 PLO 3	PLO 4 PLO 5 PLO 6	PLO 7 PLO 8	PLO 1 PLO 2 PLO 3

EOS Course Assessment Calendar

CYCLE STAGE	Fall 2020	Sp 2021	Fall 2021	Sp 2022	Fall 2022	Sp 2023	Fall 2023	Sp 2024	Fall 2024
SLO Assessment	GEOL 212 GEOL 220 OCEN 210 METE 212	GEOL 229B OCEN 210L	GEOL 210 GEOL 229A GEOL 230 GEOL 231	GEOL 232 GEOL 233	GEOL 212 GEOL 220 OCEN 210 METE 212	GEOL 229B OCEN 210L	GEOL 210 GEOL 229A GEOL 230 GEOL 231	GEOL 232 GEOL 233	GEOL 212 GEOL 220 OCEN 210 METE 212

Analyze Results & Plan Improvements		GEOL 212 GEOL 220 OCEN 210 METE 212	GEOL 229B OCEN 210L	GEOL 210 GEOL 229A GEOL 230 GEOL 231	GEOL 232 GEOL 233	GEOL 212 GEOL 220 OCEN 210 METE 212	GEOL 229B OCEN 210L	GEOL 210 GEOL 229A GEOL 230 GEOL 231	GEOL 232 GEOL 233
Plan Implementation			GEOL 212 GEOL 220 OCEN 210 METE 212	GEOL 229B OCEN 210L	GEOL 210 GEOL 229A GEOL 230 GEOL 231	GEOL 232 GEOL 233	GEOL 212 GEOL 220 OCEN 210 METE 212	GEOL 229B OCEN 210L	GEOL 210 GEOL 229A GEOL 230 GEOL 231

Have you completed all course assessments in eLumen? If no, explain why you were unable to do so during this program review cycle and what plan(s) exist for completing this in the next program review cycle.

No. With the loss of full-time faculty and a gap of 2 years before hiring a new full-time faculty member, the course assessments have not been completed on the planned timeline. Our new full-time faculty started in Fall 2021 and is catching up on what needs to be done for each course on eLumen each year. These assessments will be completec in the coming semesters as our new faculty learns the process of assessing SLOs and inputting the data into eLumen.

Include the most recent "PLO Summary Map by Course" from eLumen which shows the Course-level SLOs mapped to the Program-level SLOs.

Please see the files titled "PLOSummary_Geology_AST" and "PLOSummary_Geology_AS". Note that only the courses within these degrees of study are mapped in these documents.

Include the most recent "ILO Summary Map by Course" from eLumen that shows the Course-level SLOs mapped to the Institutional Learning Outcomes.

Please see the files titled "ILOSummary_Geology_AST" and "ILOSummary_Geology_AS". The geology courses are not mapped to ILOs at this time. This will be completed by our new full-time faculty with help from other department faculty.

Highlight changes made at the course or program level that have resulted from SLO assessment. Please include the evidence of dialog that prompted these changes.

No changes have been made. We anticipate changes in the coming semester as our full-time faculty begins the SLO assessment process for the AST- Geology, AS-Geology, AST-Environmental Studies, and for each EOS course.

Identify and describe any budget or funding requests that are related to student learning outcome assessment results. If applicable, be sure to include requests in the Resource Plan Worksheet.

The SLO assessment has not been completed.

VI. PROGRAM DEVELOPMENT

Indicate how the program supports efforts to achieve any of the following:
The Program assists the District in achieving Institutional Objectives 2A and 3A by providing AS-T degrees and general education breadth requirements for physical sciences lecture and lab. Program faculty rapidly developed the AS-T in Geology to ensure that students could complete degree requirements while minimizing unit load (Institutional Objective 4A). With the addition of the GIS certificate, students can earn the skills required to immediately be hired in the field (Institutional Objective 5A). Lastly, the NSF grant that was awarded for the development of the GISA program assists the District in Institutional Objective 7B (Measure 3).
The program assists the District achieve the following Institutional Learning Outcomes (ILO's)
ILO 1: Students completing program courses will demonstrate requisite skills that promote academic and professional development (a), and demonstrate professional skills necessary for success and employment (b).
ILO 2: Science courses by their nature require that students communicate and interpret complex information in a logical manner (b).

ILO 3: All of our courses require students to draw conclusions based upon the scientific method, computations or experimental and observational evidence (a), to construct and analyze statements in a formal symbolic system (b), to analyze the relationship between people's actions and the physical world (c), and to make decisions regarding environmental issues based on scientific evidence and reasoning (d).

ILO 6: Our courses require students to produce and share electronic documents using modern software and technology (b).

Anticipated Changes:
Program faculty are currently exploring new courses in EOS to foster continued interest in science and the program. Given the unpredictable nature of the COVID-19 pandemic and its after-effects, we anticipate that there will be a period of scheduling adjustment that will include arriving at the correct number of sections and modalities within those sections in order to meet student demand while improving student success.
Support services to promote success, persistence and retention
Facilities needs
Staffing needs/projections
Lastly, address any changes in strategy in response to the predicted budget and FTES target for the next program review cycle.

VII. END NOTES

If applicable, you may attach additional documents or information, such as awards, grants, letters, samples, lists of students working in the field, etc.

VIII. After completing and submitting this document, please complete the Overall Program Strength and Ongoing Viability Assessment with your Dean before May 13, 2022.

SIGNATURE PAGE

Faculty, Director(s), Manager(s), and/or Staff Associated with the Program

Instructional Programs: All full-time faculty in the program must sign this form. If needed, provide an extra signature line for each additional full-time faculty member in the program.
If there is no full-time faculty associated with the program, then the part-time faculty in the program should sign. If applicable, please indicate lead faculty member for program after printing his/her name.

Instructional Programs: All full-time director(s), managers, faculty and/or classified staff in the program must sign this form. (More signature lines may be added as needed.)

Division Chair/Director Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date

SUPPLEMENTAL DOCUMENTS

FACULTY HIRING PRIORITIZATION INFORMATION (IF APPLICABLE)

If your program requested a faculty position for consideration, please attach or embed the following worksheets that were presented to the College Council. The guidelines for faculty prioritization can be found by clicking this link.

APPLICABLE SIGNATURES:

Vice President/Dean	**Date**
Division Chair/Director/Designee	**Date**
Other (when applicable)	**Date**

The above-signed individuals have read and discussed this review. The Director/Coordinator, Faculty, and staff in the program involved in the preparation of the CPPR acknowledge the receipt of a copy of the Vice President/ Dean's narrative analysis. The signatures do not necessarily signify agreement.