2025 INSTRUCTIONAL ANNUAL PROGRAM PLANNING WORKSHEET

CURRENT YEAR: 2025 **PROGRAM(S): EARTH AND OCEAN SCIENCES**
CLUSTER: 1 - STEM **AREA OF STUDY: STEM**
LAST YEAR CPPR COMPLETED: SPRING 2022
NEXT SCHEDULED CPPR: SPRING 2027
CURRENT DATE: 2/24/2025

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**, which can be downloaded from the **IPPR Program Review Documents Folder**. Please review the **Resource Allocation Rubric** when preparing the 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 programs of study (degrees and/or certificates):

Earth and Ocean Sciences offers:

- AST-Geology
- AS-Geology
- AST-Environmental Science
- Certificate in GIS
- Earth and Ocean Sciences (EOS) includes all courses within OCEN, GEOL, ENVS, METE, and PSCI211.

GENERAL PROGRAM UPDATE

Describe changes and improvements to the program, such as changes to the mission, purpose, or direction. In particular, indicate any changes that have been made to address equity gaps.

The EOS department encompasses many prefixes and courses. For each section below, a combined EOS graph is shown that includes ENVS, GEOL, OCEN, and METE. The data for Environmental Science includes ENVS200. The data for Geology includes GEOL210, GEOL220, GEOL229A and GEOL229B. The data for Oceanography includes OCEN210 and OCEN210L. The data for Meteorology includes METE212.

This department is run by one full time faculty and two part time faculty that teach on the SLO campus and online. One additional part time faculty teaches GEOL and ASTRO at CMC. The low faculty limits the growth of this department. We are currently looking to add to the part-time pool in hopes of being able to keep up with offerings in future semesters as our full-time faculty chooses not to teach 20-35% overload each semester.

The EOS department in its current state is unsustainable. We do not have the faculty to keep the geology degrees (AST and AS) running. The AST requires that student take GEOL211. This course is generally taught as a continuation of GEOL210 (physical geology). The only students on campus that need to take this course are those that are working on the AST in geology. The number of students on this track have hovered between 3-6 for the last 4 years.

This course has had historically low numbers and the last time it was run (fall 2023) the course had 8 students. We offered the course again in Spring 2025 and had only 4 students enrolled. We chose to cancel this class and let the enrolled students know about fully online offerings of this course at other colleges. Without a larger geology department, we anticipate that this will continue to be necessary. Without the ability to offer this course on campus, we cannot offer the AST-Geology.

The local AS in geology requires students take two field courses. Before the COVID pandemic, we were offering two field courses per year (GEOL229A and GEOL229B). Each of these trips requires at least two faculty for safety reasons. In the past, the Robinson fund has paid for the second or third faculty member as the college does not agree that two faculty members are necessary on a 4-day field course.

We currently do not have the faculty to run these trips. We have one part time faculty member who is willing to teach the trips but cannot do so on their own and does not have the class B license required to drive a larger vehicle. Without faculty with class B licenses, we are unable to run these trips in the future. These trips are some of the most important components of a geology degree. It would be very disappointing to have to cease these offerings.

Many of these problems could be fixed with a new full time faculty member that is hired to teach Geology and other Earth Science. This person could be tasked with running the geology courses and degrees as well as running the field courses.

It is difficult for our current full time faculty member to make decisions or updates to geology or GIS courses/programs as our FT faculty does not teach these courses. An additional full-time faculty member that specializes in geology would not only help the department functionality but also allow for increased enrollment in the EOS programs and courses.

We currently offer one Cuesta-led dual enrollment ENVS200 course at Templeton High School. We are hopeful that Cuesta-led dual enrollment ENVS courses will be requested at other schools, especially as other dual enrollment physical sciences courses expand into our local high schools. We are currently limited in our ability to offer additional dual-enrollment courses as we do not have the faculty to teach these courses. We are hopeful that we will be prioritized when the college is determining which new full-time faculty positions will be opened this coming year. This would allow for much more expansion to the dual enrollment offerings in EOS than we are currently capable of offering.

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.

A. **General Enrollment (Insert Aggregated Data Chart)**

Insert the data chart and explain observed differences between the program and the college.

Figure A1: The graph above shows enrollment counts for EOS (including GEOL, ENVS, OCEN, and METE).

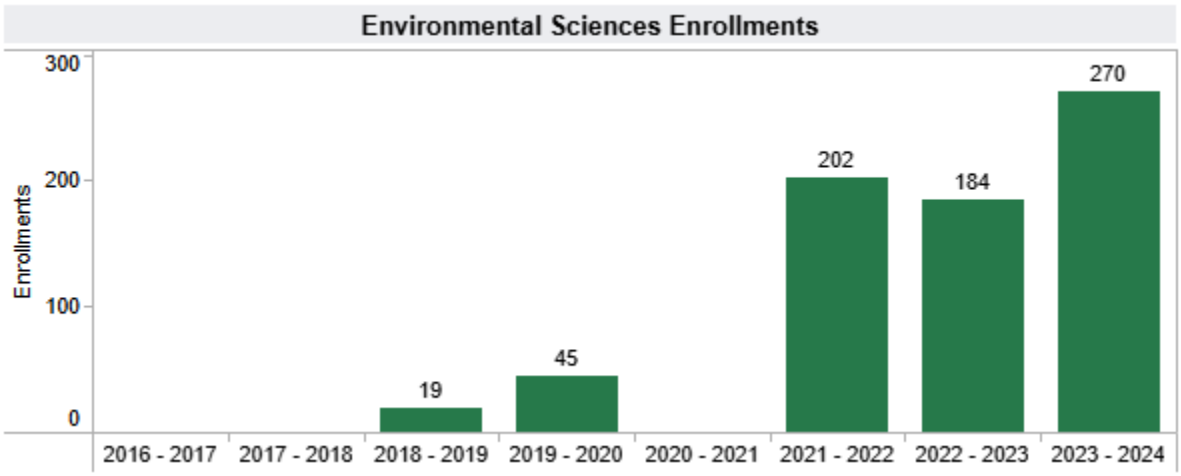


Figure A2: Enrollment counts for Environmental Science.

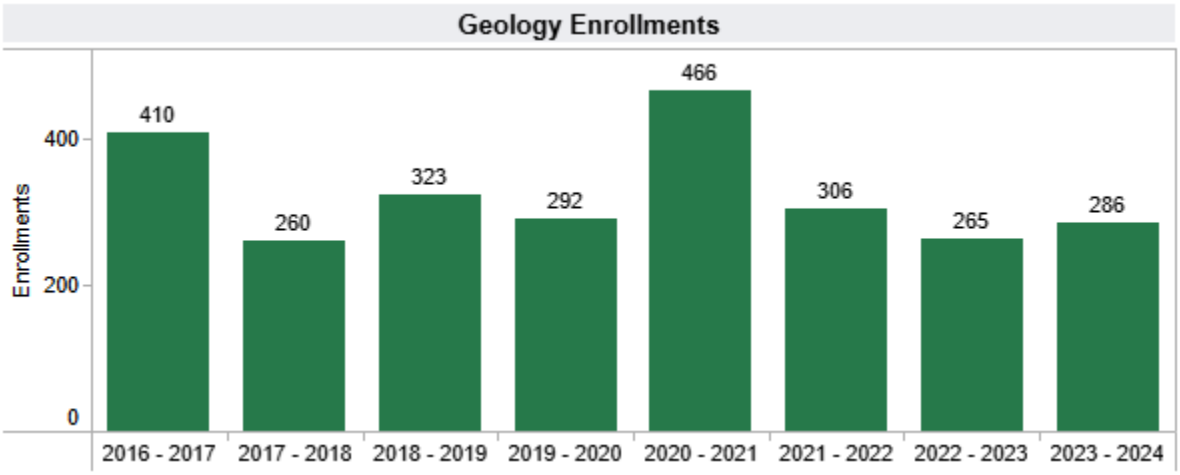


Figure A3: Enrollment counts for Geology.

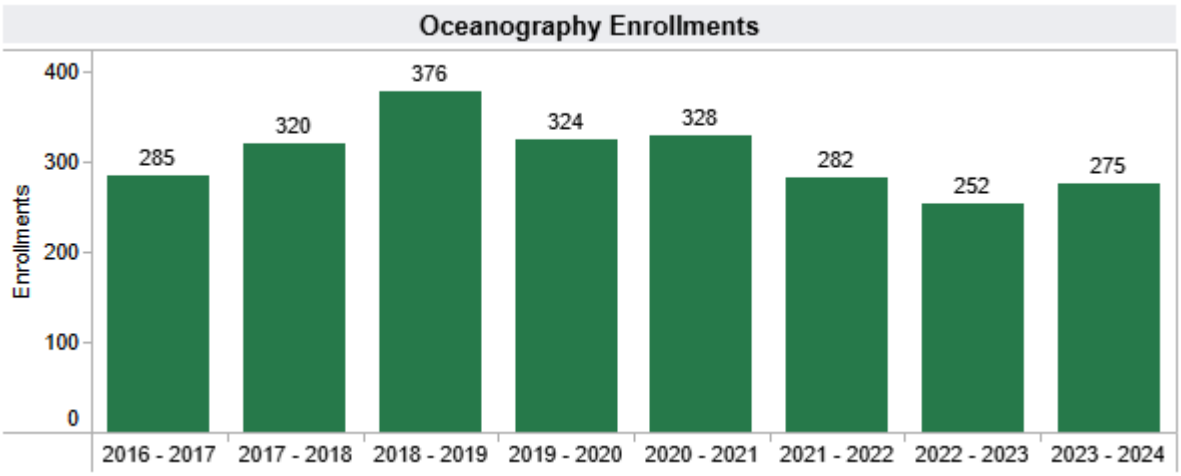


Figure A4: Enrollment counts for Oceanography.

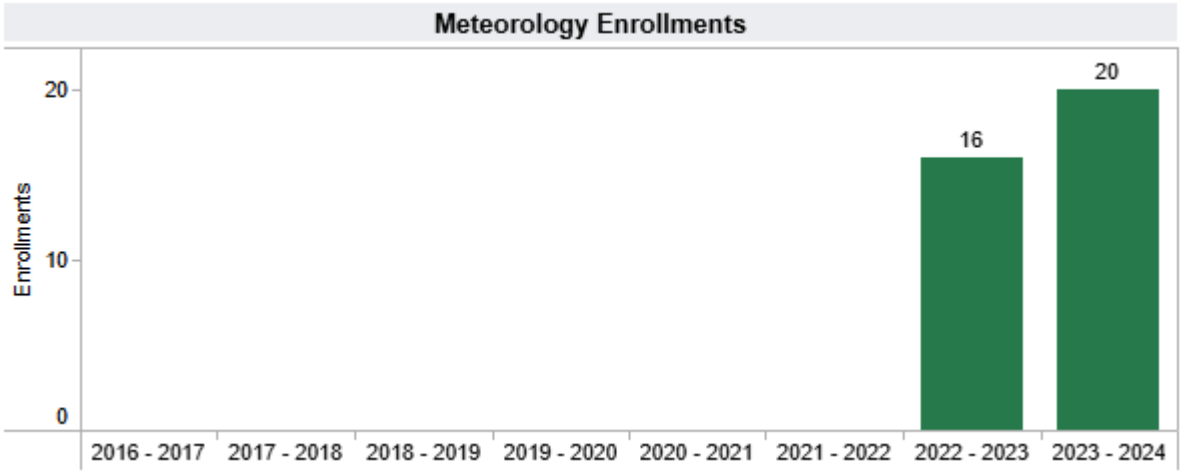


Figure A5: Enrollment counts for Meteorology.

Overall, EOS courses are doing well compared to the entire college. Enrollment reached a peak in the 23-24 school year at 851 students, most of which were evenly split between oceanography courses, geology courses, and environmental sciences courses.

The EOS department continues to be limited by faculty load availability as we are a faculty of only one full-time professor. We are trying to increase our enrollment amounts but are limited until we can hire more faculty. A second full time faculty member would allow more focus on growth in this department. Growth in the last two years has been due to our one full-time faculty taking on many (3-5) different preps and loads of 125%-137% each semester. This is not sustainable and will not lead to further growth in EOS.

B. **General Student Demand (Fill Rate) (Insert Aggregated Data Chart)**

Insert the data chart and explain observed differences between the program and the college.

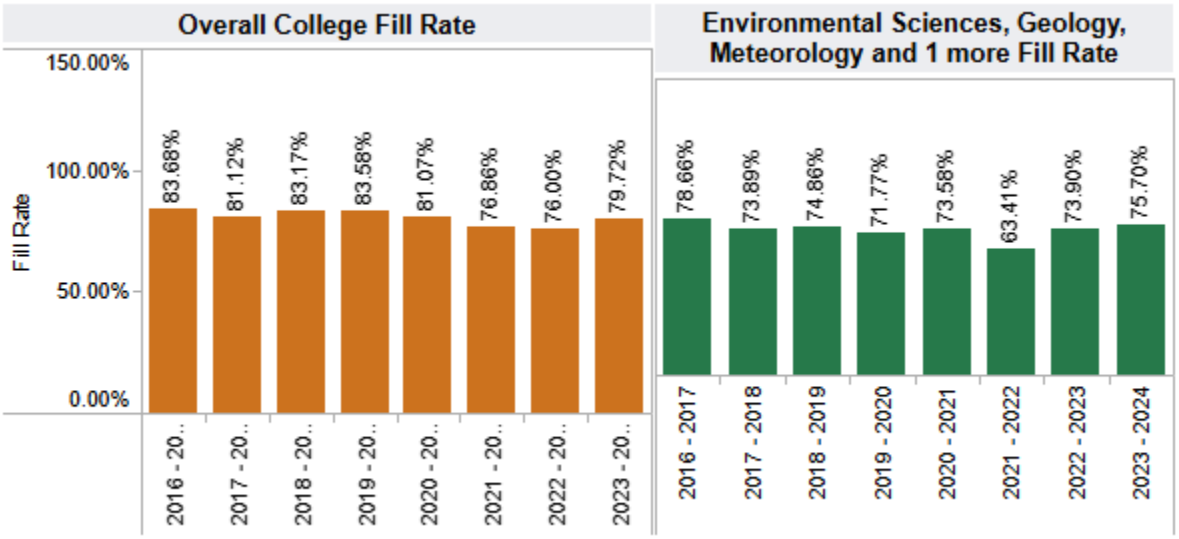


Figure B1 (above): Fill rates for EOS (including GEOL, ENVS, OCEN, and METE) in green, compared to overall fill rates of the college in orange.

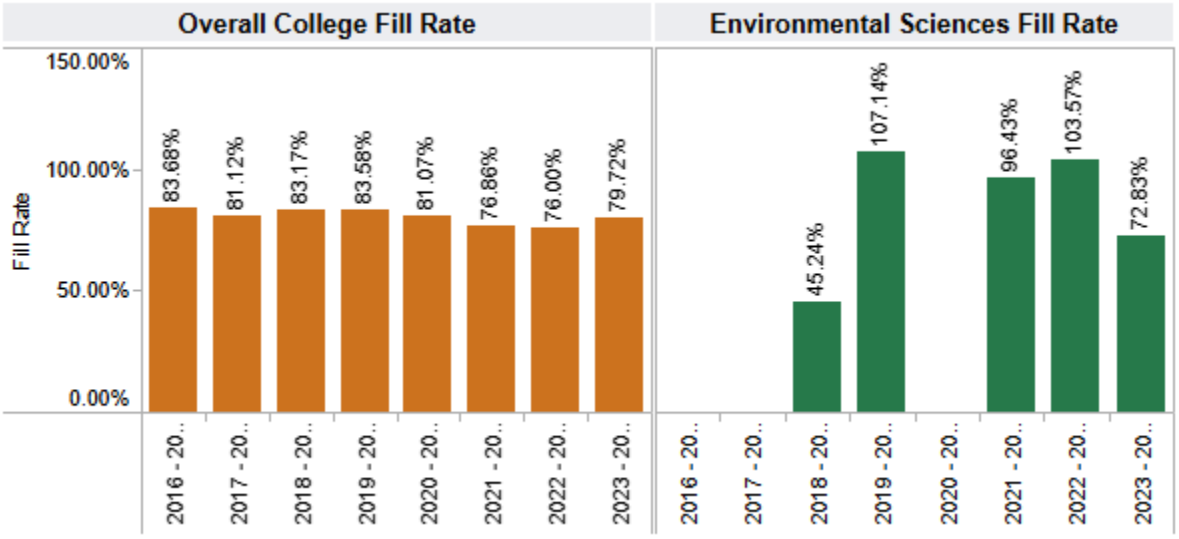


Figure B2 (above): Fill rates for Environmental Science (not dual enrolled) in green, compared to overall fill rates of the college in orange.

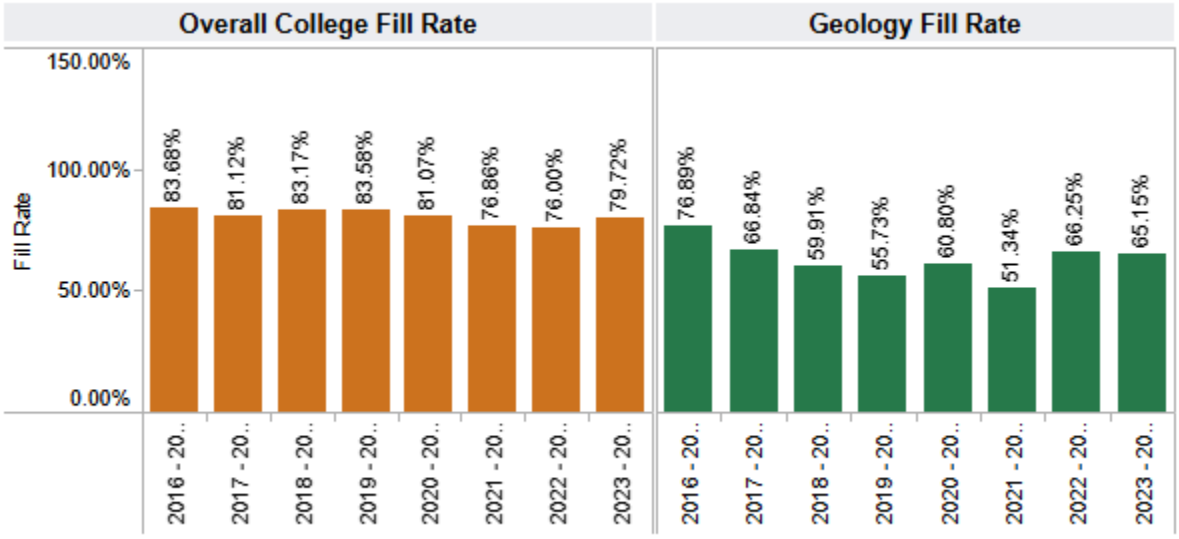


Figure B3 (above): Fill rates for Geology in green, compared to overall fill rates of the college in orange.

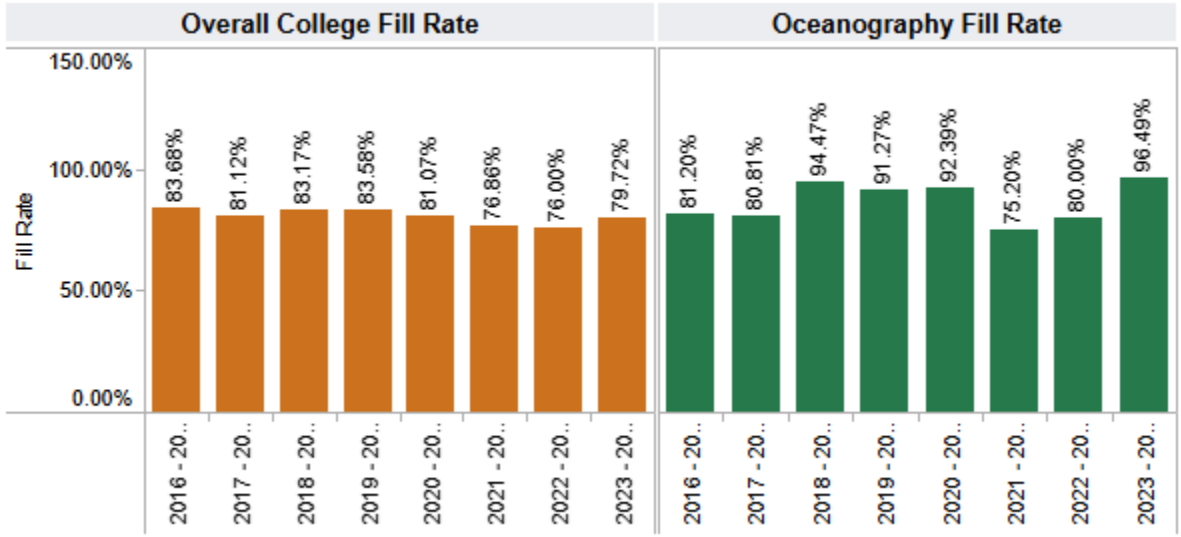


Figure B4 (above): Fill rates for Oceanography in green, compared to overall fill rates of the college in orange.

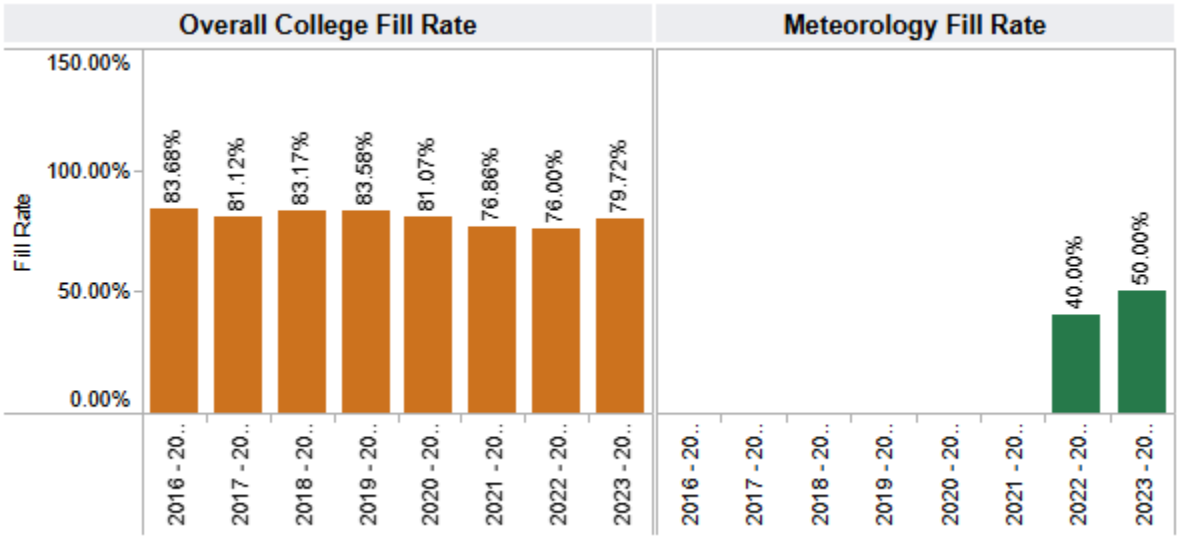


Figure B5 (above): Fill rates for Meteorology in green, compared to overall fill rates of the college in orange.

Our fill rates are slightly lower than the average fill rates of the college. Our oceanography and environmental science courses have historically great enrollment and we are continuing to see this. Certain courses in geology and meteorology have lower fill rates, including our GIS courses. These courses bring down the average fill rates of the department.

EOS faculty members have been working very hard to assess the need of the students and meet that need with the courses we offer. Ideally, we would be able to limit the offerings of historically lower enrolled courses and increase the number of offerings of the courses that often have waitlists (OCEN210, GEOL210) in order to increase our fill rates overall. This is difficult to do while also prioritizing faculty preference. We are working on finding a balance between faculty preference and student need.

Note that there is an issue with the ENVS dual-enrollment data here that led to incorrect graphs. The dual-enrollment fill rates were not included for this reason.

C. **General Efficiency (FTES/FTEF) (Insert Aggregated Data Chart)**

Insert the data chart and explain observed differences between the program and the college.

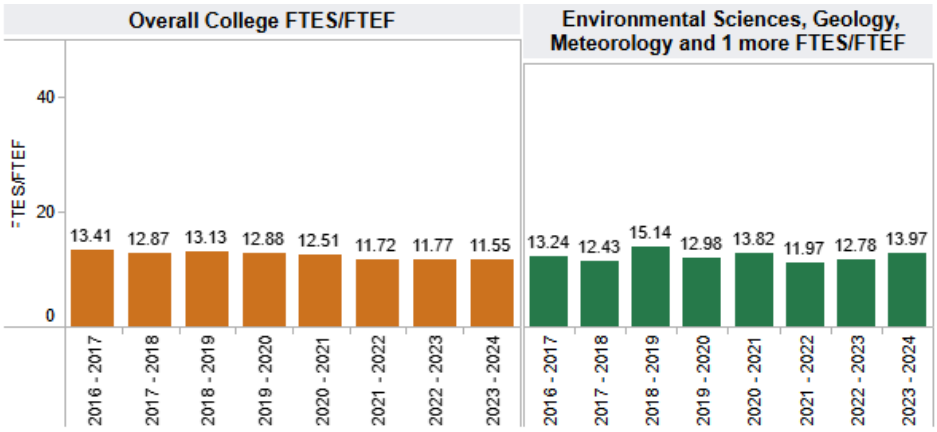


Figure C1: Efficiency for EOS (including GEOL, ENVS, OCEN, and METE) in green, compared to overall efficiency of the college in orange.

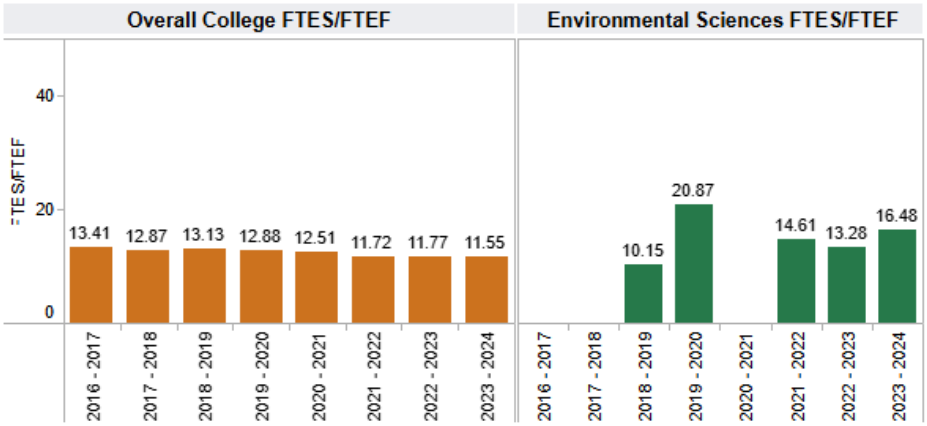


Figure C2: Efficiency for Environmental Science compared to overall efficiency of the college.

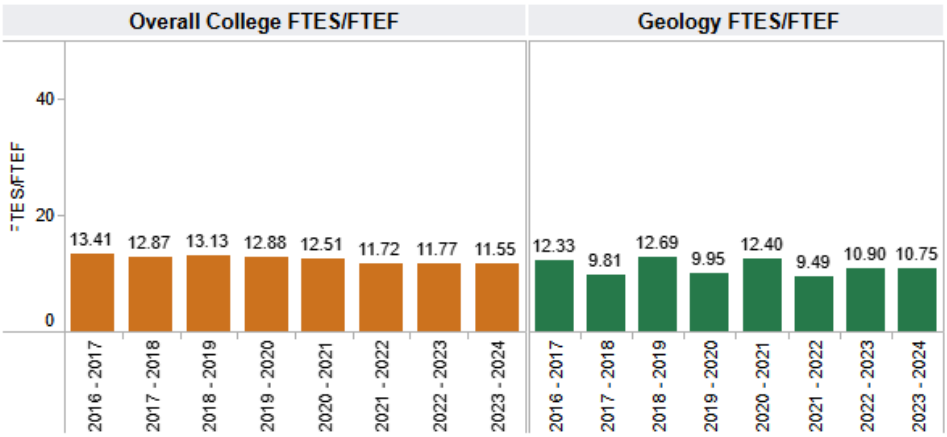


Figure C3: Efficiency for Geology compared to overall efficiency of the college.

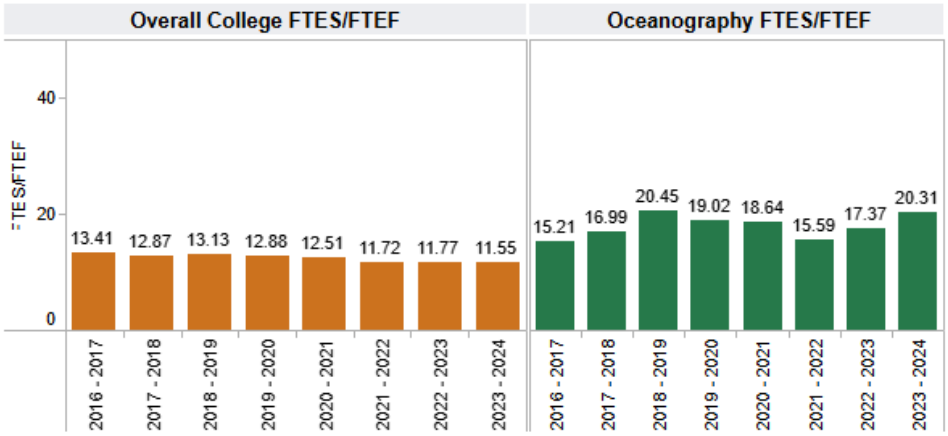


Figure C4: Efficiency for Oceanography in green, compared to overall efficiency of the college in orange.

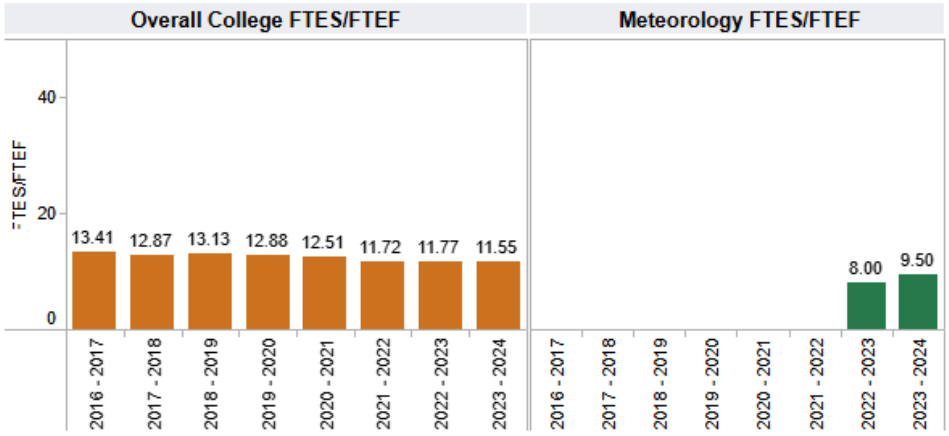


Figure C5: Efficiency for Meteorology in green, compared to overall efficiency of the college in orange.

The efficiency of the EOS department is higher than the average efficiency of the college and we are very proud of this. The trend of efficiency in EOS follows the overall trend of the college, other than the most recent year where the efficiency in EOS has increased while the college had slightly decreased.

The slightly lower than college efficiency values in GEOL courses are likely attributed to the field courses and courses with tied-to labs (GEOL 210) which are bounded by safety/space limitations that yield lower course caps.

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

Insert the data chart and explain observed differences between the program and the college.

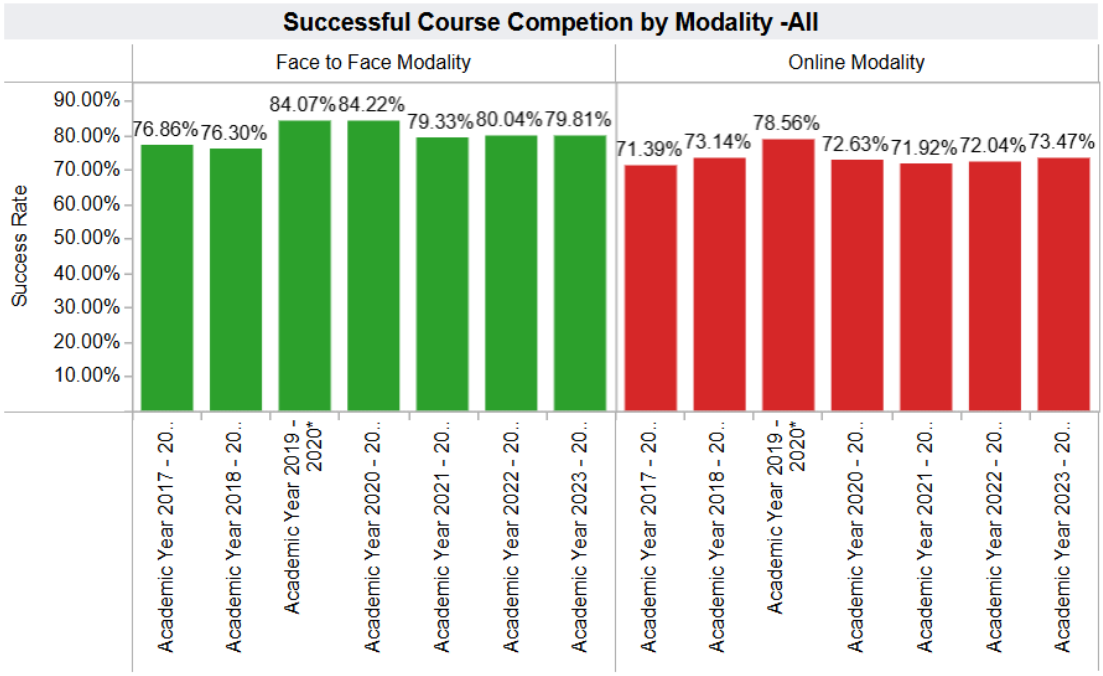


Figure D1: Student success by modality for the entire college.

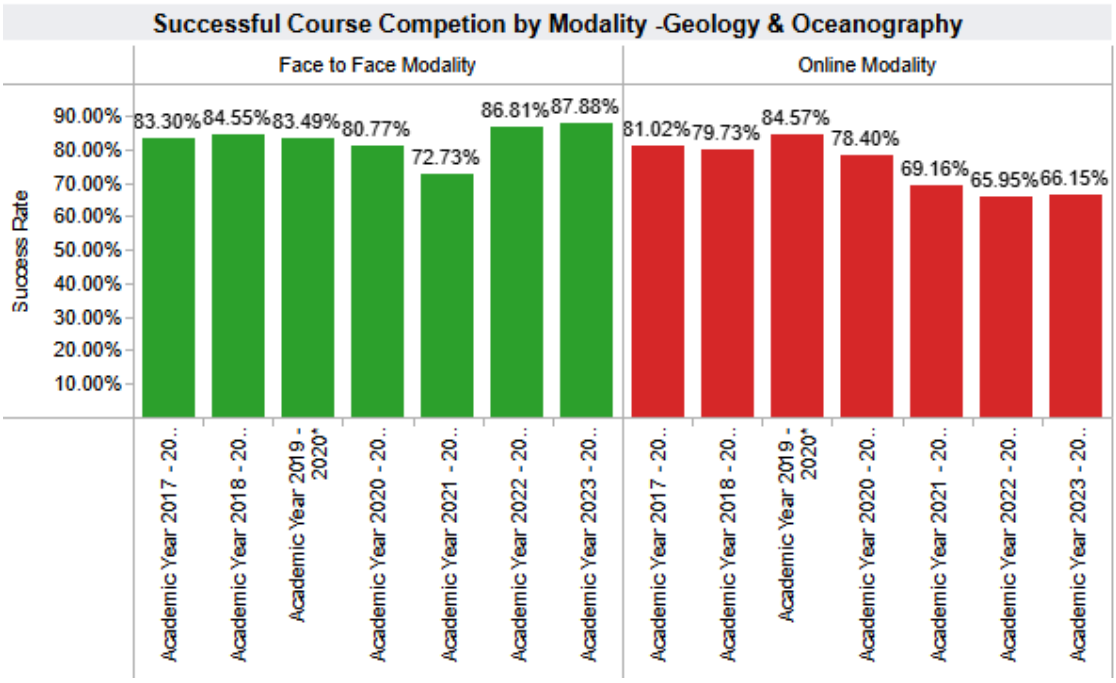


Figure D2: Student success by modality for geology and oceanography.

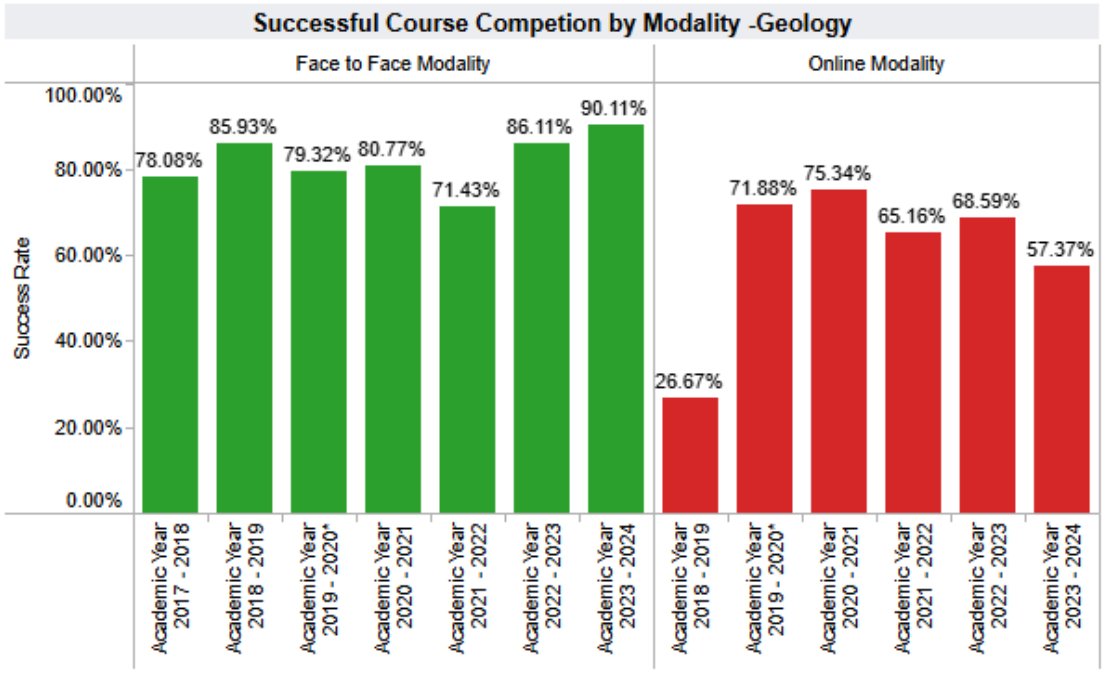


Figure D3: Student success by modality for geology.

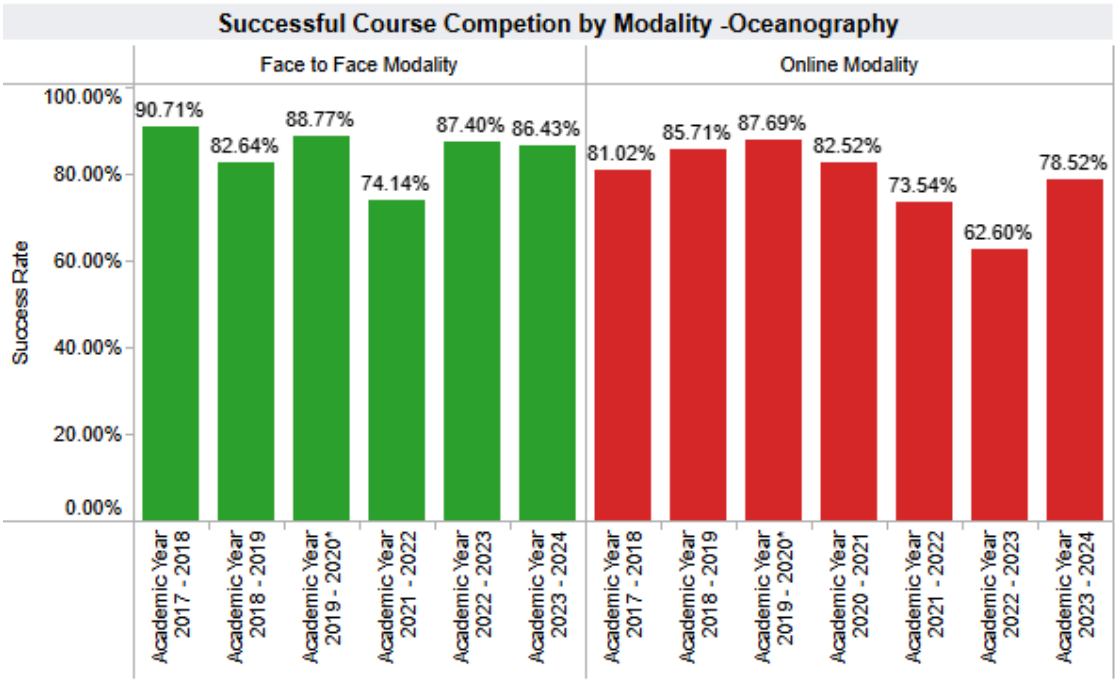


Figure D4: Student success by modality for oceanography.

Only Geology and Oceanography are included in this section as only these two prefixes are taught both in person and online. OCEN210 is taught in both modalities. When comparing geology, GEOL210, 229A, and 229B are taught in person, while GEOL220 is taught online. METE and ENVS are not included in this analysis. METE is one course that is only taught online. ENVS is one course

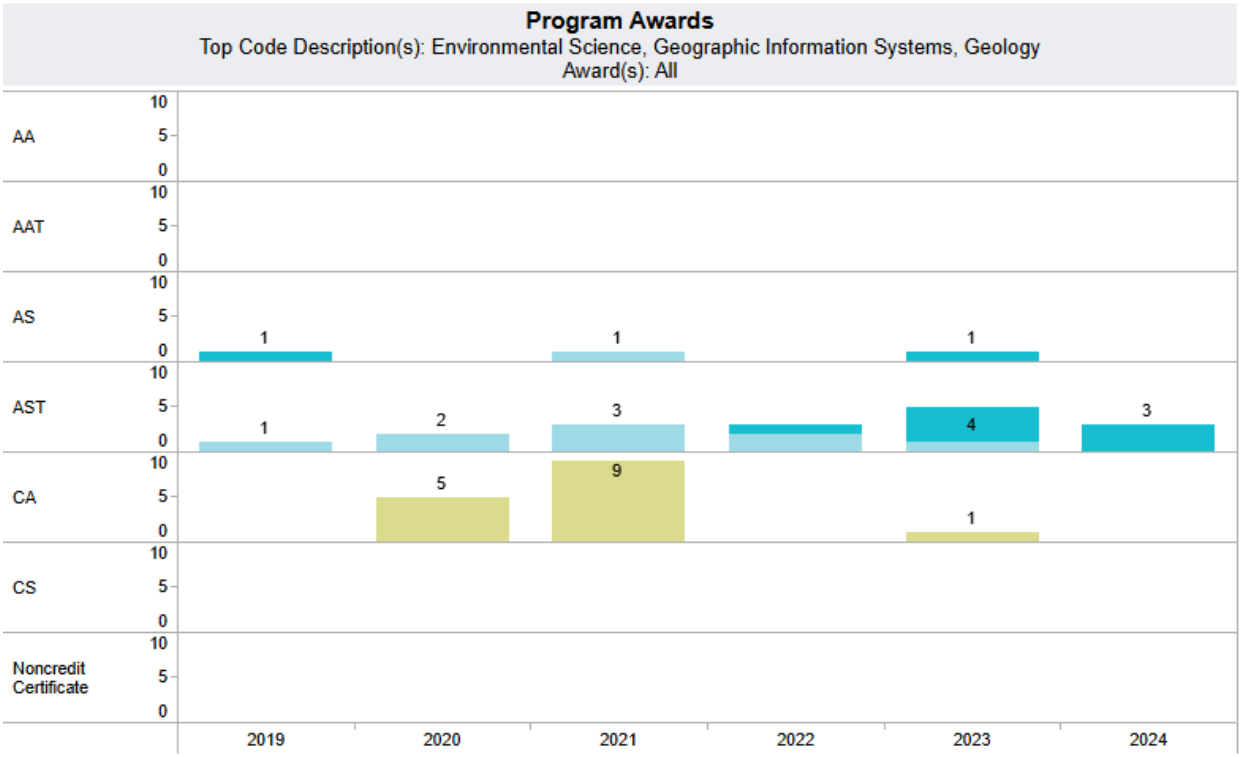
that is taught in person at Cuesta and also as a dual enrollment course at Templeton High School.

In recent years, online success rates are slightly lower that face-to-face success rates, similarly to the average of the college. Faculty have been reminded to ensure that students are dropped from courses if they stop attending or participating, even after census. This is reflected in the increase in online success rates in oceanography in the 23-24 school year. Our face-to-face success rates are higher than the college average.

The difference in success rate between online and in-person geology courses shows that we might not be offering the right online courses within the GEOL department. New curriculum has been written for a course called Natural Disasters that we believe will be better suited for our online students. This course can be put on the schedule starting in spring 2026.

E. **Degrees and Certificates Awarded (Insert Data Chart)**

Insert the data chart and explain observed differences between the program and the college.



Program Awards Table

Award Type	Award	2019	2020	2021	2022	2023	2024
AS	Geology (AS)	1				1	
	Geology (AST)			1			
	Total	1		1		1	
AST	Environmental Sciences (AST)				1	4	3
	Geology (AST)	1	2	3	2	1	

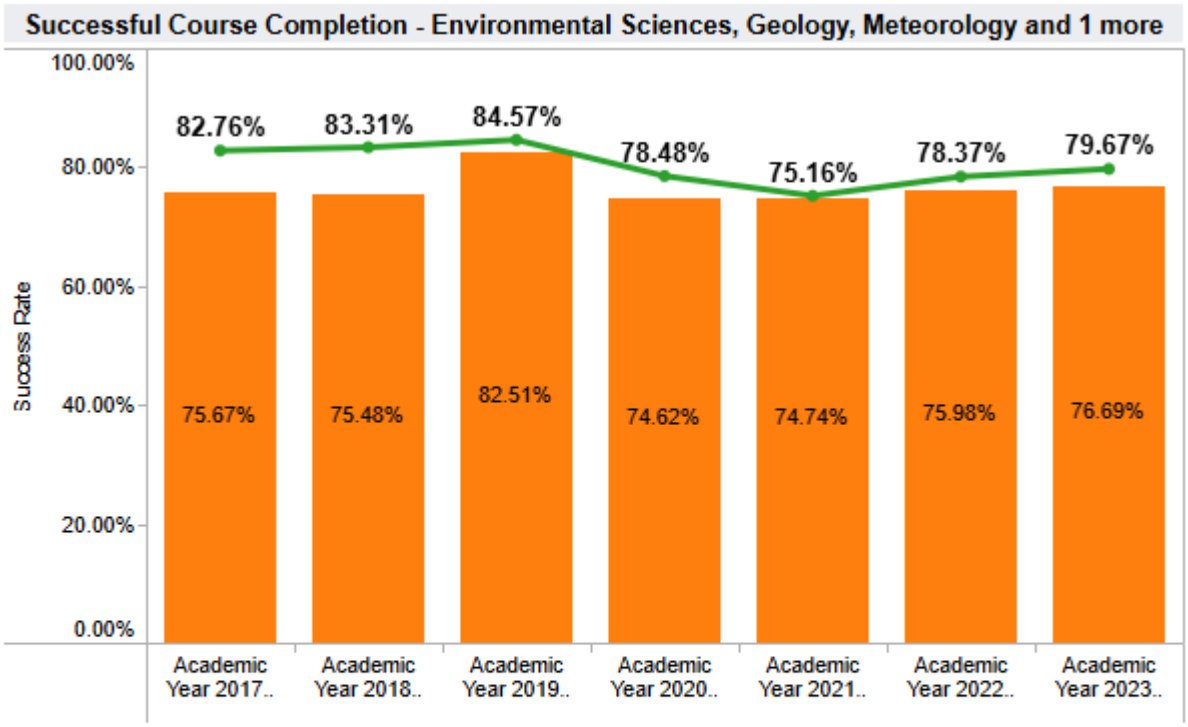
Program Awards: The number of degress and certificates awarded by program type

Figure E1: Program awards for AST in Environmental Science (teal), AST in Geology (light blue), AS in Geology (light blue) and Certificate in GIS (yellow).

We are seeing an increase in interest in our AST in environmental sciences. This is shown by the increased degrees awarded in 2023 and 2024 school years and in the enrollment in both ENVS200 and GEOL210, both of which are required for the ENVS AST. Based on the number of our current students declaring a major in Environmental Science, we anticipate an increase in students earning the environmental science AST in the coming years.

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

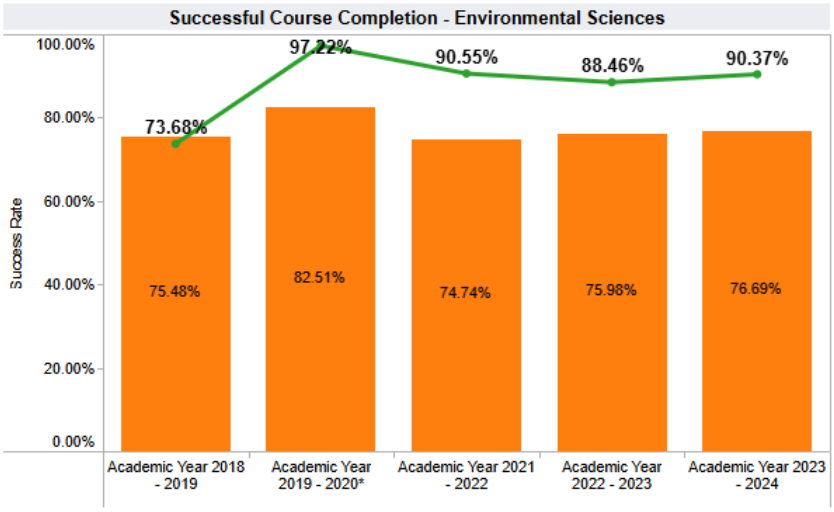
Insert the data chart and explain observed differences between the program and the college.



Environmental Sciences, Geology, Meteorology and 1 more Success Rate Table

	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021	Academic Year 2021 - 2022	Academic Year 2022 - 2023	Academic Year 2023 - 2024
Department Success..	82.76%	83.31%	84.57%	78.48%	75.16%	78.37%	79.67%
Total Enrollments	581	745	665	794	791	719	853

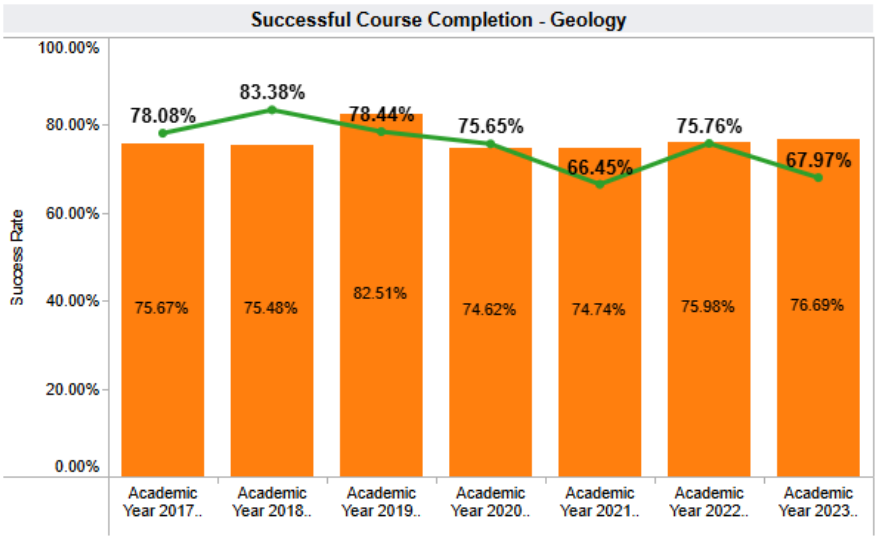
Figure F1: Course completion for EOS (including GEOL, ENVS, OCEN, and METE) in green compared to overall course completion of the college in orange.



Environmental Sciences Success Rate Table

	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2021 - 2022	Academic Year 2022 - 2023	Academic Year 2023 - 2024
Department Success..	73.68%	97.22%	90.55%	88.46%	90.37%
Total Enrollments	19	45	202	185	271

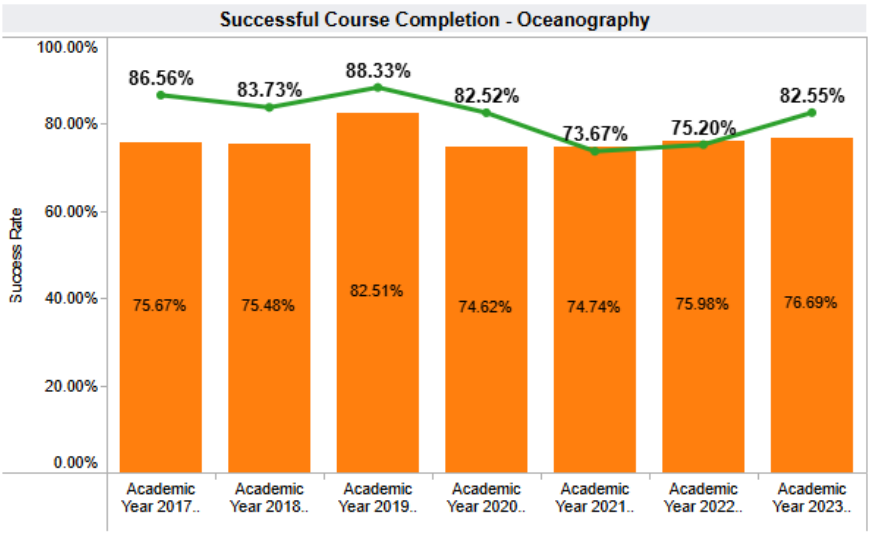
Figure F2: Course completion for Environmental Science in green compared to overall course completion of the college in orange.



Geology Success Rate Table

	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021	Academic Year 2021 - 2022	Academic Year 2022 - 2023	Academic Year 2023 - 2024
Department Success..	78.08%	83.38%	78.44%	75.65%	66.45%	75.76%	67.97%
Total Enrollments	261	350	296	466	307	266	287

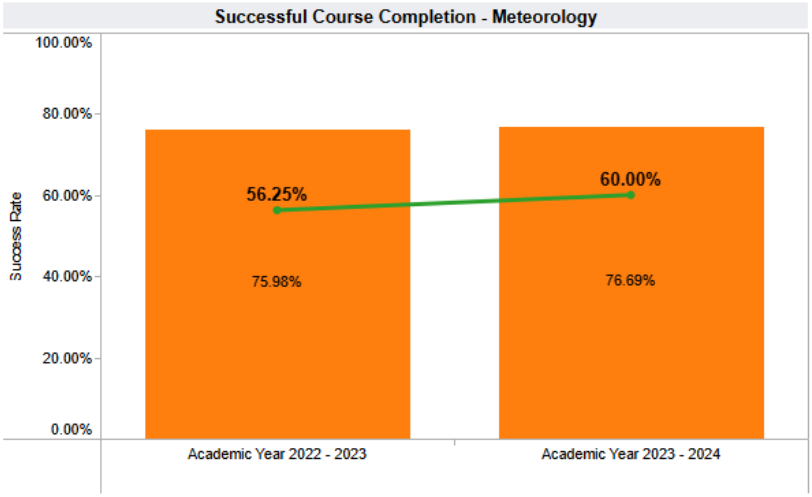
Figure F3: Course completion for Geology in green compared to overall course completion of the college in orange.



Oceanography Success Rate Table

	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021	Academic Year 2021 - 2022	Academic Year 2022 - 2023	Academic Year 2023 - 2024
Department Success..	86.56%	83.73%	88.33%	82.52%	73.67%	75.20%	82.55%
Total Enrollments	320	376	324	328	282	252	275

Figure F4: Course completion for Geology in green compared to overall course completion of the college in orange.



Meteorology Success Rate Table

	Academic Year 2022 - 2023	Academic Year 2023 - 2024
Department Success..	56.25%	60.00%
Total Enrollments	16	20

Figure F5: Course completion for Meteorology in green compared to overall course completion of the college in orange.

Our overall course completion in EOS is higher than the average of the college. We are very proud of these numbers. The course completion rates have increased in recent years.

We believe this is due to better scheduling and shuffling of faculty members as a full-time faculty joined the department in fall 2021.
Course completion in geology and meteorology are lower than the average of the college. This is something that will be considered when scheduling in the future. We will need to determine if this data should result in adjustments to course modalities and/or course offerings.

G. 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.

The following are some questions you might want to consider:

- What specific groups are experiencing inequities? What patterns do you notice in the data? How have the equity gaps changed since the previous academic year?
- What professional opportunities are your program faculty participating in to address closing equity gaps?
- What strategies, policies and/or practices in your program have you implemented or what could be improved to better support students who experience equity gaps?

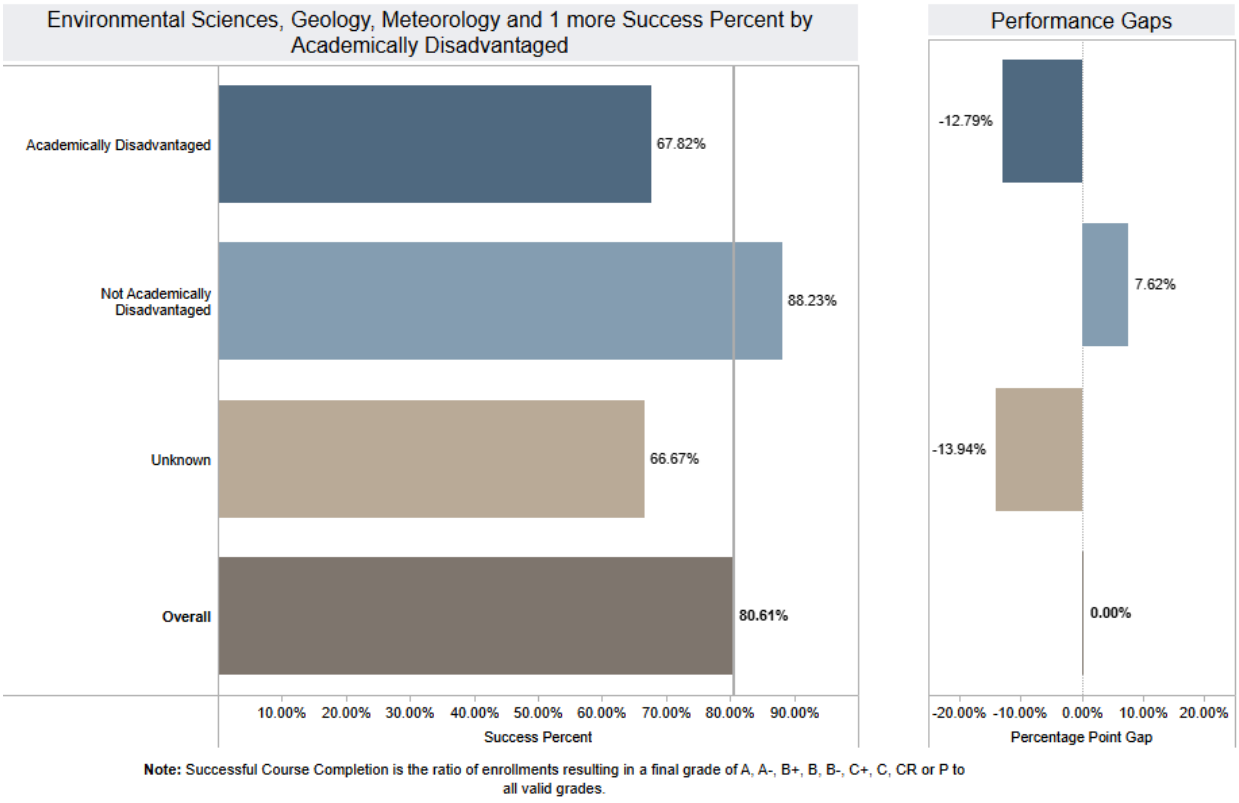
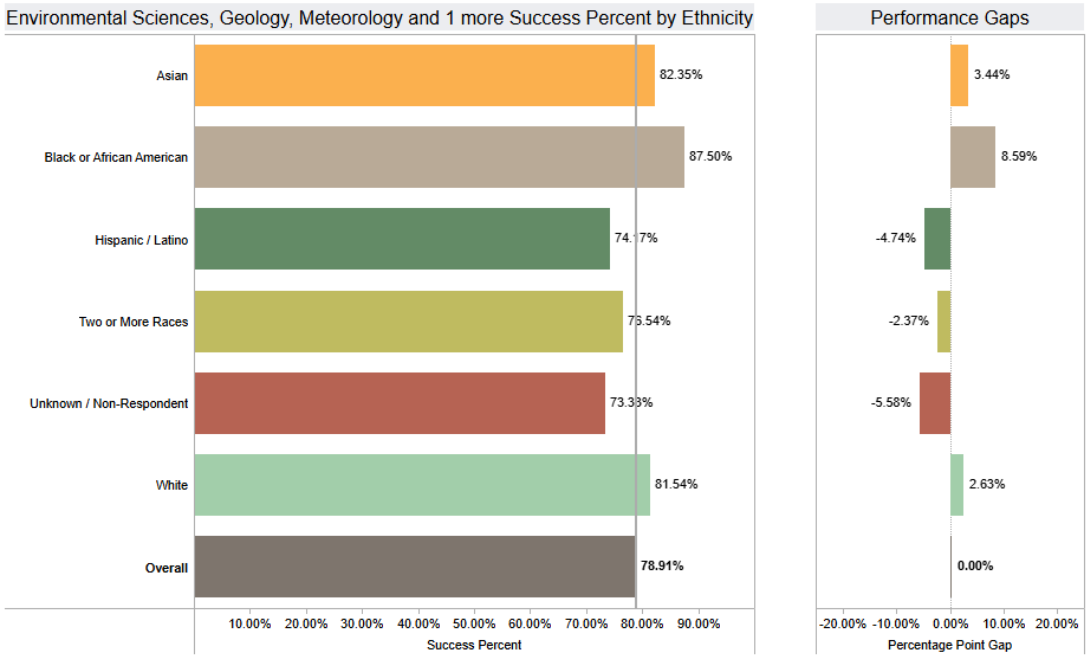
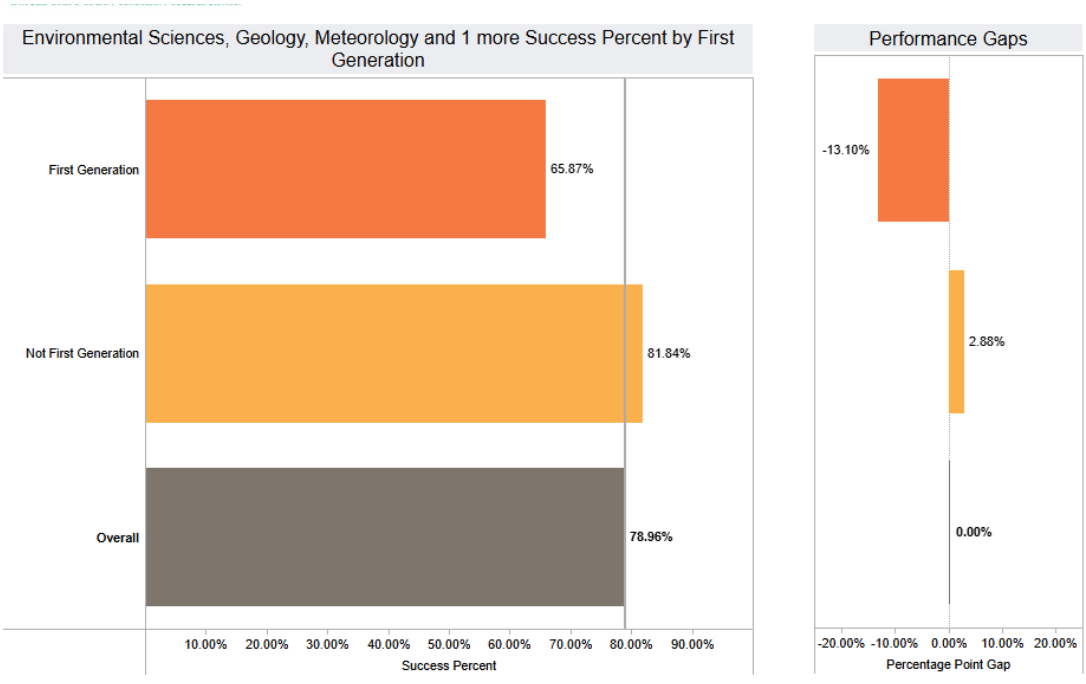


Figure G1: Course completion in EOS courses (including GEOL, ENVS, OCEN, and METE) by academically disadvantaged vs not academically disadvantaged.



Note: Successful Course Completion is the ratio of enrollments resulting in a final grade of A, A-, B+, B, B-, C+, C, CR or P to all valid grades.

Figure G2: Course completion in EOS courses (including GEOL, ENVS, OCEN, and METE) by ethnicity.



Note: Successful Course Completion is the ratio of enrollments resulting in a final grade of A, A-, B+, B, B-, C+, C, CR or P to all valid grades.

Figure G3: Course completion in EOS courses (including GEOL, ENVS, OCEN, and METE) by first generation vs. not first generation student.

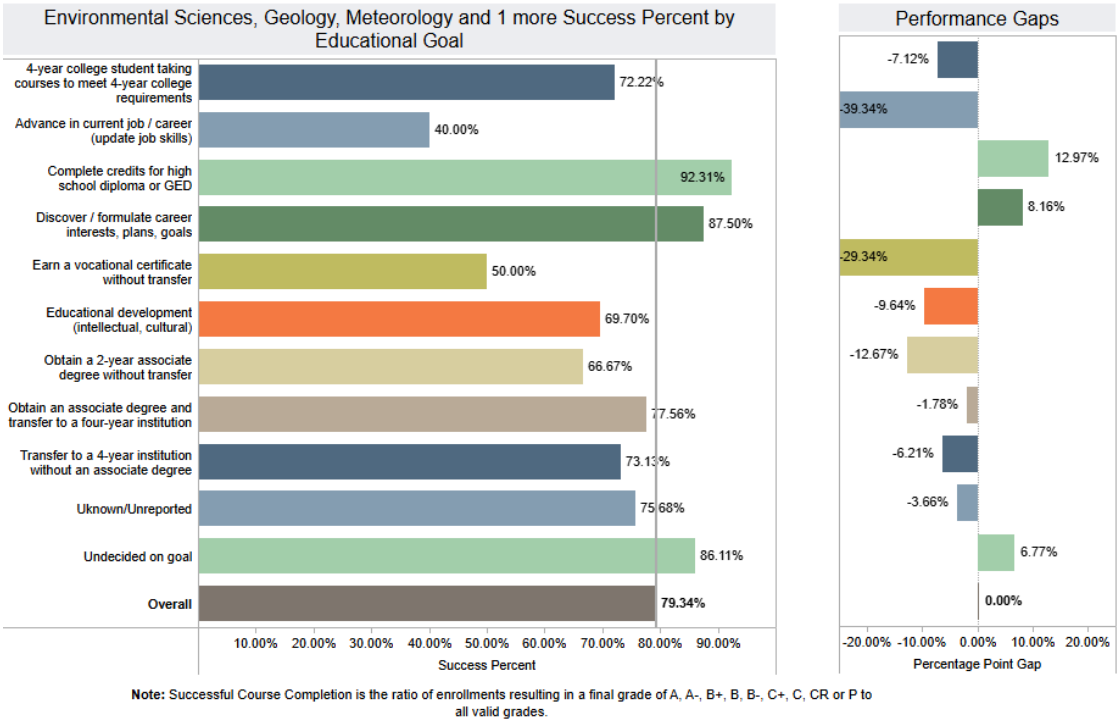


Figure G4: Course completion in EOS courses (including GEOL, ENVS, OCEN, and METE) by educational goal.

These diagrams show that the largest inequalities in EOS by subpopulation are in the categories of race, academically disadvantaged vs non-disadvantaged students, first generation vs not-first generation, and academic goal.

Two of our faculty members have completed the JEDI academy offered on campus and are both grateful for that opportunity. We would like to encourage all faculty to complete this academy in order to learn more about closing these equity gaps. We hope that as changes are implemented with the goal of decreasing equity gaps that we will see these equity gaps shrinking in future years.

Additional adjustments that have been made departmentally are the emphasis on integrating open education resources where possible, utilizing embedded tutors in courses, and updating curriculum and other pedagogical practices to better retain students within these subpopulations, leading to their successful completion of these courses to reduce equity gaps.

PROGRAMS AND CURRICULUM REVIEW PROGRESS

Section 1: Progress Check on Scheduled Curriculum Updates from CPPR

Directions:

For the following questions, please refer to #3 in Section 1 of the Programs and Curriculum Review Progress portion of last year's APPW.

1. List those programs of study (degrees and/or certificates) and courses that were scheduled for major or minor modification during the 2024 academic year in the 5-year calendar of the Curriculum Review Worksheet.

   GEOL 193, GEOL231, GEOL232, METE193, OCEN210L.

2. From the list generated in #1, identify those programs of study and courses that underwent the scheduled modifications during the 2024 academic year. Complete the table below for those items only.

Program of Study OR Prefix and Course #	Major/Minor Modification (select one)	Date completed (semester and year)
OCEN210L	Minor	Fall 2023

3. From the list generated in #1, identify those programs of study and courses that did **not** undergo the modifications for which they were scheduled during the 2024 academic year. Complete the table below for those items only.

Program of Study OR Prefix and Course #	Past Due Date for Modification	Briefly state why modification was not completed on schedule	Re-scheduled date for modification (must be within 1 year)
GEOL193	2024	Has not run. Discussion of potential deactivation needed.	
METE193	2024; Last	Has not run. Discussion of potential deactivation	

	reviewed 5/11/2015	needed.	
GEOL231	2024	Course and entire GIS certificate supported by adjunct professors. The one full time professor in EOS did not realize these courses needed to be reviewed this semester and is not able to complete this review as this professor does not teach these courses. Adjunct professors have been contacted to ask if they have any updates to make to the CORs for GEOL231 and 232. This really should not be a task for adjunct faculty.	May 2025
GEOL232	2024	Same as above. This is also a GIS course.	May 2025

SECTION 2: PROGRESS CHECK ON PREVIOUSLY OUT-OF-DATE CURRICULUM UPDATES FROM CPPR

Directions: For the following questions, please refer to #3 in Section 1 of the Programs and Curriculum Review Progress portion of APPW from years before the previous academic year where incomplete curriculum updates were re-scheduled to be addressed in 2024.

1. List those programs of study and courses that are listed in the older APPW that were listed in #3. Complete the table below for those items only. If there were no courses included under #3 of previous APPW, please type "N/A" in the first box of the first row of the table.

Program of Study OR Prefix and Course #	Past Due Date for Modification	Re-scheduled date for modification	Completed (yes or no)
N/A			

2. From the list generated in #1, identify those programs of study and courses that did **not** undergo the modifications for which they were re-scheduled to during the 2024 academic year. Complete the table below for those items only. You may leave this table blank if you wrote "N/A" for the previous table.

Program of Study OR Prefix and Course #	Past Re-scheduled Due Date for Modification	Briefly state why modification was not completed as rescheduled	Second re-scheduled date for modification (must be within 6 months)
N/A			

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.*

All EOS SLO assessments will be completed by the end of Spring 25 semester. Our faculty is

planning to work with our SLOA coordinator, Kelli Gottlieb, to ensure this is done correctly.

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 and addressing equity gaps
B. Anticipated changes in curriculum, scheduling or delivery modality
C. Levels, delivery or types of services
D. Facilities changes
E. Staffing projections
F. Other

B. A new EOS course, Natural Disasters, will have completed the curriculum and articulation process and able to be offered starting Spring 2026. We look forward to offering this course either online or in person. We anticipate this introductory level GE course will be a good fit for our students. Both Emily Kane and Jennifer Shellhorn are willing and able to teach this class in coming semesters and are both looking forward to this additional option within the EOS program. We anticipate that this course will make for a great online option.

E. We have a part time pool open right now (spring 25) and are hoping to add part time faculty to our department before Fall 25. We will not be able to offer all of the courses that we normally offer in fall if we are not able to hire more faculty. Our full-time faculty member is not committed to teaching overload in the coming semesters. This combined with any hope of potential growth necessitates hiring of more faculty.

This department could seriously benefit from a second full-time faculty member. The courses and degrees offered in this department are very broad and cover many different topics. This is unique to our department and is not seen in other STEM departments. This is a lot for one person to manage. An ideal hire would be in Geology/Earth Science, where the new faculty could oversee the geology portion of the department and help out with ENVS classes (including the new Natural Disasters course). Also important to note is the necessity for multiple faculty to be willing and able to teach and manage the extent of the field courses as a safety protocol, at minimum.

With the potential to grow there may also be future need for a designated supporting staff member (technician) to aid in the facilitation of labs including setup/break-down, inventory and ordering, and assistance with off-campus field trips.

F. We are grateful for the Robinson account for supporting our recent purchases for our students. This past year we purchased multiple sets of camping gear (as listed in 2023 APPW and resource list), which will help increase equity in our field courses. We do not want lack of equipment to inhibit students from taking these valuable field courses. We are very happy to own multiple sets of camping gear that any student can borrow for these trips.

The Robinson account has also paid for our secondary faculty to attend these field courses. These offerings would not be able to run without this additional support. Multi-day field courses cannot be run with only one faculty in one vehicle. We will continue to support these field courses using the Robinson account as long as funding exists.

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.