Program Review

Summary and Reflections with Unit Goals, Action Plans, and Updates

Instructional Program - Geology (GEOL)

Executive Summary

Describe the successes and challenges your unit has faced since the last comprehensive review.
The Geology program has continued to grow and adapt in the post-pandemic environment. General Education courses in the program have had success in the on-line environment (see Geology Program Review from 2020–2021 for more information). Students are beginning to come back to campus, but successful online courses continue to be popular, and a variety of modalities have been made available to students including fully on campus, hybrid, fully online, and 10-week online sessions. All Geology labs are back on campus in fully face-to-face formats. Oceanography has emerged in popularity as part of the overall Geology program. Oceanography is combined with Geology for this review because both disciplines serve similar student goals and faculty who teach Geology meet minimum qualifications to teach Oceanography and vice-versa. Two of our adjunct faculty teach both Oceanography and Geology classes. Oceanography is considered one of the Earth Sciences of which Geology is also a discipline.

Faculty from the Geology/Oceanography program participated in the Scripps Institution of Oceanography Geosciences Education and Opportunities Program, "Scripps-GEO." The objectives of this program are (1) to strengthen faculty, institutional and public partnerships in geoscience workforce applications in our region, (2) initiate student-focused project components, specifically career-focused seminar courses and academic-year internship opportunities at Scripps, targeted at recruiting students early in their undergraduate education, i.e. first or second year students, and (3) critically evaluate our results and identify strategies that are most effective in preparing, advancing and retaining diverse students in degrees and careers in the geosciences. We are very proud to say that several of our program students were selected as Scripps-GEO scholars and successfully presented their research at the Mesa College Research Conference (MCRC) in 2022.

If applicable, describe any major curricular or service changes your unit has engaged in and the impact of those changes since the last comprehensive review.
The STEM Lecture Series, led by our Geology faculty Don Barrie, has continued with both online and in person events by Physics Faculty member, James Hinton. Faculty continue to collaborate closely with the geoscience departments at SDSU and UCSD. The STEM Lecture Series occasionally hosts speakers from both institutions. Mesa Faculty were approached by Scripps Institute of Oceanography to be involved with their GEO Paths Internship for Spring 2024. This paid internship would allow Mesa students to complete research projects with Scripps faculty while learning about Geology career paths.

Faculty have been making the return to campus worthwhile to students through increased hands on and interactive learning. Students have been making regular visits to the Geogarden for instruction and to see the sedimentary rocks exposed south of campus, near A-100 Bldg. Being back on campus has also seen Geology Faculty Don Barrie on the quad doing his explosive liquid nitrogen volcano experiment. The AR Sandbox is nearly complete. The AR Sandbox, funded by the HSI STEM E3 grant, has the capability to show students real-time topographic images overlaid on sand that they are able to manipulate (see image). The AR Sandbox has the capability to greatly improve topographic map instruction, which is both difficult for students and essential to understanding geoscience phenomena. Also, in an effort to improve on campus learning and increase student engagement, faculty have increased the use of binoculars and polarizing microscopes in the lab. As part of the pandemic, many high quality rock/mineral sets were purchased for student at-home lab kits. These same kits are now used by students in lectures where each student has their own kit to explore rocks and minerals. Finally, Mesa College's extensive sand collection has been an integral part of the GEOL 111 course, The Earth Through Time.

One of the greatest curricular improvements in the past year has been the return to field trips. Most San Diego students have not had access to geoscience education in high school and many are unaware of the rocks and formations around them. Geoscience faculty regularly provide field trips to Tourmaline Beach & Mt. Soledad, San Diego Natural History Museum, Torrey Pines, Lake Morena, Eagle/High Peak Gold Mine, Julian, Palm Springs Aerial Tramway & San Andreas Fault visit and Salton Sea & Mecca Hills (just north of Salton Sea) and the Anza-Borrego Desert. Geoscience faculty, led by Don Barrie, took 10 students on a Summer Field Experience this summer as part of a grant funded by the National Science Foundation that was won by Mesa College. Students camped out for this 10-day research field trip. Applications for the trip exceeded the number of spots available. Students used words like Amazed, Grateful, Educated, Happy, Inspired and Fascinated when describing the event.

Here are some other student comments:

Summary and Reflection

"I would absolutely recommend this trip to other students. It was a wonderful experience that allowed me to meet many amazing people and learn awesome things."

"One of the things that this experience really helped me is being able to have the opportunity to have experience in the career that I plan to have, which is Geology. This experience helped me open my eyes more and be completely convinced that this is what I want for my career."

"I really enjoyed being about to meet other likeminded students from Mesa. You get all sorts of people at community college and sometimes I forget that I'm not alone in my pursuit of a highly academic career. It was good to talk to others on the same path and develop relationships with professors and experienced students who could help guide me and give hints as to where my next opportunity might be."

"I would absolutely recommend this trip to others. The people in the group were wonderful. Field instructions was the most impactful for me. Things out in nature are not at neat and easily classified as what we find in text book or lab."

Students were given an opportunity to continue their work with a research grant in the Spring 2024 semester and response has been greater than we expected.

In terms of Curriculum, the GEOL 111 course completed a six-year review as part of which the course title and description were updated. The course title and description were written to make the course subject matter clearer to students and to generate interest. GEOL 120 and GEOL 104 completed 6-year reviews as well and basic skills courses were removed from the GEOL 120 course due to AB1705.

If applicable, describe the impact of any new resources (human, fiscal, etc) on the unit and/or action plan implementation.
Not applicable

If you assess OUTCOMES, please confirm that the outcomes have been reviewed for accuracy. If you do not assess Outcomes, skip this question.
Reviewed & Accurate

Related Documents for Charts and Graphs
AR Sandbox Image.docx

Executive Summary Complete
Yes

Data Reflection

Trends observed in program/service area's data.
**See attachment with graphs.

Geology and Oceanography enrollment has been healthy. As discussed previously, one of the most interesting observations that we have made centers on the growing popularity of online and Oceanography courses. The following graph shows the enrollment numbers for Geology (in blue) and Oceanography (in red). From this graph, we see that the enrollment for Geology has been decreasing somewhat over the last few semesters while the enrollment of Oceanography has begun to grow. However, both enrollments as a whole (in purple) are on an upward path exceeding enrollment prior to the pandemic.

Another way to look at this data is in the following. This graph shows the growth/decline trends in enrollment with respect to Fall 2019. The black line depicts enrollment during Fall 2019. Enrollment at Mesa College (ALL MESA in blue) shows small declines since 2019 (around 20% lower). Enrollment trends in Physical Sciences as a whole (ASTR, GEOL, OCEA, PHYN, ENGE, and PHYS shown in orange) show similar trends. However, enrollment in GEOL/OCEA (in purple) appears to be returning to pre-pandemic levels.

One other interesting set of data is related to transfer. Although the majority of students who take courses in geosciences are interested in fulfilling a GE requirement, there are students who transfer into geology programs. The numbers are not large, but they are larger than one might think. Numbers from the CSU Transfer Dashboards put the numbers close to the number of

students transferring into Physics programs (See Graph below). The total number of CSU transfers into Physics programs was 29 and Geology was 25. This compares with Chemistry programs with 43 students . Transfers into UC programs are smaller, but that may be an avenue for change. Geoscience programs can be an excellent way to get students new to STEM into STEM careers. Geosciences tap into students' sense of community because they involve questions and problems that are relevant to specific regions and to deeper questions about the Earth and the world around us. Geoscience courses offer an opportunity to "center" Latinx/Chicano experience in the design and implementation of curriculum and outside of the classroom activities. This may especially be relevant to LatinX students where connection to the STEM fields is best established through the lens of serving/supporting the community (Chavarria and Knox, 2019).

Describe any equity gaps in the data. Are there differences and/or patterns observed by demographics (e.g.race/ethnicity, gender, age, etc.)
Success rates in all GEOL and OCEA courses remain high with averages across the years around 80%. Spring 2022, the last semester with available data, does show a slightly lower than average success rate for GEOL (around 73%) and OCEA (around 79%). We are seeing some equity gaps in GEOL and OCEA courses according to the dashboards in terms of both ethnicity and gender (please see Row 1 in Table below). These are similar to equity gaps seen in the campus as a whole (Row 2). This is not surprising since the Geology and Oceanography courses mostly attract students interested in fulfilling a Physical Science GE requirement which is close to the composition of the student body at Mesa as a whole. One other interesting outcome in the data is that some of the equity gaps shrink or disappear for students in Online only courses (Row 3). This is hard to explain and may be due to a different demographic choosing online instruction, but it is still something to investigate further.

See attached graphs for the following:
GEOL/OCEA
MESA
OnLINE

Related Documents for Charts and Graphs
Data Reflection graphs (1. Describe trends).docx;
Data Reflection graphs (2. Equity gaps).docx

Describe the discussion(s) that took place about the unit's learning outcomes assessment data.
Faculty report satisfaction with students' achievement of course outcomes. As discussed previously, both Oceanography and Geology courses are taught in a variety of modalities. Faculty have not noticed strong gaps in terms of learning outcomes between any of the groups. However, faculty are aware of changes in student preparation as a result of AB 1705. Only GEOL 120 had to be updated to remove advisories and none of the courses have MATH prerequisites. Faculty in both lecture and lab have reported taking opportunities to explicitly reinforce math, reading and writing skills in their courses. Geology lab faculty, for example, have discussed giving students real examples using proportional thinking. Lecture faculty have given scaffolded writing assignments to strengthen students' writing skills. Although faculty have not reported deficiencies in student learning outcomes, discussions have focussed on students' lack of science identity. Faculty recognize that these courses may be one of the last opportunities that students have to learn about what science is and how science is practiced. This is one of the reasons why field trips are integral to geoscience courses.

Data Reflection Complete
Yes

Practice Reflection

Describe current practices your program/service area has engaged in that you believe impact the above data trends and equity gaps.
The increasing enrollment in Oceanography has been a bit of a surprise and we are still trying to determine the reason. Students can take any physical science course and we wonder why they are interested in Oceanography as opposed to Geology. One theory that we had is that it sounds more interesting. To that end, we changed the title of our GEOL 111 course to The Earth through Time in an effort to capture student interest. Faculty also advertised the course heavily during the Fall semester in order to get more enrollment and this paid off with a fully enrolled course. We are now also considering new courses in Natural Disasters and a lab for Oceanography. Presently, students can fulfill their physical science lecture requirement with the Oceanography course, but there isn't a lab. We would like to leverage student interest in this subject by developing and offering a lab that students could take as well. Natural Disasters is a very popular course at other institutions that fits well with general education students. It involves students in thinking about science and its impact on society. We consider that this might be more engaging to students in some underrepresented groups who may benefit from seeing science applied. We also wonder

if this would have a positive impact on student science identity in terms of being able to see the value of science. Finally, courses in geosciences are ideal for the new Leaf program where courses that have learning outcomes related to climate change and sustainability are awarded a Leaf designation. We think that our courses are perfect for this program.

A second major emphasis in the geosciences program is on field experiences. We know that field experiences can positively impact student STEM identity in a variety of ways. Students interested in geosciences can learn important science skills and get involved in research. Through field trips, students not thinking about STEM as a career can become better acquainted with problems and questions that may ignite a passion for STEM. Students who may never be scientists can go on field trips to learn more about what scientists do and how it impacts their community and the region around them. Students explore how their personal, cultural and collective experience intersects with geosciences and what questions, issues and topics can be explored within this discipline that are relevant to their communites. For these reasons, field trips are a focus in the geoscience classroom. Faculty are working on making field trips more common in all of the courses, including those that are online. Online courses have had a poor reputation for not being able to engage students in the actual practice of science, but faculty have found that these students will participate in field trips when the opportunity is presented. As part of the NSF grant that geoscience faculty are involved in, we are exploring the different ways to use field experiences to get students interested in science and science careers.

What other factors (internal or external) might also impact the above data trends and equity gaps?
We are less concerned about the impact of AB1705 on our general education courses since they don't currently have prerequisites. However, faculty have discussed ways to strengthen basic skills within the courses. This would mean intentionally adding basic math and writing assignments into the courses.

Related Documents for Charts and Graphs

Practice Reflection Complete
Yes

Mid-Cycle Updates

YEAR 2 Updates (2023 - 2024)

Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 2.
The Geology/Oceanography program is currently stressed. The sole contract faculty member for the program has retired and has not been replaced. The Geology Program continues to be sought after for grant and research opportunities, but participation is difficult without a steward for the program. Since the retirement of Don Barrie, we have been approached for two different grant opportunities. One was from Scripps Institute for Oceanography for their GEO Paths Internship. This paid internship would allow Mesa students to complete research projects with Scripps faculty while learning about Geology career paths. The second is the ZTC program. The college has applied for and won the grant that will allow for the development of low or no-cost materials for Physical Science courses with an emphasis on courses like Geology.

Geoscience faculty, led by Don Barrie, took 10 students on a Summer Field Experience in June of 2023 as part of a grant funded by the National Science Foundation that was won by Mesa College. Students camped out for this 10-day research field trip. Applications for the trip exceeded the number of spots available. Students used words like Amazed, Grateful, Educated, Happy, Inspired and Fascinated when describing the event.

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Summary and Reflection

"I would absolutely recommend this trip to others. The people in the group were wonderful. Field instructions was the most impactful for me. Things out in nature are not at neat and easily classified as what we find in text book or lab."

Students were given an opportunity to continue their work with a research grant in the Spring 2024 semester and response has been greater than we expected. The NSF Grant with Field Trips and Research has continued with Don working only in the Spring Pro-Rata, but this is unsustainable. We can't grow these opportunities without a faculty member to lead.

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 2.
Data is sufficient.

Review Outcomes Report. Review the unit's outcomes assessment process for 2022 - 2023. Discuss connections to unit goals/action plans/resource requests.
Review of CLO's indicate a need to adjust language to be more descriptive for Geology and Oceanography courses. The adopted CLO's for the department are more suited to Physics and other math-based courses. Adjunct faculty were asked to work on updating CLO's for the 2023-2024 academic year. Contract faculty were asked to serve as liaisons to help the process.

Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 2.
Not at this time.

YEAR 3 Updates (2024 - 2025)

Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 3.
We are very excited to have been able to recruit and hir a new Geology/Oceanography Contract Instructor for Spring 2025. The Geology/Oceanography program has been struggling without a contract faculty member. Other contract faculty have worked to provide leadership for adjunct faculty. Our Pro-Rata faculty member has been able to help during his Pro-Rata semester. Despite this, the program has been doing well. Adjunct faculty organized a bus tour of San Diego during the Spring 2024 semester. The field trip had been offered previously with students providing their own transportation. Adjunct faculty felt that this was an equity issue in that students who did not have transportation could not participate. They asked chairs for help. The project fit within the goals of the NSF grant and funds were used to charter a bus for the group. The tour was successful with 40 students participating from all of the Geology and Oceanography courses both online and on campus.

After the successful first year of the Geology Summer Field Experience, three students opted to work with Pro-Rata faculty member Don Barrie on independent research projects. Several students also participated in a research opportunity with Scripps Oceanographic Institute. All of these students presented work at the Mesa College Research Conference and more or less swept the awards. Additionally, students won an award for their poster the American Association for the Advancement of Science Annual Meeting.

Recruitment for the second year of the Geology Summer Field Experience yielded many more applicants than spots that were available. Faculty were able to choose 10 students to participate in the 10 day camping and learning experience. Students returned with high praise for the experience. The Evaluator for the NSF project reported that students on the 2024 trip reported the experience as highly impactful similar to the students in the 2023 experience. Language used by the 2024 students included more amazement with the landscapes and geology itself with more indications of renewed interest in Geology as a career.

One our biggest goals going forward is to help our new faculty member transition into her new role. Professor Ashley Manning Berg comes to us with extensive experience in teaching Geology and in doing field work with students. In this transition, we also expect our NSF funding to cease and we will also have a goal of institutionalizing our field work experiences.

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 3.
No updates. Enrollment data is flat. Geology/Oceanography offerings were slightly reduced or kept level due to a lack of a contract faculty member. We hope to have a new faculty member soon and have started to increase offerings slightly. All courses continue to be fully enrolled and expanded offerings are still the goal.

Equity gap data was reviewed and there are no new problems or issues to report. Geology continues to attract a diverse group of students. We are monitoring equity gaps in our Online and On campus courses as the online modality continues in popularity.

Summary and Reflection

Review Outcomes Report. Review the unit's outcomes assessment process for 2023 - 2024. Discuss connections to unit goals/action plans/resource requests.

During the Fall 2024 department meeting, faculty worked together to write new CLO's for Geology and Oceanography courses. Faculty are satisfied with the new CLO's as being able to describe student outcomes better than the old ones. Since we wrote all new outcomes, as a department, our goal is to assess all of them by the end of Spring 2025. Geology and Oceanography faculty have devised a plan for this to happen. Much of the assessment will take place in the Spring 2025 semester although GEOL 111 was assessed previously since it will not be offered until Spring 2026. In this cycle of assessment, we are looking to see if our CLO's and our process for assessing are appropriate. We hope to adjust as data is reported.

Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 3.

No updates.

YEAR 4 Updates (2025 - 2026)

Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 4.

GEOL/OCEA is a program in transition. In Spring 2023, the program lost its only contract faculty member. Although other faculty stepped in to keep the program running, it was losing momentum because of a lack of leadership. Curricular changes, lab updates and outreach were put on hold until a new faculty member could be approved and hired. We are very fortunate to have been able to hire Dr. Ashley Manning-Berg as our new contract faculty member. Ashley comes to us with teaching and research experience that we feel will greatly benefit our students and our program. Dr. Manning-Berg has already helped us identify areas for growth in our program. We finish this assessment cycle and look forward to looking at our data with fresh eyes in the Fall to create new goals and objectives for the program. Until then, here is a quick update on where we stand.

Staffing/Faculty: The program averages around 2.00 FTEF per semester. Don Barrie returns during Spring semesters to teach Pro-Rata. Otherwise, we have managed with adjunct instructors who have been with us for a long time. Bulent Bas, Ray Rector, and Pete Stang covered courses during the 3 semesters that we did not have full-time faculty. We cut back course offerings slightly in Fall semesters to manage, but Bulent, Ray, and Pete did excellent work in keeping our courses running and engaging in outreach such as the Bus Trip. In Spring 2025, Ashley Manning-Berg joined our faculty. Ashley has been an excellent addition to the faculty, but is still getting acquainted with the college, students, and curriculum. We expect that she will take leadership of this program during the next evaluation cycle. She is meeting with faculty, counseling staff, and our transfer partners to help plan next steps. We are all excited to support her in this work.

Curriculum: The biggest curriculum change during the last year was the change in the CLO's. The Physical Science department is diverse, with most of the faculty in Physics. When CLO's were created, the department decided to create three that would serve all of the disciplines. This approach had advantages because the entire department could discuss CLO's using the same language. However, the CLO's didn't quite serve GEOL or OCEA well. The GEOL/OCEA faculty created two CLO's that better describe the learning goals for the courses.

Enrollment in GEOL/OCEA has been steady. FTES/FTEF has remained steady around 17-19. The pandemic slump in enrollment has been eliminated and courses are back to their pre-pandemic enrollments. We have noticed that GEOL/OCEA courses are slower to enroll than our other General Education courses such as ASTR. We have spoken with counseling to gain perspective on enrollment. They tell us that students often look for GE courses in alphabetical order and ASTR courses are just first. They also tell us that, because our GEOL 104 course, Earth Science, is listed as GEOL 104 rather than a 100 course, students are under the impression that they need GEOL 100 before taking it, which is not the case.

Our GEOL 120 course remains an issue because it is part of the Teacher Education ADT, but we cannot offer it due to low enrollment. Counselors also tell us that there is a need for a physical science lab that can "stand alone" without being attached to a course. We are hoping that there is a solution that will solve both of these problems and that we will be able to deactivate the GEOL 120 course that has not been offered in several years.

Dr. Manning-Berg has met with our transfer partners at SDSU and has come back with interesting news. The Environmental Sciences program has added a new Geology requirement that affects their students and ours who are transferring. The GEOL 111 course has had trouble with enrollment because it is considered an upper-level Geology course and includes the lab. The Geology department at SDSU reports that they need our students to complete this course before they transfer and have asked us to increase offerings. We had plans to offer the course in Spring 2026 and will watch enrollment in order to make future plans. Currently, our OCEA 101 course does not articulate for the Environmental Sciences or Geology programs at SDSU because their course includes a laboratory component that ours doesn't have. Students can take OCEA 101 for GE, but not to fulfill any majors-level requirements.

Summary and Reflection

Ashley also reports that she has more students interested in Geology as a major than we anticipated. Geology is a tough subject because the introductory course usually serves as both a requirement for majors and appropriate for general education students. Dr. Manning-Berg is feeling a struggle between preparing students for upper-level courses and fulfilling the needs of GE students. In order to serve this, we are thinking about increasing our offerings of the Earth Science course and letting counseling know that it is a better option as a survey course. We will also decrease our Physical Geology offerings in order to give more space to increase the depth of the course for students majoring in the discipline. Additionally, we are looking into adding new course offerings to appeal to GE students and that complement Dr. Manning-Berg's background.

Laboratory/Equipment: During the FALL 2025 semester, we had a visually impaired student enrolled in GEOL 100 and GEOL 101. Having this student, along with having Dr. Manning-Berg joining the faculty has made us take a stronger look at our equipment and lab supplies. This has led to improvements for all of our students. Our ILT's, Chris Waters and Ryan Woods, spent the Summer and Fall 2025 semesters working on new supplies under the direction of Ashley. It appears that Geology faculty may have been "making do" with what they had in some ways to work within our department budget. There have been some small things, like printing updated maps in a larger, more legible size and in colors that students can see more clearly. There are still some larger needs that our budget has not been able to support.

Outreach: We finished up the NSF grant in Spring 2025. We had our last bus trip in Fall 2024. The purpose of the bus trip was to take students on a tour of San Diego's geology. Students had been attending field trips using their own transportation, which has been difficult for the safety and inclusion of all students. The bus trip was designed to allow students access to parks with the guidance of a geology faculty member. We applied for and were granted a mini-grant from the Mesa Foundation to run the bus trip in Fall 2025, but we were not able to run it. We are hoping that we can still use the money during Spring 2026. Also, Don Barrie led a group last spring 2025 to Julian using individual transportation. In the long term, we hope to increase our field trips and offer our field course, but we need to address the challenge of transportation. Additionally, we are looking into finally offering the Field Geology of San Diego course, which has been active but not offered due to practical constraints.

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 4.

As discussed earlier, enrollment looks good. GEOL/OCEA courses are back to their pre-pandemic levels. Courses fill completely by Census. There is a mix of both online and on-campus courses offered. There are also some late-start courses offered. Faculty report that they are struggling with online course integrity. The battle against AI-generated assignment completion has become unwinnable. Many students also seem to be using AI to generate answers on online exams. Faculty are working together and consulting with external PD to create assessments that students complete with AI assistance, rather than have AI complete assignments that students submit as their own. This will be an ongoing struggle.

Dashboards show no awards for the Geology ADT. This is interesting because we are hearing that students are interested in Geology and Oceanography. We hope that the new LAS degree for general science will help us see more of these students.

Course completion for GEOL/OCEA are steady around 92% on average, and success rates are also flat at around 78-79%. These are both positive findings. However, when the averages are drilled down a bit, there seem to be drops in 2024/25 in the Geology Lab (GEOL 101) and our Earth Science (GEOL 104) courses in both success and completion (Increases in OCEA success/completion have kept the average flat). Both rates are still fairly high, but we will need to watch how the trend continues. Faculty do not seem concerned at this point, but we may need to do some further study.

Overall equity gaps for course success are similar to what other disciplines are experiencing. However, the equity gap for Latine students is fairly small at -3.1% and large for Pacific Islander students at -32.6%. This could be due to the number of students in each category. An additional 52 successes for Latine students would be needed to close the gap, whereas an additional 7 students would erase the -32.6% gap. Equity gaps also exist for our Black/African American students at -11.1%. Drilling down into the data a bit shows that equity gaps have been smaller than average for the program for 2023/24 and 2024/25. There do not appear to be any trends in the equity gap data and there do not appear to be differences between OCEA and GEOL. In the next cycle, we will be prepared to look more closely for these trends. Our current conclusion is that we may be making progress, but work on closing equity gaps continues.

Review Outcomes Report. Review the unit's outcomes assessment process for 2024 - 2025. Discuss connections to unit goals/action plans/resource requests.

As discussed previously, the biggest change in outcomes has come from rewriting the outcomes themselves. All courses include outcomes related to Critical Thinking and Communication, as we believe these are where our courses' strengths lie. The new Outcomes specifically discuss what Critical Thinking and Communication look like in the GEOL/OCEA courses. Faculty are satisfied with the new outcomes and have found ways to authentically measure them through student work. All outcomes have been uploaded to Nuventive and all have targets. GEOL 100 is missing results, but this was due to a

miscommunication between faculty. Results will be completed in Spring 2026. Students in all GEOL courses that were assessed met their target. Students in OCEA met their Communication target, but the target for Critical Thinking was close, but not completely met. This may partially be due to the difficulty that faculty are having with assessment in online courses. Online and on-campus faculty are meeting to discuss how to design assignments to best capture critical thinking in both modalities.

Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 4.
We are feeling confident going forward with the leadership of Dr. Manning-Berg and look forward to planning for change. We need to increase the presence of GEOL/OCEA on campus in order to boost enrollment. We also hope to continue to work on our equity gaps through new curriculum, field experiences, and labs. One of the biggest struggles we are having in the GEOL/OCEA program is planning for growth while working with the FTES we are given. Since we work under one umbrella, we plan all GE courses (ASTR, GEOL, OCEA, PHYN) as one group. All of these disciplines have areas where they can grow. They are usually highly productive courses and we hope that we can get more FTEF to devote to these disciplines. At this point, our plans include: 1. Activating GEOL 102: Environmental Geology. 2. Creating an OCEA lab. 3. Creation of a new Climate Change course.

YEAR 5 Updates (2026 - 2027)
Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 5.

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 5.

Review Outcomes Report. Review the unit's outcomes assessment process for 2025 - 2026. Discuss connections to unit goals/action plans/resource requests.
Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 5.

Unit Goals, Action Plans, and Updates

Goal 1: Increase enrollment in Geoscience courses through outreach and curricular changes.

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Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030:

- **Completion - Objective 1:** Develop pathways that provide students with clarity about degree, certificate, and transfer requirements. (✓)
- **Completion - Objective 3:** Design and promote programs and services that intentionally target a reduction in equity gaps in completion outcomes (✓)

Action Plans	Updates
Action Plan Status: Active **Action Plan:** Create an Oceanography Lab Course **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 11/26/2024 **Action Plan Update**: This Goal is still in progress pending a new contract faculty member. **Update Year**: 2024 - 2025 **Action Plan Progress**: Barriers Encountered **Submission Date**: 01/12/2024 **Action Plan Update**: This goal is still active, but is not a priority until a new contract faculty member is hired. **Update Year**: 2023 - 2024 **Action Plan Progress**: Barriers Encountered
Action Plan Status: Active **Action Plan:** Apply for Leaf Designation for 3 of the GEOL or OCEA courses. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 01/13/2026 **Action Plan Update**: This plan is in progress. Some courses have Leaf designations and some still need to be added. **Update Year**: 2025 - 2026 **Action Plan Progress**: On Track **Submission Date**: 11/26/2024 **Action Plan Update**: Goal is on hold for new Faculty member. **Update Year**: 2024 - 2025

Unit Goals, Action Plans, and Updates

Action Plans	Updates
	Action Plan Progress: Barriers Encountered
	Submission Date: 01/12/2024 **Action Plan Update**: This goal is in progress. **Update Year**: 2023 - 2024 **Action Plan Progress**: On Track
Action Plan Status: Active **Action Plan:** Create a Natural Disasters lecture course **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 01/13/2026 **Action Plan Update**: With the addition of new faculty, this has been determined not to be the best solution to the problem. Instead, a different course is planned that fits better with student needs. **Update Year**: 2025 - 2026 **Action Plan Progress**: Barriers Encountered
	Submission Date: 11/26/2024 **Action Plan Update**: This goal may need to be revised. Current cuts in FTEF have slowed growth for our GE courses. We need leadership from our new contract instructor. **Update Year**: 2024 - 2025 **Action Plan Progress**: Barriers Encountered
	Submission Date: 01/12/2024 **Action Plan Update**: This goal is in progress. Course outline creation to begin in Spring 2024 **Update Year**: 2023 - 2024 **Action Plan Progress**: On Track
Action Plan Status: Active **Action Plan:** Create promotions for Geoscience courses **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 11/26/2024 **Action Plan Update**: This goal is complete **Update Year**: 2024 - 2025 **Action Plan Progress**: Completed
	Submission Date: 01/12/2024 **Action Plan Update**: This goal is in progress. Promotions were created for the Fall 2023 and Spring 2024 semesters. More work on their effectiveness is needed. **Update Year**: 2023 - 2024 **Action Plan Progress**: On Track

Unit Goals, Action Plans, and Updates

Goal 2: Decrease equity gaps and increase science identity in Geoscience courses through increased participation in field trips and curricular changes.

Unit Goal: Goal 2: Decrease equity gaps and increase science identity in Geoscience courses through increased participation in field trips and curricular changes.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030:

- **Completion - Objective 3:** Design and promote programs and services that intentionally target a reduction in equity gaps in completion outcomes (✓)
- **Pathways and Partnerships - Objective 3:** Increase community engagement, experiential learning, integrated career planning, and workforce training to prepare students for future careers (✓)
- **Scholarship - Objective 4:** Expand the use of innovative and high-quality teaching, learning, and support practices that achieve equitable outcomes and increase student success (✓)

Action Plans	Updates
Action Plan Status: Completed **Action Plan:** Complete Summer Field Experience in June 2023 with 10 students. **Action Plan Cycle:** 2023 - 2024, 2022 - 2023	**Submission Date**: 01/12/2024 **Action Plan Update**: This goal has been accomplished! **Update Year**: 2023 - 2024 **Action Plan Progress**: Completed
Action Plan Status: Completed **Action Plan:** Provide data to determine best practices for Field Experiences **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 01/13/2026 **Action Plan Update**: Assessment from the NSF grant Evaluator cites small field trip experiences, such as the bus trip as impactful for large numbers of students. **Update Year**: 2025 - 2026 **Action Plan Progress**: Completed **Submission Date**: 11/26/2024 **Action Plan Update**: This goal is in progress. Data is continued to be taken. **Update Year**: 2024 - 2025 **Action Plan Progress**: On Track **Submission Date**: 01/12/2024 **Action Plan Update**: This goal is in progress. Data has been collected, but needs to be analyzed. **Update Year**: 2023 - 2024

Unit Goals, Action Plans, and Updates

Action Plans	Updates
	Action Plan Progress: On Track
Action Plan Status: Completed **Action Plan:** Revise Field Experience for 2024 trip. **Action Plan Cycle:** 2023 - 2024, 2022 - 2023	**Submission Date**: 11/26/2024 **Action Plan Update**: This goal is complete **Update Year**: 2024 - 2025 **Action Plan Progress**: Completed **Submission Date**: 01/12/2024 **Action Plan Update**: This goal is in progress. **Update Year**: 2023 - 2024 **Action Plan Progress**: On Track
Action Plan Status: Completed **Action Plan:** Create at least one opportunity for a short/local field trip for students in online and on campus courses. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 11/26/2024 **Action Plan Update**: This goal is complete. Faculty created a day-long bus trip for all OCEA/GEOL students. **Update Year**: 2024 - 2025 **Action Plan Progress**: Completed **Submission Date**: 01/12/2024 **Action Plan Update**: This goal is in progress, but needs a Contract faculty member to make it a priority. **Update Year**: 2023 - 2024 **Action Plan Progress**: Barriers Encountered

Institutionalizing Field Experiences

Unit Goal: In this goal, we hope to work to institutionalize the field experiences from the grant work.

Goal Status: Active

Beginning Year: 2025 - 2026

Action Plans	Updates
Action Plan Status: Active	**Submission Date**: 01/13/2026

Unit Goals, Action Plans, and Updates

Action Plans	Updates
Action Plan: Explore funding sources for field experiences. **Action Plan Cycle:** 2025 - 2026	**Action Plan Update**: With the addition of a new contract faculty member, we are working on this goal. We have gotten some money for the Bus Trip from the Mesa Foundation. **Update Year**: 2025 - 2026 **Action Plan Progress**: On Track