

Crafton Hills College - Outcomes Assessment Report

General Education Outcome: Natural Science

Assessed: 2025-2026

Learning Outcomes Statement

Students successfully completing a course in this area will be able to apply a problem-solving strategy such as the scientific method or other systematic process of inquiry and to recognize the contributions of science and technology in our world.

Means of Assessment (Measurement Method)

Students were assessed during either the Fall 2025 or Spring 2026 semesters. Assessments occurred in 101 sections and resulted in a total of 6,652 assessments.

Summary of Evidence

Table 1: Number and Percent of students scoring 3 or Higher on the GEO.

GEO #	General Education Outcome	# 3 or higher	% 3 or higher
1	Students successfully completing a course in this area will be able to apply a problem-solving strategy such as the scientific method or other systematic process of inquiry and to recognize the contributions of science and technology in our world.	5,947	89.40%

List of courses where outcomes were mapped to the GEO (32 Unique Courses).

ANAT-101	BIOL-131	CHEM-212	EMS-022	MICRO-150
ANAT-150	BIOL-131H	CHEM-213	EMS-067	PHYSIC-111
ANAT-151	CHEM-101	CIS-091	GEOG-102	PHYSIC-250
ANAT-159	CHEM-102	CIS-101	GEOG-102H	PHYSIC-252
BIOL-100	CHEM-123	CIS-113	HIT-101	
BIOL-130	CHEM-150	CSCI-110	MATH-251	
BIOL-130H	CHEM-151	CSCI-240	MICRO-102	

Use of Results/Proposed Actions – Individual Submissions

1	<i>Several adjustments were made throughout the semester to better support students with no prior experience in physics. For example, lectures incorporated a progression of examples, ranging from basic to more advanced, allowing students to practice in collaborative group settings. Additionally, more handouts were provided to ensure students had resources for independent study. A significant improvement in student performance was observed after the first quiz, indicating the effectiveness of these strategies.</i>
2	<i>* Try new strategies? No, continued with supporting students in lecture and promote tutoring center, office hours, and other campus services available to students.* Add content? Continued with providing practice questions, exam preps, and providing in lecture support.* See notable improvement in class performance? Yes, due to met needs of SLO.* Identify any learning gaps? Yes, traditional vs non-traditional students had a tendency to come to class more often.* Try new strategies? Open to Tutoring center implementing embedded SI* Make recommendations for content, assessment, or SLO modification? SLOs are revisited every so often.</i>
3	<i>16 week semester pacing seemed to work well.Need to give more time to equilibrium calculationsNeed to figure out pacing of lab experiments better.</i>
4	<i>16 week semester was new and the pace seemed to work.Will add problems to problem sessions to help with math.Work on pacing of laboratory experiments.</i>
5	<i>All students who completed CHEM 123 successfully passed the course, earning grades of A or B, with the majority earning an A. The fully online format incorporated interactive modules, frequent low-stakes assessments, and structured review activities, which supported strong student performance. No significant learning gaps were identified among course completers. In future offerings, these strategies will be continued, with minor refinements to engagement activities and assessment pacing to further support student success in the online environment.</i>
6	<i>Although the overall success rate was 63%, indicating that the goals were somewhat met, continued efforts will be made to strengthen student understanding and performance. Proposed actions include increasing targeted review activities, incorporating additional practice opportunities, and reinforcing key concepts through active learning strategies. Student feedback and assessment results will be used to identify areas of difficulty and guide instructional adjustments for future semesters</i>
7	<i>Assessment needs overhaul.</i>
8	<i>Based on the analysis of student performance data, the class successfully met and exceeded the established SLO target. Instructional strategies, consistent formative assessment practices, and targeted student support contributed to strong overall achievement and engagement. Moving forward, effective instructional practices will be maintained and refined to continue promoting high levels of student success. Additional opportunities for enrichment, critical thinking, and differentiated instruction will be incorporated to further challenge students and sustain academic growth.</i>
9	<i>Content review to meet new course outline of record for Fall 2026</i>
10	<i>continue introducing Student Learning Outcomes at the beginning of each class and review throughout the lesson and help with student's needs as the lesson/class progresses.</i>

11	<i>Continue teaching with current method.</i>
12	<i>Continue to use instant feed back manikins to give students real time information.</i>
13	<i>Continue using real time feed back manikins</i>
14	<i>Document Critical Thinking Success: Archive student work that demonstrates the transition from rote memorization to synthesis and data analysis, justifying the high A/B rate (94%) as earned mastery. Validate Assessment Rigor: Conduct a brief audit of exam questions to show they required deductive reasoning and troubleshooting, rather than simple recall.</i>
15	<i>Eleven students completed the course, with eight earning grades of A or B, resulting in a success rate of 72.7%. The remaining three students earned a D, which allowed them to receive units but did not meet the prerequisite requirement for CHEM 213. During the course, supplemental problem-solving strategies and targeted review sessions were implemented to support student learning. While overall performance was strong, challenges were observed in multi-step reaction mechanisms and synthesis planning, indicating areas for reinforcement. In the future, additional scaffolded practice, earlier assessment checkpoints, and minor alignment adjustments to assessments and SLOs will be considered to address identified learning gaps and improve student outcomes.</i>
16	<i>Expectations were met, however a better more rigorous analysis system is needed.</i>
17	<i>Have as many instructors available to be able to provide as much one on one instruction as possible. Add in verbal information to supplement the video.</i>
18	<i>Holding the student to a higher standard because they are honors is important and if they are not doing their work, dropping them from the course.</i>
19	<i>Honors requirement maybe too much for these students.</i>
20	<i>Honors requirements may be a little too much for these students.</i>
21	<i>huge learning gap due to weakness in math. more support is needed outside the classroom. student motivation activities should be included, very few students took advantage of extra credit opportunities.</i>
22	<i>I attempted new strategies this term with mixed success. I think I have identified shortcomings in the process and made corrections for next term.</i>
23	<i>I think reaching out to students that are not turning in work is the best thing for this class. We do not meet in person but if I see someone struggling sending a letter to them to check on them is the best thing and then dropping them if I do not get a reply or if their performance continues, dropping them from the course</i>
24	<i>I used different strategies, such as activities, assignments, and assessments, adjusted to meet students' different learning needs, readiness levels, interests, and abilities. In the future will you will explore new teaching strategies and refine pacing, assessments, and SLO targets to better support student growth.</i>
25	<i>I will continue to write the Student Learning Outcomes on the white board and review them before each class. I could try to have a classroom discussion about the SLO's to generate more interest/excitement about the day's learning objective.</i>

26	<i>I will continue working directly with students due to the smaller class size and the hands-on experience provided through dissection activities.</i>
27	<i>Identify any learning gaps?* Notice that many students are having trouble understanding the reading material or managing their time effectively. Try new strategies? Closely follow up with students who start missing classes or stop attending, and advise them about the possibility of dropping the class rather than remaining enrolled without attending and receiving a failing grade. "According to students, they believe that if they fail, they will be able to retake it and that it won't show on their transcripts."</i>
28	<i>Identify any learning gaps?* Notice that many students are having trouble understanding the reading material or managing their time effectively. Try new strategies? Closely follow up with students who start missing classes or stop attending, and advise them about the possibility of dropping the class rather than remaining enrolled without attending and receiving a failing grade.</i>
29	<i>Identify any learning gaps?* Note that many students struggle to understand the reading material or manage their time efficiently. Try new strategies? Monitor students who begin missing classes or stop attending, and inform them of the option to drop the course rather than remain enrolled, absent, and earn a failing grade.</i>
30	<i>In this section of CHEM 123, most students earned an A, with a few earning a B, resulting in a 94% success rate. This section was notable in that no students dropped the course; however, one student earned a D and one student received an FW due to non-participation. Course strategies and content effectively supported student learning for engaged students. In future offerings, early intervention and engagement monitoring will continue to be emphasized to support student success in the fully online format.</i>
31	<i>In this section of CHEM 123, most students earned an A, with a few earning a B, resulting in a 97% success rate. One student earned a C and one student received an FW due to non-participation. Overall, course content and instructional strategies effectively supported student learning for engaged students. Future offerings will continue to emphasize early outreach and engagement monitoring in the fully online environment.</i>
32	<i>In this section of CHEM 123, most students who remained engaged successfully completed the course; however, two students earned a D and one student earned an FW due to non-participation. The primary challenge identified was student disengagement rather than content mastery. Course strategies and content were effective for active participants. In future offerings, earlier outreach, enhanced progress monitoring, and additional engagement checkpoints will be implemented to reduce attrition and support persistence in the fully online format.</i>
33	<i>Instruction. Identify any learning gaps?* Notice that many students are having trouble understanding the reading material or managing their time effectively. Try new strategies? Closely follow up with students who start missing classes or stop attending, and advise them about the possibility of dropping the class rather than remaining enrolled without attending and receiving a failing grade. "According to students, they believe that if they fail, they will be able to retake it and that it won't show on their transcripts."</i>
34	<i>It meets the 65% target. No actions at this time.</i>
35	<i>Keep everything the same, student success was great this semester.</i>

36	<i>Low attendance at lecture for a significant portion of the class, low completion of online homework. Not sure why this particular section scored so much lower on everything.</i>
37	<i>Low completion rate for online homework and low attendance rates for a few students but otherwise this section was very successful.</i>
38	<i>Made sure that the students had a high enough student to instructor ratio to make sure they got as much one on one instruction as possible. Also adding in verbal lecture on top of the video information.</i>
39	<i>Make sure we have enough instructors to provide as much of a one on one instructor opportunity as possible. Add supplemental instruction to the video.</i>
40	<i>Making sure that the students have as many instructors as possible for as much one on one instruction as possible. Also adding supplemental instruction to help with the video.</i>
41	<i>Making sure there are enough instructors to make sure there's as much one on one instruction as possible. Adding verbal information to supplement the video.</i>
42	<i>Making sure we had enough instructors to provide the students as much one on one instruction as possible. Along with providing supplemental instruction on top of the video.</i>
43	<i>Met target. No proposed actions at this time.</i>
44	<i>Modified teaching strategy for writing double displacement reactions with ion tiles, saw improvement in test scores on those questions. Next semester will adjust points distribution so more students will choose to do mastering chemistry online homework.</i>
45	<i>More class exercises for practice.</i>
46	<i>One success I have had this semester was implementing in-class group discussions of case studies. I noticed that after we started these discussions, there was a significant improvement in scores on the third and fourth lecture exams compared to the first. Looking ahead, I want to add more low-stakes practice sessions, like ungraded quizzes, to help students feel more confident before lecture exams.</i>
47	<i>Overall, students performed well in the course and demonstrated progress toward the Student Learning Outcomes. Instructional strategies included the addition of new content and activities designed to improve engagement and application of biological concepts. While student performance was generally strong, assessment review indicated a need for more direct alignment and reporting tied specifically to individual SLOs. This will help better identify strengths, learning gaps, and areas needing improvement. Moving forward, strategies will include refining assessment methods to more clearly measure SLO achievement and considering modifications to course content, assessments, and SLO language where appropriate to improve clarity and measurable outcomes.</i>
48	<i>Review course content for course outline of record changes coming for Fall 2026</i>
49	<i>Revise SLOs, update repetitious ones and include new ones to focus on other aspects of the course, not solely the laboratory. Microbiology requires more than analyzing the Unknown Project grandfathered in from professor Shimeld's course design. I propose integrating additional ILOs (2, 5, possibly 4). As well as integrate Communication and Skillset PLOs. This will ideally require recrafting assignments and content to be able to measure these. The Microbiology Series have been largely successful at completing the goals of training students beyond the classroom. Proposals arise on increasing retention beyond the first or second</i>

	<i>term (recruitment and retention) and regarding expanding the basic levels of research performed due to limited materials (financial support for materials).</i>
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51	<i>Several adjustments were made throughout the semester better to support students with no prior experience in physics. For example, lectures incorporated a progression of examples, ranging from basic to more advanced, allowing students to practice in collaborative group settings. Additionally, more handouts were provided to ensure students had resources for independent study. A significant improvement in student performance was observed after the first quiz, indicating the effectiveness of these strategies.</i>
52	<i>SLOs 1, 2, and 4 are closely connected through the need for a strong algebra foundation. I will continue to identify and review math deficiencies through pre-assessments and recognize the importance of incorporating targeted math reviews throughout the course. Mathematical proficiency is a strong predictor of student success in chemistry, as many core chemistry concepts rely heavily on algebraic reasoning and problem-solving skills.</i>
53	<i>SLOs were met</i>
54	<i>Structured discussion groups</i>
55	<i>student need more time to prepare for exams. lecture time too short as well.</i>
56	<i>Student performance in this section was outstanding, with nearly the entire cohort achieving mastery of the SLOs. This success validates the current use of accessible course materials and student-centered pacing. In future terms, I will continue to refine these resources based on this semester's feedback to ensure the content remains relevant to non-majors while maintaining the academic rigor required for physical science credit.</i>
57	<i>Student performance was good this term with goals met. There continues to be room for improvement, could be worth rethinking lab schedule and topics.</i>
58	<i>Success will continue through consistent Canvas announcements, classroom announcements, collaboration with the Tutoring Center, STEM Center, SAS office, and regular office hours. These strategies are expected to support continued student success and help address any learning gaps. There are no planned modifications to the SLOs at this time.</i>
59	<i>Target of 65% was met for all SLO's no proposed action at this moment.</i>
60	<i>Targeted Scaffolding: Develop supplemental OER "Bridge Modules" for the course's most difficult concepts. These resources will provide extra support for students who struggle with the initial transition to higher-level chemistry. Practical Relevancy Links: Open each module with a "Why this matters" real-world</i>

	<i>application (e.g., Green Chemistry in consumer products) to build intrinsic interest beyond just earning a grade.</i>
61	<i>The strategies I implemented during this course seemed to have worked. I will continue to utilize them in the future.</i>
62	<i>The strategies I implemented during this semester seemed to have worked. I will continue to utilize them in the future.</i>
63	<i>The Student Level Reporting was based on the Reworked Rubric: 4 = A & B grades 3 = C grades 2 = D grades 1 = F grades Using the reworked rubric, this section met department SLO goals. The class performances were as expected. I did note however, two major grouping. Many students 22 or so consistently performed well driving the average up for the students who performed poorly. Poor performing students had a lower attendance on average often missing a few exams. The learning gaps mainly are attributed to lack of attendance. I don't know, however, what events lead to students missing classes. Perhaps, improving my weekly check in times for missing students to ensure students can get the help they need through any support services that the campus has to offer. Strategies - In addition to building upon accessible study materials and low-stakes practice items, I will continue to enhance the "outside" of classroom work, such as STEM Center Drop-In Sessions and Zoom Study Sessions.</i>
64	<i>The target of 65% has been reached. No Proposed actions at this time.</i>
65	<i>There were students who did not turn in work. Need to work on strategies to motivate them to turn in work.</i>
66	<i>These students were among the best I have taught in recent years; they are truly our future doctors and dentists. They successfully utilized provided instructional tools to develop their own scholarly approaches. I intend to use their feedback to continue implementing these effective strategies and to design new tools that will support the success of future scholars in this course.</i>
67	<i>This section did meet the department criteria of 70%. However, the overall percentage should be higher. In previous semesters, my morning sections have performed lower than my evening sessions. The class performance may be affected by the class being scheduled so early. Strategies to improve class performance include STEM Center, Group Sessions, Tutoring or More Zoom Sessions.</i>
68	<i>This section met our department goal of greater than 70% (85.8%). Of all my sections, this section performed the best. Like other sections, to increase class performance, I will push for more student services like the STEM Center and Tutoring Services. I will also try to hold more review sessions in the STEM Center as well as online (Zoom).</i>
69	<i>This section met the departmental goal of 70% or greater (73.3%). Strategies to increase class performance - Push for additional student services like the STEM Center and Tutoring Services. I will try to implement for review study sessions in the STEM Center and review sessions online (ZOOM).</i>
70	<i>This section saw exceptional performance, with 100% of the 43 students earning an A or B. This level of success in a non-majors physical science course indicates that the current instructional approach and scaffolding are highly effective. I will continue to utilize these engagement strategies and proactive communication to maintain these high retention and success rates in future terms.</i>

71	<i>This section successfully met our department score of 70%. Like with section 01, to improve class performance would be to push more student services like STEM Center and Tutoring Services. I will implement more review sessions both online (zoom) or in person through the STEM Center.</i>
72	<i>This student outcomes for this semester improved greatly from fall of 2025. I experienced a connection with my students this semester that I have not experienced in the past. Since their performance was better, I can conclude that this improved relationship contributed to their performance in some way, but I cannot attribute this to any specific action taken on my part. Remaining a strong and consistent advocate for student learning by incorporated scaffolding for difficult subjects, making myself available to my students, and understanding the challenges they experience will continue to be my focus.</i>
73	<i>To assist students in doing well, I provided them with review sheets/study guides for each chapter, practice quizzes for each chapter and collected verbal feedback about the course after the 2nd exam. Students provided feedback and their suggestions were implemented in the course for the rest of the semester. Student performance improved on the remaining lecture exams. In the future all study guides and practice quizzes will be provided ahead of time.</i>
74	<i>Tried new engagement strategies and study techniques. Offered more office hours to equitably target all students. Learned most students know to attend lab with it being 40% of the grade, ignoring being in lectures. Future: Update syllabus. Update class activities and study time.</i>
75	<i>Tried new strategies. Connected learning objectives. Implemented critical thinking. Real world examples.</i>
76	<i>Try new strategies to better manage group projects.</i>
77	<i>Try to do better job in Group Projects and apply different strategies for individual students' assessments.</i>
78	<i>Using the reworked rubric, this section met department SLO goals. The class performances were as expected. I did note however, two major grouping. Many students 22 or so consistently performed well driving the average up for the students who performed poorly. Poor performing students had a lower attendance on average often missing a few exams. The learning gaps mainly are attributed to lack of attendance. I don't know, however, what events lead to students missing classes. Perhaps, improving my weekly check in times for missing students to ensure students can get the help they need through any support services that the campus has to offer. Strategies - In addition to building upon accessible study materials and low-stakes practice items, I will continue to enhance the "outside" of classroom work, such as STEM Center Drop-In Sessions and Zoom Study Sessions.</i>
79	<i>Using the reworked rubric, this section met department SLO goals. The class performances were as expected. I did note, however, two major grouping. Many students 24+ or so consistently performed well driving the average up for the students who performed poorly. Poor performing students had a lower attendance on average often missing a few exams. The learning gaps mainly are attributed to lack of attendance. I don't know, however, what events lead to students missing classes. Perhaps, improving my weekly check in times for missing students to ensure students can get the help they need through any support services that the campus has to offer. Strategies - In addition to building upon accessible study materials and low-stakes practice items, I will continue to enhance the "outside" of classroom work, such as STEM Center Drop-In Sessions and Zoom Study Sessions. Currently, I am improving my practice items and coordinating with the STEM center to have more frequent Drop-in Sessions.</i>
80	<i>Very strong group of students. Towards the end some got "senioritis" and stopped studying for quizzes.</i>

81	<i>Will continued as plan.</i>
82	<i>Will focus more on course exercises then powerpoint presentation.</i>
83	<i>With my co-lead we were able to adapt and overcome challenges and better stream line the program to better fit the needs of the student and of the staff at the adjoining companies.</i>
84	<i>work on unified department criteria</i>
85	<i>work with department committee to standardize evaluations</i>
86	<i>Yes, I will try new strategies.</i>