Academic Program Assessment Report

Assessment is a term commonly used to encompass the process of gathering and using evidence to guide improvements.

SACSCOC requires that an institution "identifies expected outcomes, assesses the extent to which it achieves these outcomes, and provides evidence of seeking improvement based on analysis of the results".

Be sure to SAVE your progress as you work!

Academic Program
Chemistry, B.S.

Submission Due Date
2024-2025

Assessment Coordinator Name
Whitney Craig

Enter Assessment Coordinator Email
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Program Goal

Goal

Goal 1

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Students will have an understanding of chemistry content knowledge
Previously: Prepare students well. Prepared students possess a range of skills and knowledge.

Pillar of Success Supported
Graduates Who Are Gainfully Employed or Admitted to Graduate School

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Demonstrate overall understanding of chemistry. Students perform well on national assessment (used the Diagnostic of Undergraduate Chemistry Knowledge (DUCK) published by the American Chemical Society).

Timeframe for this Outcome
2023-2024

Performance Target for "Met"
Average score on DUCK18 is 50th percentile or higher.

Performance Target for "Partially Met"
Average score on DUCK18 between 25th and 49th percentile.

Performance Target for "Not Met"
Average score on DUCK18 is below 25th percentile.

Assessment Measure Used
Diagnostic of Undergraduate Chemistry Knowledge (DUCK) published by the American Chemical Society

Frequency of Assessment
DUCK administered in every spring in capstone course (PSCI 499).

Data Collected for this Timeframe (Results)
Average percentile score for the 15 students taking this exam was between the 15th and 19th percentile based on the American Chemical Society Division of Chemical Education Composite Norms (Average score 24.6/60)

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
We formally used the MFT for many years as it is nationally normed. The MFT is an overall exam at the very end of the program. Thus, it can sometimes be nearly 3 years since a student will have learned a concept that is covered on this exam. This causes difficulty because while these data are easily collected, it is not clear how to use them to improve the program as the only percentile information is now associated with the overall score, not the individual subsections. Additionally, the MFT is computer based and the department and assessment committee are unable to review questions to verify if the questions reflect our student learning goals for each course.

To be able to better assess the questions and subsections on the exam, the Diagnostic of Undergraduate Chemistry Knowledge (DUCK) published by the American Chemical Society was utilized. The students completing the exam in spring 2024 were an initial baseline to understand the current level of student knowledge and retention given a disruption from traditional foundational instruction due to COVID-19. This exam is paper based for ease of evaluation and is nationally normed much like the MFT exam. The Chemistry Assessment committee plans to meet and review questions on the exam and determine the utility of the exam as an assessment of chemistry knowledge.

Previously, we had expressed a desire to move to exams created by the American Chemical Society (ACS) that can be given at the end of a course. From Fall 2022 Spring 2024 academic year, we had significant turnover in the department and college. We have onboarded 7 new faculty members during this time, have had a new dean appointed, had a new provost appointed, and had 2 faculty leave the department. As a result, we have not begun the review process of the DUCK exam or incorporating discipline specific end of course exams for each subarea of chemistry.

Resources Needed to Meet/Sustain Results
We used college funding to purchase ACS exams across all disciplines of chemistry. If specific discipline exams were incorporated, funding would be used to purchase these. We will also need to work with administration to resolve the logistical challenges needed to administer the exams outside of the regularly scheduled lecture times as the exams are longer than the standard lecture length.

Explanation of How Resources Will Be Used
Exams were purchased for each student enrolled. To give exams for the students enrolled in all of the possible courses will cost $194.40 including shipping. This is a $49.10 reduction in cost compared to the previously used MFT. Discipline exams are not included in this total.

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Demonstrate overall understanding of chemistry. Students perform well in undergraduate research and on internships.

Timeframe for this Outcome
2023-2024

Performance Target for "Met"
Above 2.0 on department rubrics (content questions).

Performance Target for "Partially Met"
Between 1.5 and 1.9 on department rubrics (content questions).

Performance Target for "Not Met"
Below 1.5 on department rubrics (content questions).

Assessment Measure Used
Departmental rubric for research/internships

Frequency of Assessment
End of every semester in which students enroll in a research class or an internship.

Data Collected for this Timeframe (Results)
Data was not collected using department rubrics.

Score (Met=3, Partially Met=2, Not Met=1)
2

Comments/Narrative
We only partially met this outcome. This year's results do not directly compare to previous years

because of modifications to the rubric.

We have structural problems we must resolve with regards to this presentation. We had been advocating for conference-like presentation setting for students in which we would hold the event outside of class time due to time constraints of a 50- or 75- minute class. There was significant pushback from the department against such an event. In addition, by having the students give presentation during the PSCI 499 class time, we had very limited faculty input.

Furthermore, we are now realizing that large chunks of our program evaluation are highly dependent on the individual teaching the class. This is a not a criticism of whoever is teaching the class. Rather, this is acknowledgement that we have created a program assessment metric which is not standardized and validated across multiple reviewers. When there are large numbers of faculty evaluating the presentations, the variance between individuals gets averaged out. However, when there is faculty participation is limited, the presentations are being scored by just two or three faculty. And in this case, lack of clarity of what we are trying to achieve with the presentations combined with lack of standardization across faculty using the instrument cause significant variation.

This goal was voted to be removed from program assessment during the 2023-2024 academic year. It will be deleted as an outcome in the 2024-2025 academic year. If it is reworked or replaced with another goal, it will be added separately.

Resources Needed to Meet/Sustain Results
This goal was voted to be removed from program assessment during the 2023-2024 academic year.

Explanation of How Resources Will Be Used
This goal was voted to be removed from program assessment during the 2023-2024 academic year.

Outcome 3

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Demonstrate overall understanding of chemistry. Students present good senior seminar presentations. (This outcome will be separated into its own goal to assess specific scientific communication as voted in the Department during the spring of 2024. It will be separated in its own goal during the 2024-2025 Assessment
Goal: Students are able to communicate scientific information
Outcome 1: Demonstrate scientific communication skills (PSCI 499 Mock Interviews, PSCI 499 Scientific Presentations))

Timeframe for this Outcome

2023-2024

Performance Target for "Met"
Summary score above 25 on seminar evaluation form.

Performance Target for "Partially Met"
Summary score a 19 -24 on seminar evaluation form (content questions).

Performance Target for "Not Met"
Summary score below 19on seminar evaluation form (content questions).

Assessment Measure Used
Content-related items from seminar evaluation form of senior seminar presentations.

Frequency of Assessment
Every spring in capstone course (PSCI 499).

Data Collected for this Timeframe (Results)
The average score for the 14 students on the content questions on rubric was 32

39/39 points earned = 100
32/39 points earned = 90
25/39 points earned = 80
19/39 points earned = 70
less than 19 points earned = encore performance in order to pass this assignment

Score (Met=3, Partially Met=2, Not Met=1)
3

Comments/Narrative
This year's results do not directly compare to previous years because of modifications to the rubric.

We have structural problems we must resolve with regards to this presentation. We had been advocating for conference-like presentation setting for students in which we would hold the event outside of class hours. There was significant pushback from the department against such an event. In addition, by having the students give presentation during the PSCI 499 class time, we had very limited faculty input, often limited to the instructor of record solely.

The PSCI 499 instructor of record has brought forward multiple times in assessment committee meetings and department meetings that the majority of our program evaluation are highly dependent on the individual teaching the class and has expressed deep concern that the measurements and data collection is not fully representing all faculty views and student growth over multiple semesters. This was an acknowledgement that we have created a program assessment metric which is not standardized and validated across multiple reviewers. When there are large numbers of faculty evaluating the presentations, the variance between individuals gets averaged out. However, when there is faculty participation is limited, the presentations are being scored by just two or three faculty. And in this case, lack of clarity of what we are trying to achieve with the presentations combined with lack of standardization across faculty using the instrument cause significant variation.

This is another reason we are putting significant focus during the 2023-2024 year on updating our program assessment.

(This outcome will be separated into its own goal to assess specific scientific communication as voted in the Department during the spring of 2024. It will be separated in its own goal during the 2024-2025 Assessment.)

Resources Needed to Meet/Sustain Results
Articles have been published identifying metrics and rubrics that are broad enough to be utilized by multiple courses and specific to chemistry:

Doug Czajka, Gil Reynders, Courtney Stanford, Renée Cole, Juliette Lantz, and Suzanne Ruder, “A Novel Rubric Format for Providing Feedback on Process Skills to STEM Undergraduate Students,” Journal of College Science Teaching, 2021, 50, 48-56.

Gil Reynders, Juliette Lantz, Suzanne Ruder, Courtney Stanford, and Renée Cole, “Rubrics to Assess Critical Thinking and Information Processing in Undergraduate STEM Courses" International Journal of STEM Education, 2020, 7, 1, 1-15DOI: 10.1186/s40594-020-00208-5

Gil Reynders, Erica Suh, Renée S. Cole, and Rebecca Sansom, “Developing Student Process Skills in a Freshmen Chemistry Laboratory” Journal of Chemical Education, 2019, 96, 10, 2109-2119DOI: 10.1021/acs.jchemed.9b00441

Renée Cole, Gil Reynders, Suzanne Ruder, Courtney Stanford, Juliette Lantz, “Constructive alignment beyond content: Assessing professional skills in student group interactions and written work,” in Research into Practice in Chemistry Education - Advances from the 25th IUPAC International Conference on Chemistry Education 2018. Editors: Madeleine Schultz, Siegbert Schmid, and Gwen Lawrie, Springer, 2019. (Invited)DOI: 10.1007/978-981-13-6998-813

We need training to help us figure out how we want to progress. The Chronicle of Higher Education offers a variety of training options for faculty, some of it free, some of it for a fee. Having access to $2000 to cover potential training costs will likely be helpful.

Explanation of How Resources Will Be Used
Training will help us better understand program assessment and make it a more robust and useful process.

Outcome 4

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Demonstrate scientific communication skills. Students present research/internship well.

Timeframe for this Outcome
2023-2024

Performance Target for "Met"
Above 2.0 on department rubrics (presentation questions).

Performance Target for "Partially Met"
Between 1.5 and 1.9 on department rubrics (presentation questions).

Performance Target for "Not Met"
Below 1.5 on department rubrics (presentation questions)

Assessment Measure Used
Departmental rubric for research/internship.

Frequency of Assessment
End of every semester in which students enroll in a research class or an internship.

Data Collected for this Timeframe (Results)
No data were collected

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
We did not meet our target for this outcome.

Anecdotally, we believe that research and internships are a valuable part of our program and should continue to be utilized. However, as indicated last year, students are increasingly presenting in venues that make data collection difficult. And in 2022-2023, we failed to collect data for this outcome.

This outcome has been separated into a separate goal below for the 2023-2024 year and combined into a single goal to assess scientific communication as voted on by the department in the spring of 2024. This will be deleted in the 2024-2025 assessment.

Resources Needed to Meet/Sustain Results
This outcome has been separated into a separate goal below for the 2023-2024 year and combined into a single goal to assess scientific communication as voted on by the department in the spring of 2024. This will be deleted in the 2024-2025 assessment.

Explanation of How Resources Will Be Used
This outcome has been separated into a separate goal below for the 2023-2024 year and combined into a single goal to assess scientific communication as voted on by the department in the spring of 2024. This will be deleted in the 2024-2025 assessment.

Outcome 5

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Demonstrate scientific communication skills. Students have a good mock interview.
(This outcome will be merged with a separate goal in the 2024-2025 report.
Goal: Students are able to communicate scientific information
Outcome 1: Demonstrate scientific communication skills (PSCI 499 Mock Interviews, PSCI 499 Scientific Presentations))

Timeframe for this Outcome
2023-2024

Performance Target for "Met"
Summary score on mock interview evaluation forms above 85%.

Performance Target for "Partially Met"
Summary score on mock interview evaluation forms between 70%

Performance Target for "Not Met"
Summary score on mock interview evaluation forms below 70%.

Assessment Measure Used
Rubric for senior seminar (PSCI 499 mock interviews)

Frequency of Assessment
Every spring in capstone course (PSCI 499).

Data Collected for this Timeframe (Results)
Average was 88 for the 15 students.

Score (Met=3, Partially Met=2, Not Met=1)
3

Comments/Narrative
We met this outcome.

The feedback we are getting from the students is that PSCI 499 is too late to be doing the mock interview process. Most of them have already interviewed for jobs/graduate school by the time this activity occurs.

This outcome has been separated into a separate goal below for the 2023-2024 year and combined into a single goal to assess scientific communication as voted on by the department in the spring of 2024. This will be deleted in the 2024-2025 assessment.

Resources Needed to Meet/Sustain Results
Currently, the modifications to this metric are being made by the PSCI 499 instructor or record solely. Our program will need to assess this goal in depth and establish specific metrics to better analyze this goal so it is tailored to program and student success.

Explanation of How Resources Will Be Used
Training will help us better understand program assessment and make it a more robust and useful process.

Outcome 6

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge,

skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Demonstrate scientific communication skills. Students present their senior seminar well.

Timeframe for this Outcome
2023-2024

Performance Target for "Met"
Summary score above 32/39 on seminar evaluation forms (presentation items).

Performance Target for "Partially Met"
Summary score between 20 and 32 on seminar evaluation forms (presentation items).

Performance Target for "Not Met"
Summary score below 20 on seminar evaluation forms (presentation items).

Assessment Measure Used	**Frequency of Assessment**
Presentation-related items from evaluation form of senior seminar presentations.	Every spring in capstone course (PSCI 499).
Data Collected for this Timeframe (Results)	**Score (Met=3, Partially Met=2, Not Met=1)**
Average score for 15 students was 32.3	3

Comments/Narrative
This year's results do not directly compare to previous years because of modifications to the rubric and a vote to combine several outcomes previously in a separate goal.We have structural problems we must resolve with regards to this presentation. We had been advocating for conference-like presentation setting for students in which we would hold the event outside of class hours. There was significant pushback from the department against such an event. In addition, by having the students give presentation during the PSCI 499 class time, we had very limited faculty input, often limited to the instructor of record solely.The PSCI 499 instructor of record has brought forward multiple times in assessment committee meetings and department meetings that the majority of our program evaluation are highly dependent on the individual teaching the class and has expressed deep concern that the measurements and data collection is not fully representing all faculty views and student growth over multiple semesters. This was an acknowledgement that we have created a program assessment metric which is not standardized and validated across multiple reviewers. When there are large numbers of faculty evaluating the presentations, the variance between individuals gets averaged out. However, when there is faculty participation is limited, the presentations are being scored by just two or three faculty. And in this case, lack of clarity of what we are trying to achieve with the presentations combined with lack of standardization across faculty using the instrument cause significant variation.

*This outcome has been separated into a separate goal below for the 2023-2024 year and combined

into a single goal to assess scientific communication as voted on by the department in the spring of 2024. This will be deleted in the 2024-2025 assessment

Resources Needed to Meet/Sustain Results
Articles have been published identifying metrics and rubrics that are broad enough to be utilized by multiple courses and specific to chemistry:
Doug Czajka, Gil Reynders, Courtney Stanford, Renée Cole, Juliette Lantz, and Suzanne Ruder, “A Novel Rubric Format for Providing Feedback on Process Skills to STEM Undergraduate Students,” Journal of College Science Teaching, 2021, 50, 48-56.

Gil Reynders, Juliette Lantz, Suzanne Ruder, Courtney Stanford, and Renée Cole, “Rubrics to Assess Critical Thinking and Information Processing in Undergraduate STEM Courses" International Journal of STEM Education, 2020, 7, 1, 1-15DOI: 10.1186/s40594-020-00208-5

Gil Reynders, Erica Suh, Renée S. Cole, and Rebecca Sansom, “Developing Student Process Skills in a Freshmen Chemistry Laboratory” Journal of Chemical Education, 2019, 96, 10, 2109-2119DOI: 10.1021/acs.jchemed.9b00441

Renée Cole, Gil Reynders, Suzanne Ruder, Courtney Stanford, Juliette Lantz, “Constructive alignment beyond content: Assessing professional skills in student group interactions and written work,” in Research into Practice in Chemistry Education - Advances from the 25th IUPAC International Conference on Chemistry Education 2018. Editors: Madeleine Schultz, Siegbert Schmid, and Gwen Lawrie, Springer, 2019. (Invited)DOI: 10.1007/978-981-13-6998-813

Explanation of How Resources Will Be Used
Training will help us better understand program assessment and make it a more robust and useful process.

Goal Summary

Goal Summary/Comments
This was our last year using this particular Goal #1 to its current extent. This last academic year revealed many problems and short-comings in our process that we must address. We began focusing efforts into overhauling and updating our program assessment as it relates to goal #1 in Fall 2024 based on changes began in Spring 2024.
To date we have:
1) Moved away from the MFT as an externally normed exam to indicate student content knowledge. Because of a variety of factors, this exam did not provide data that was useful for improving program performance. We have shifted to the DUCK18 exam and will be reviewing the exam in the 2024-2025 academic year as an assessment committee.

2) Several goals were consolidated into one overall goal of assessing communication to better evaluate the assessment tools.

3) We must resolve low participation in the student seminar process. The lack of clarity about what we are trying to accomplish combined with low faculty involvement means that the data we collect are highly variant from year to year. Though there has been turnover within the college and department, it is essential that more faculty members take an active role in evaluating students instead of relying on one course and one instructor of record to assess all outcomes in this goal.

Changes Made/Proposed Related to Goal
We are putting significant focus and effort this year into major rethinking of program assessment. The system we have been using for the last 5 years is not helping us improve.

Upload Rubrics/Other Files
Mock Interview Rubric.pdf

Resume Final Rubric.docx

Peer Reviewed Paper Presentation - Copy.xlsx

DUCK18_Norm_Sheet_Aug23_final.pdf

Goal 2

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Goal #2: Build professional networks.
Strong linkages with our alumni, professional scientific community, employers, graduate schools, and local K-12 schools is vital to our success.

Building strong networks directly impacts pillars 1, 2, 3, 4, 5, 6, and 10. Since the form does not allow selection of more than one pillar, here is the argument for additional pillars:

Pillar #1: High-Demand, Market Driven Programs. By connecting to both the K-12 schools and employers/graduate schools, the Department will be able to keep our programs highly relevant to meet the demand of potential students as well as match the needs of prospective employers/graduate schools who will hire/admit our graduates.
Pillar #2: Selective, Competitive Recruitment and Enrollment of Ambitious and Talented Students. Developing connections with K-12 schools will help to build pipelines for us to identify, recruit, and enroll talented and ambitious students.
Pillar #3: Robust Student Experience. By cultivating connections, we will be better able to identify meaningful opportunities outside of the classroom for our students related to training (i.e. internships and research) as well as service/fun activities such as doing school outreach programs.
Pillar #4: Graduates Who Are Gainfully Employed or Admitted to Graduate School. Developing connections with employers/graduate schools will enhance our ability to ensure students are gainfully employed/admitted to graduate school.
Pillar #5: Advancement Activities Leveraged to Further University’s Mission. Developing connections with employers and alumni enhances the University’s ability to identify and secure funding from chemistry related sources.
Pillar #6: Engaged and Supportive Alumni. Developing our own connections with alumni perfectly aligns with the University’s efforts.
Pillar #10: High-Valued Community Partner. Developing connections with the community is the only mechanism through which we can become highly valued.

Pillar of Success Supported
Highly-Valued Community Partner

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge,

skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Total number of network contact events.

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Six or more events per year.

Performance Target for "Partially Met"
Between three and five network contact events per year.

Performance Target for "Not Met"
Less than three network contact events per year.

Assessment Measure Used
Counted events

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
See below

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
This goal was voted to be removed in Spring 2024.

Resources Needed to Meet/Sustain Results
N/A

Explanation of How Resources Will Be Used
N/A

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Diversity of network contact events.

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
All five networks are contacted.

Performance Target for "Partially Met"
Three or four networks are contacted.

Performance Target for "Not Met"
Less than three networks are contacted.

Assessment Measure Used
Counted

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
We had some virtual contacts with alumni.

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
This goal was voted to be removed in Spring 2024.

Resources Needed to Meet/Sustain Results
N/A

Explanation of How Resources Will Be Used
N/A

Outcome 3

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome

Quality of network contact events.

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Two or more network contact events are considered meaningful based on program rubric to evaluate quality.

Performance Target for "Partially Met"
One network contact event is considered meaningful based on program rubric to evaluate quality.

Performance Target for "Not Met"
No network contact events are considered meaningful based on program rubric to evaluate quality.

Assessment Measure Used
Counted events

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
See below.

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
This goal was voted to be removed in Spring 2024.

Resources Needed to Meet/Sustain Results
N/A

Explanation of How Resources Will Be Used
N/A

Goal Summary

Goal Summary/Comments
We developed this goal shortly before COVID. However, we never fully embraced it. At this point, based on the results for the last few years, we put no emphasis in actually achieving these goals.

We made no progress in 2022-2023 towards overhauling our program assessment. During the past year, we had significant turnover in the department and college. We now have 4 new faculty members, a new interim dean, and a new interim provost. As a result, we made no progress towards updating and improving assessment goals.

Some progress was made by the PSCI 449 instructor of record for this goal in the 2023-2024 academic year to involve members of the Greenwood Scientific community in the mock interview process, the department voted to remove this as a department goal mid Spring 2024. It will be removed next evaluation cycle.

Changes Made/Proposed Related to Goal
We plan to eliminate this goal and will use the 2023-2024 academic year to develop a new one.

Upload Rubrics/Other Files

Goal 3

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Goal #3: Be proactive in recruitment.
Engaging with prospective students will help us recruit and enroll talented students into our programs.

Pillar of Success Supported
Selective, Competitive Recruitment and Enrollment of Ambitious and Talented Students

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Total number of program recruitment events.

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Two or more program recruitment events per year.

Performance Target for "Partially Met"
One program recruitment event per year.

Performance Target for "Not Met"
No program recruitment events during the year.

Assessment Measure Used
Counted events

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
See below.

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
This goal was voted to be removed in Spring 2024

Resources Needed to Meet/Sustain Results
none.

Explanation of How Resources Will Be Used
NA

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Location diversity of program recruitment events.

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Both on and off-campus program recruitment events.

Performance Target for "Partially Met"
Only one type of program recruitment event.

Performance Target for "Not Met"
No program recruitment events.

Assessment Measure Used
Counted events

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
See below.

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
This goal was voted to be removed in Spring 2024

Resources Needed to Meet/Sustain Results
none

Explanation of How Resources Will Be Used
NA

Outcome 3

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Quality of program recruitment events.

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Two or more program recruitment events are considered meaningful based on program rubric to evaluate quality.

Performance Target for "Partially Met"
One program recruitment event is considered meaningful based on program rubric to evaluate quality.

Performance Target for "Not Met"
No program recruitment events are considered meaningful based on program rubric to evaluate quality.

Assessment Measure Used
Counted events

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
See below

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
This goal was voted to be removed in Spring 2024

Resources Needed to Meet/Sustain Results
none

Explanation of How Resources Will Be Used
NA

Outcome 4

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge,

skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Participation in Admissions recruitment events.

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Program participates in all open houses and offers class space for all Bearcat for a Day events.

Performance Target for "Partially Met"
Program participates in either all Open Houses or all Bearcat for a Day events, but not both.

Performance Target for "Not Met"
Program does not participate in Open Houses and does not participate in Bearcat for a Day events.

Assessment Measure Used
Counted events

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
Participated in all events

Score (Met=3, Partially Met=2, Not Met=1)
3

Comments/Narrative
This is outcome is easy to meet. It is simply to remind us of the importance of participating with University recruitment efforts. This goal was voted to be removed in Fall 2024.

Per Dean Yates request, our department should begin creating a 4-year guide page that is more user friendly for distribution at open houses.

Resources Needed to Meet/Sustain Results
NA

Explanation of How Resources Will Be Used
N/A

Goal Summary

Goal Summary/Comments
Several of these goals were voted to be eliminated. Because of this, many metrics were not collected.

Changes Made/Proposed Related to Goal
We plan to eliminate this goal and will use the 2023-2024 academic year to develop a new one.

Upload Rubrics/Other Files

Goal 4

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
To comply with Program Productivity standards as defined by the South Carolina Commission on Higher Education.

Pillar of Success Supported
High-Demand, Market-Driven Programs

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Major Enrollment

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Using a five-year rolling average, the number of students enrolled in the major (a) for Baccalaureate programs is greater than or equal to 12.5, (b) for Master’s/First Professional is greater than or equal to 6.

Performance Target for "Partially Met"
Not Applicable

Performance Target for "Not Met"
Using a five-year rolling average, the number of students enrolled in the major (a) for Baccalaureate programs is less than 12.5 (b) for Master’s/First Professional is less than 6.

Assessment Measure Used
Enrollment and Graduation data extracted from

Frequency of Assessment
Annually

Banner

Data Collected for this Timeframe (Results)
64.20

Score (Met=3, Partially Met=2, Not Met=1)
3

Comments/Narrative
See below.

Resources Needed to Meet/Sustain Results
N/A

Explanation of How Resources Will Be Used
N/A

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Completions (Degrees Awarded)

Timeframe for this Outcome
2022-2023

Performance Target for "Met"
Using a five-year rolling average, the number of degrees awarded (a) for Baccalaureate programs is greater than or equal to 8, (b) for Master's/First Professional is greater than or equal to 3.

Performance Target for "Partially Met"
N/A

Performance Target for "Not Met"
Using a five-year rolling average, the number of degrees awarded (a) for Baccalaureate programs is less than 8 (b) for Master's/First Professional is less than 3.

Assessment Measure Used
Enrollment and Graduation data extracted from Banner

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)

Score (Met=3, Partially Met=2, Not Met=1)

12.60	3

Comments/Narrative
See below.

Resources Needed to Meet/Sustain Results
N/A

Explanation of How Resources Will Be Used
N/A

Goal Summary

Goal Summary/Comments
Based on the enrollment in required lower-level courses right now, we expect that that are program productivity numbers will remain good. Likewise, the overall enrollment at the university level remains strong.

Changes Made/Proposed Related to Goal
Currently, we have no proposed changes specifically related to program productivity. The COVID pandemic impact on the educational preparation for our incoming students is not yet clear. Further, we are not yet sure how the pandemic will impact broader trends related to students seeking higher education and careers in the sciences. Yes, there is a national trend to stagnating and even falling enrollment. However, the enrollment numbers for the University as a whole continue to increase, so we are cautiously optimistic that our productivity numbers in chemistry will stay healthy. We will continue to monitor the situation with regards to program productivity.

We will continue to monitor the situation with regards to program productivity.

Upload Rubrics/Other Files

Goal 5

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Students understand important practices of science

Pillar of Success Supported
Graduates Who Are Gainfully Employed or Admitted to Graduate School

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of

performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Students understand and can apply principles of chemical and laboratory safety

Timeframe for this Outcome
2023-2024 Academic Year.

Performance Target for "Met"
No metrics or measurement tool were identified for this goal. No data was collected.

Performance Target for "Partially Met"
No metrics or measurement tool were identified for this goal. No data was collected.

Performance Target for "Not Met"
No metrics or measurement tool were identified for this goal. No data was collected.

Assessment Measure Used
NA

Frequency of Assessment
NA

Data Collected for this Timeframe (Results)
NA

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
No metrics or measurement tool were identified for this goal. No data was collected. Thought it was voted to be adopted by the department in early spring 2024, no metrics were discussed by the assessment committee or department and none were voted on for this assessment. It is not enough to sign a safety pledge for labs as graduates are entering chemical laboratories in a job and expected to have specific skills.

Resources Needed to Meet/Sustain Results
In order to evaluate this goal, safe practices must be identified to verify that students understand and can apply principles of chemical and laboratory safety.

Explanation of How Resources Will Be Used
NA

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention,

employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Students will learn how to analyze data

Timeframe for this Outcome
2023-2024 Academic Year

Performance Target for "Met"
NA

Performance Target for "Partially Met"
NA

Performance Target for "Not Met"
NA

Assessment Measure Used
NA

Frequency of Assessment
NA

Data Collected for this Timeframe (Results)
NA

Score (Met=3, Partially Met=2, Not Met=1)
1

Comments/Narrative
No metrics or measurement tool were identified for this goal. No data was collected. Thought it was voted to be adopted by the department in early spring 2024, no metrics were discussed by the assessment committee or department and none were voted on for this assessment. It is not enough to sign a safety pledge for labs as graduates are entering chemical laboratories in a job and expected to have specific skills.

Resources Needed to Meet/Sustain Results
In order to evaluate this goal, safe practices must be identified to verify that students understand and can apply principles of chemical and laboratory safety.

Explanation of How Resources Will Be Used
NA

Goal Summary

Goal Summary/Comments
This goal was not met due to it recently being established.

Changes Made/Proposed Related to Goal
In the 2024-2025 academic year, specific, measurable, time-sensitive, and attainable foals and metrics must be identified.

Upload Rubrics/Other Files

Goal 6

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Students are able to communicate scientific information

Pillar of Success Supported
Graduates Who Are Gainfully Employed or Admitted to Graduate School

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Demonstrate scientific communication skills (PSCI 499 Mock Interviews, PSCI 499 Scientific Presentations)

Timeframe for this Outcome
2023-2024

Performance Target for "Met"
Students score an 80% or above on all rubrics for this assessment

Performance Target for "Partially Met"
Students score a 60% or above on all rubrics for this assessment

Performance Target for "Not Met"
Students score less than a 60% or above on all rubrics for this assessment.

Assessment Measure Used
Rubrics within the PSCI 499 senior capstone course

Frequency of Assessment
Annually in the PSCI 499 Senior Capstone Course

Data Collected for this Timeframe (Results)
2023-2024

Score (Met=3, Partially Met=2, Not Met=1)
2

Comments/Narrative
These results are redundant with previous information in the form. In Spring 2024, the department voted to have this specific goal and rearrange specific outcomes under this category. Redundantly from above:

This year's results do not directly compare to previous years because of modifications to the rubric and a vote to combine several outcomes previously in a separate goal. We have structural problems we must resolve with regards to this presentation. We had been advocating for conference-like presentation setting for students in which we would hold the event outside of class hours. There was significant pushback from the department against such an event. In addition, by having the students give presentation during the PSCI 499 class time, we had very limited faculty input, often limited to the instructor of record solely. The PSCI 499 instructor of record has brought forward multiple times in assessment committee meetings and department meetings that the majority of our program evaluation are highly dependent on the individual teaching the class and has expressed deep concern that the measurements and data collection is not fully representing all faculty views and student growth over multiple semesters. This was an acknowledgement that we have created a program assessment metric which is not standardized and validated across multiple reviewers. When there are large numbers of faculty evaluating the presentations, the variance between individuals gets averaged out. However, when there is faculty participation is limited, the presentations are being scored by just two or three faculty. And in this case, lack of clarity of what we are trying to achieve with the presentations combined with lack of standardization across faculty using the instrument cause significant variation.
The feedback we are getting from the students is that PSCI 499 is too late to be doing the mock interview process. Most of them have already begun the interview process at this time or found jobs or been accepted into a graduate program.

Resources Needed to Meet/Sustain Results
Redundant from above:

Articles have been published identifying metrics and rubrics that are broad enough to be utilized by multiple courses and specific to chemistry:
Doug Czajka, Gil Reynders, Courtney Stanford, Renée Cole, Juliette Lantz, and Suzanne Ruder, “A Novel Rubric Format for Providing Feedback on Process Skills to STEM Undergraduate Students,” Journal of College Science Teaching, 2021, 50, 48-56.

Gil Reynders, Juliette Lantz, Suzanne Ruder, Courtney Stanford, and Renée Cole, “Rubrics to Assess Critical Thinking and Information Processing in Undergraduate STEM Courses" International Journal of STEM Education, 2020, 7, 1, 1-15DOI: 10.1186/s40594-020-00208-5

Gil Reynders, Erica Suh, Renée S. Cole, and Rebecca Sansom, “Developing Student Process Skills in a Freshmen Chemistry Laboratory” Journal of Chemical Education, 2019, 96, 10, 2109-2119DOI: 10.1021/acs.jchemed.9b00441

Renée Cole, Gil Reynders, Suzanne Ruder, Courtney Stanford, Juliette Lantz, “Constructive alignment beyond content: Assessing professional skills in student group interactions and written work,” in Research into Practice in Chemistry Education - Advances from the 25th IUPAC International Conference on Chemistry Education 2018. Editors: Madeleine Schultz, Siegbert Schmid, and Gwen Lawrie, Springer, 2019. (Invited)DOI: 10.1007/978-981-13-6998-813

Explanation of How Resources Will Be Used
Training will help us better understand program assessment and make it a more robust and useful process. Training is offered through the ELIPSS program.

Goal Summary

Goal Summary/Comments
Our department is taking steps to begin making target changes to our assessment plans. Communication has been separated into its own goal by the department. This should allow for the expansion of assessment to be throughout the course of a student's academic career and by multiple professors.

Changes Made/Proposed Related to Goal
Currently, we are putting significant focus and effort this year into major rethinking of program assessment. The assessment committee has proposed the use of two universal rubrics to assess communication in the 2024-2025 academic year.

Upload Rubrics/Other Files

Dean's Email Address
jyates1@lander.edu

Approved by Dean?

Signature of Dean

Comments from Dean's Review