

II A. Program Learning Outcome (PLO) assessment

If your department participated in the ILO assessment you may use this section to report on your student learning in relation to the assessed ILO. The assessment data can be requested from the Dean of Curriculum and Educational Effectiveness.

Program Learning Outcome	<p>1) Students will be experienced at reconciling Christian and secular scientific world views. They will be knowledgeable in the area of the interface between Christian Faith and science. They will have a perspective that integrates their scientific and theological beliefs into a seamless whole. <i>Outcome:</i> Most students will attain at least a <i>satisfactory</i> score (according to our grading rubric) on their senior integration of faith and learning paper as graded by two department readers. 30% of students will attain an excellent score or higher.</p> <p>Note: In 2018–2019 we participated in the ILO for writing and the 2019–2020 ILO for CUPA. These, fortunately, align very closely to our PLO for 2018–2019, so we requested permission to use our ILO data for this report.</p>
Who is in Charge /Involved?	<p>Contakes embedded an essay assignment in CHM-195 in the Spring of 2019. Everest corresponded with Lisa DeBoer, who is coordinating the ILO.</p>
<u>Direct Assessment Methods</u>	<p>Contakes scored the essays according to the ILO rubric. The entire department read a subset of six essays (two strong, two middle, two weak), and discussed them at a department meeting in September 2019. Everest summarized the findings, which were reviewed and approved by the entire department in October 2019.</p>
<u>Indirect Assessment Methods</u>	<p>(none)</p>

<p>Major Findings</p>	<p>(See Appendix I for Prompt, Rubric, and Scores)</p> <p>Seven out of thirteen received scores above 70% and five out of thirteen received scores of 80% or above, so we feel as though we have met our goal for numerical targets of most students obtaining satisfactory scores and 30% of our students performing at an excellent level.</p> <p>Our students, for the most part, write well about the relationship between chemistry and faith. Students demonstrate a wide range of modes of integration of Christianity and Chemistry which include: articulating Christian reasons to consider ethical implications of work in the field, reflecting on the physical world with a sense of awe and wonder because of our faith, expressing Christian motivations for the pursuit of truth about the physical universe, and using chemistry to pursue human flourishing.</p> <p>We find that our students are generally stronger at addressing the Christian audience than the secular audience. The arguments they offer to the general audience frequently assume Christian values or appeal to evidence that only Christians would take for granted. This was a particular instance of a more common problem of a lack of offering specific evidence. Students who offered specific examples or evidence tended to write much more compelling essays.</p>
<p>Closing the Loop Activities</p>	<p>We have specific ideas that might improve future outcomes. Some suggested changes pertain to the assessment tool itself, and some pertain to our program. For the tool itself, we believe that students will write more compelling essays if they are specifically prompted to include examples. Additionally, we believe that students will write better for a general audience if the prompt suggests a specific audience for students to imagine (e.g., members of the American Chemical Society through the pages of <i>C&E News</i>). For potentially beneficial modifications to the program itself, we believe that providing students an opportunity to write for a non-Christians earlier in the program (e.g., in faith integration essays in CHM-130 or CHM-131) will better equip our students to interpret Christian thinking on science/faith issues for a more general audience.</p>
<p>Collaboration and Communication</p> <p>This was a highly collaborative effort both within and outside the department.</p>	

Appendix I—Prompts, Rubrics, and Results for PLO Essays

Program Learning Outcome #3 for Chemistry

Students will be experienced at reconciling Christian and secular scientific world views. They will be knowledgeable in the area of the interface between Christian Faith and science. They will have a perspective that integrates their scientific and theological beliefs into a seamless whole.

Outcome: Most students will attain at least a *satisfactory* score (according to our grading rubric) on their senior integration of faith and learning paper as graded by two department readers. 30% of students will attain an excellent score or higher.

Prompt for essays

1. What does it mean to be a Christian in chemistry? As you answer this question, engage with concepts and language valued by professional chemists.
2. Imagine being asked to speak at a local church about the value of chemistry in Christian life. As you create talking points that answer this question, engage with concepts and language valued in the church. Be attentive to an audience with a range of education and experiences.

Appendix I, cont.—Rubric used in scoring CUPA Essays

	Excellent	Strong	Average	Initial	Inadequate
Christian Understanding (Head)	The essay provides a sophisticated and highly synthesized discussion of the most disciplinarily relevant biblical and theological themes.	The essay provides a strong, developed discussion of the most disciplinarily relevant biblical and theological themes	The essay provides a basic discussion of the most relevant biblical and theological themes.	The essay mentions biblical and theological themes, but not the most relevant ones , or does not develop the discussion.	The essay lacks appropriate biblical and theological grounding.
Christian Affections (Heart)	The essay develops a Sophisticated and highly synthesized argument for the relationship between biblically and theologically grounded convictions, and inner dispositions, virtues and desires.	The essay provides a strong, developed discussion of the relationship between biblically and theologically grounded convictions, and inner dispositions, virtues and desires.	The essay provides a basic discussion of relationship between biblically and theologically grounded convictions, and inner dispositions, virtues and desires.	The essay gestures toward a relationship between biblically and theologically grounded convictions, and inner dispositions, virtues and desires, but does not develop the discussion.	The essay lacks acknowledgement of any relationship between biblically and theologically grounded conviction, and inner dispositions, virtues and desires.
Christian Practices (Hands)	The essay ties Christian convictions to lived actions and choices with a clear, compelling, and committed voice .	The essay provides a strong, developed discussion of the relationship between Christian convictions and lived actions and choices.	The essay provides a basic discussion of the relationship between Christian convictions and lived actions and choices.	The essay implies there may be actions and choices that result from Christian conviction, but does not develop the discussion.	The essay lacks recognition of any connection between Christian conviction and lived actions and choices.

Appendix I, cont.—Student Essay Scores

	Score 1	Score 2	Score 3	Total	Percent
Student 1	5	5	4.5	14.5	97%
Student 2	5	4.5	5	14.5	97%
Student 3	5	5	4	14	93%
Student 4	4.5	4.5	4.5	13.5	90%
Student 5	4	4.5	4	12.5	83%
Student 6	4	3.5	4	11.5	77%
Student 7	3.5	4.5	3.5	11.5	77%
Student 8	3.5	3	3.5	10	67%
Student 9	3.5	3	3	9.5	63%
Student 10	3	3.5	3	9.5	63%
Student 11	2.5	3	3	8.5	57%
Student 12	2.5	3	2.5	8	53%
Student 13	3	2.5	2	7.5	50%

Note: Seven of 13 scored above a 70% (“satisfactory”), and five of 13 scored at 80% or above (“excellent”).