

Degree Program Name: BS in Chemistry

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Before you complete the form below, review your outcomes library and curriculum map to ensure that they are accurate and up to date. If not, you may submit a new version along with this summary.

Part One

<p>a. What learning outcomes did you assess this year?</p> <p>If this is a graduate program, indicate the <a href="#">Graduate Student Learning Outcome*</a> each outcome aligns with.</p>	<p>b. (1) What method(s) did you use to determine how well your students attained the outcome? (2) In what course or other required experience did the assessment occur?</p>	<p>c. What expectations did you establish for achievement of the outcome?</p>	<p>d. What were the actual results?</p>	<p>e. (1) Who was responsible for collecting and analyzing the results? (2) How were they shared with the program's faculty?</p>
<p>1. Fundamental Concepts</p>	<p>All students in Chem 405 took the Major Field Test (from the ETS) in chemistry.</p>	<p>The class as a whole will score at or above the 50<sup>th</sup> percentile in each of the four areas (physical, organic, inorganic, and analytical) as well as in the two assessment indicator areas (biochemistry and critical thinking) and except for an occasional student, no one will be below the 33<sup>rd</sup> percentile in any area.</p>	<p>In 2015-16, only 12 out of 27 students achieved better than the 50<sup>th</sup> percentile overall, while in 2016-17, 9 out of 15 students did. Averaging the two years, 50% of our students were in the top 50<sup>th</sup> percentile, which meets our standard. The test is also scored by subsection based on areas of chemistry (physical, organic, inorganic, analytical). We do not yet have comparative data for the current year, but in 2015-16, the number of students below the 33<sup>rd</sup> percentile in <i>two</i> or more areas was 12 out of 27.</p>	<p>Dr. Glendening administered the exam in Chem 405 in the fall semester each year. The results were discussed at a May 2017 faculty meeting.</p>

2. Problem Solving skills	Faculty in various courses chose selected questions designed to test problemsolving skills in a number of contexts to evaluate on the basis of how well each	Essentially all of the categories in the rubric will be rated at least "Fair" with most of them rated "Good" or better.	In some of the outcomes criteria (such as "Identify appropriate mathematical expressions. . . " the target of "Fair" or better was achieved, with about 98% meeting it in	Drs. Inlow, Wolf, Noll and Van Hovel contributed data based on exam questions in their courses. These were compiled by Dr. Rosenhein and were discussed at the
	chemistry major performed.		Chem 431 (out of 20 students in F 16). For "Using mechanistic principles. . . " 91% of the students in 352 were "Fair" or better and in the same course, 87% met that standard for "Identify unknown compounds. . . " In some cases the target was not achieved: For "Identify and use available resources to find information . . . " (57% Not acceptable in 461). Some courses were marginal: For "Propose a synthetic sequence," (~60% Fair or better, out of 23 majors in 352). For "Calculate quantities associated with chemical reactions. . . "(63% Fair or better in 461; 71% in 321.)	same meeting as above.

Student Learning Summary Report Rubric :: Office of Assessment & Accreditation :: Indiana State University

Degree Program: BS in Chemistry Date: 01.12.18

	Level 0 – Undeveloped	Level 1 – Developing	Level 2 – Mature	Level 3 – Exemplary
1. Student Learning Outcomes	<input checked="" type="checkbox"/> No outcomes were identified. <b>Just overarching categories of learning</b>  <input type="checkbox"/> No Curriculum Map was provided.	<input type="checkbox"/> Outcomes were identified.  <input type="checkbox"/> Some of the outcomes are specific, measurable, student-centered, program-level outcomes.  <input type="checkbox"/> A Curriculum Map was provided.	<input type="checkbox"/> Outcomes are specific, measurable, student-centered, program-level outcomes.  <input checked="" type="checkbox"/> Outcomes at least indirectly support Foundational Studies Learning Outcomes or the Graduate Learning Goals.  <input type="checkbox"/> The Curriculum Map identifies where/to what extent each outcome is addressed.  <input type="checkbox"/> At least one outcome was assessed in this cycle.	<input type="checkbox"/> Outcomes are important, specific, measurable, student-centered program-level outcomes that span multiple learning domains.  <input type="checkbox"/> Outcomes directly integrate with Foundational Studies Learning Outcomes or the Graduate Learning Goals.  <input type="checkbox"/> Outcomes reflect the most important results of program completion (as established by an accreditor or other professional organization).  <input type="checkbox"/> Learning outcomes are consistent across different modes of delivery (face-to-face and online.)  <input type="checkbox"/> Outcomes are regularly reviewed (and revised, if necessary) by the faculty and other stakeholders.  <input checked="" type="checkbox"/> The Curriculum Map identifies where/to what extent each outcome is

				<p>addressed and offers evidence that students have sufficient opportunity to master the associated learning outcomes.</p> <p><input checked="" type="checkbox"/> Two or more outcomes were assessed in this cycle.</p>
<p><b>2. Measures &amp; Performance Goals</b></p>	<p><input type="checkbox"/> No measures are provided.</p> <p><input type="checkbox"/> No goals for student performance are identified.</p>	<p><input type="checkbox"/> Measures are provided, but some are vague and/or do not clearly assess the associated outcomes.</p> <p><input type="checkbox"/> Measures are primarily indirect.</p> <p><input type="checkbox"/> Performance goals are identified, but they are unclear or inappropriate.</p> <p><input type="checkbox"/> Some performance goals are based on course and/or assignment grades, but there is no evidence that grades are calibrated to the outcomes.</p>	<p><input checked="" type="checkbox"/> At least one direct measure was provided for each outcome.</p> <p><input checked="" type="checkbox"/> Some information is provided to suggest that measures are appropriate to the outcomes being assessed.</p> <p><input checked="" type="checkbox"/> Clear and appropriate standards for performance are identified.</p> <p><input type="checkbox"/> Some performance goals are based on course and/or assignment grades, and general information is provided to demonstrate that grades are calibrated to the outcomes.</p> <p><input type="checkbox"/> Mechanisms used to assess student performance (rubrics, checklists, exam keys, etc.) were provided. <b>(Referenced but not provided)</b></p>	<p><input type="checkbox"/> Multiple measures were employed, and most are direct.</p> <p><input type="checkbox"/> Detailed information is provided to show that measures are appropriate to the outcomes being assessed.</p> <p><input type="checkbox"/> Measures assess some <a href="#">high impact practices</a> (internships, capstone course projects, undergraduate research, etc.)</p> <p><input type="checkbox"/> If students are required to pass a certification or licensure exam to practice in the field, this was included as a measure.</p> <p><input type="checkbox"/> Some measures allow performance to be gauged over time, not just in a single course.</p> <p><input type="checkbox"/> If a measure is used to</p>

				<p>assess more than one outcome, a clear explanation is offered to substantiate that this is appropriate.</p> <p><input type="checkbox"/> Clear and appropriate standards for performance are identified and justified.</p> <p><input type="checkbox"/> Mechanisms used to assess student performance (rubrics, checklists, exam keys, etc.) were summarized as well as provided to demonstrate that the measure provides specific evidence of what students know/can do.</p> <p><input type="checkbox"/> If performance goals are based on course and/or assignment grades, specific evidence is provided to demonstrate that grades are calibrated to the outcomes.</p>
<p><b>3. Results</b></p>	<p><input type="checkbox"/> No data are being collected.</p> <p><input type="checkbox"/> No information is provided about the data collection process.</p> <p><input type="checkbox"/> No results are provided.</p> <p><input type="checkbox"/> Students are meeting few of the performance</p>	<p><input type="checkbox"/> Some data are being collected and analyzed.</p> <p><input type="checkbox"/> Some results are provided.</p> <p><input type="checkbox"/> Insufficient information is offered to demonstrate that data collection, analysis, and interpretation processes are valid.</p>	<p><input checked="" type="checkbox"/> Data are being collected and analyzed.</p> <p><input checked="" type="checkbox"/> Results are provided.</p> <p><input checked="" type="checkbox"/> Some information is offered to demonstrate that data collection, analysis, and interpretation processes are valid and meaningful.</p> <p><input checked="" type="checkbox"/> Students generally are</p>	<p><input type="checkbox"/> Clear, specific, and complete details about data collection, analysis, and interpretation of results are provided to demonstrate the validity and usefulness of the assessment process.</p> <p><input type="checkbox"/> Students generally are achieving the performance standards expected of them and demonstrate continuous</p>

	standards set for them.	<input type="checkbox"/> Students are achieving some of the performance standards expected of them.	achieving the performance standards expected of them.	improvement on standards they have yet to achieve/achieve less well.  <input type="checkbox"/> If students are required to pass a certification or licensure exam to practice in the field, the pass rate meets the established benchmark.
<b>4. Engagement &amp; Improvement</b>	<input type="checkbox"/> No one is assigned responsibility for assessing individual measures.  <input type="checkbox"/> Assessment primarily is the responsibility of the program chair. <input type="checkbox"/> No improvements (planned or actual) are identified.  <input type="checkbox"/> No reflection is offered about previous results or plans.	<input type="checkbox"/> The same faculty member is responsible for collecting and analyzing most/all assessment results.  <input type="checkbox"/> It is not clear that results are shared with the faculty as a whole on a regular basis.  <input type="checkbox"/> Plans for improvement are provided, but they are not specific and/or do not clearly connect to the results.  <input type="checkbox"/> Little reflection is offered about previous results or plans.	<input checked="" type="checkbox"/> Multiple faculty members are engaged in collecting and analyzing results.  <input checked="" type="checkbox"/> Results regularly are shared with the faculty.  <input checked="" type="checkbox"/> The faculty regularly engages in meaningful discussions about the results of assessment.  <input checked="" type="checkbox"/> These discussions lead to the development of specific, relevant plans for improvement.  <input type="checkbox"/> Improvements in student learning have occurred as the result of assessment.	<input type="checkbox"/> All program faculty members are engaged in collecting and analyzing results.  <input type="checkbox"/> Faculty regularly and specifically reflect on students' recent achievement of performance goals and implement plans to adjust activities, expectations, outcomes, etc. according to established timelines.  <input type="checkbox"/> Faculty and other important stakeholders reflect on the history and impact of previous plans, actions, and results, and participate in the development of recommendations for improvement.  <input type="checkbox"/> Continuous improvement in student learning occurs as the result of assessment.

				<input type="checkbox"/> Outcomes and results are easily accessible to stakeholders on/from the program website.  <input checked="" type="checkbox"/> Assessment is integrated with teaching and learning.
Overall Rating	<input type="checkbox"/> Level 0 – Undeveloped	<input checked="" type="checkbox"/> Level 1 - Developing	<input type="checkbox"/> Level 2 – Mature	<input type="checkbox"/> Level 3 – Exemplary

No outcomes were listed in the report, only general categories of learning; to be consistent, I reduced the score on this item. Otherwise, the report would have earned a mature rating. Measures are aligned; standards are appropriate (especially given student performance); details were provided about how the results were arrived at; multiple faculty members are involved in assessing student learning; and they regularly engage in fruitful conversations about it. I do wonder how you are ensuring that results of the problem-solving assessment are representative of overall students' abilities?? Also, in your quest to help students retain information, you might consider techniques such as starting each class with a discussion of items they most commonly missed in the homework. It takes five minutes, and could be helpful.

Thank you!