

Program Assessment Plan

Program: BS in Chemical Biology
Department: Chemistry
College/School: College of Arts & Sciences
Date: Revised August 2021
Primary Assessment Contact: Marvin Meyers

Note: Each cell in the table below will expand as needed to accommodate your responses.

| # | Program Learning Outcomes | Assessment Mapping | Assessment Methods | Use of Assessment Data |
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| | <p>What do the program faculty expect all students to know, or be able to do, as a result of completing this program?</p> <ul style="list-style-type: none"> Note: These should be measurable, and manageable in number (typically 4-6 are sufficient). | <p>From what specific courses (or other educational/professional experiences) will artifacts of student learning be analyzed to demonstrate achievement of the outcome? Include courses taught at the Madrid campus and/or online as applicable.</p> | <p>What specific artifacts of student learning will be analyzed? How, and by whom, will they be analyzed?</p> <ul style="list-style-type: none"> Note: the majority should provide direct, rather than indirect, evidence of achievement. <p>Please note if a rubric is used and, if so, include it as an appendix to this plan.</p> | <p>How and when will analyzed data be used by faculty to make changes in pedagogy, curriculum design, and/or assessment work?</p> <p>How and when will the program evaluate the impact of assessment-informed changes made in previous years?</p> |
| 1 | <p>Explain major principles in organic chemistry, biochemistry, and pharmacology.</p> | <p>CHEM-2440 (organic chemistry) CHEM-4620 (biochemistry) CHEM-4470 (medicinal) PPY-4410 (molecular pharmacology)</p> | <p>ACS standardized exams for organic chemistry (CHEM-2440) and biochemistry (CHEM-4620) will be used to quantify student comprehension.</p> <p>Average exam scores in CHEM-4470 and PPY-4410 will be used to gauge student mastery of this learning outcome (Spring).</p> | <p>The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.</p> <p>Assessment data will be collected on a 3-year rotating basis. A summary of the results will be shared with the faculty annually and adjustments to the curriculum and/or assessment process will be made as needed.</p> |
| 2 | <p>Conduct laboratory techniques and experiments safely.</p> | <p>CHEM-2445 (organic chem 2 lab) CHEM-4625 (biochemistry 2 lab) CHEB-3970/CHEM-3970/BIOL-4980 (undergrad research)</p> | <p>A rubric will be used to collect student learning data from instructor/mentor evaluations for CHEM-2445 (organic chem 2 lab), CHEM-4625 (biochemistry 2 lab), and CHEB-3970/CHEM-3970/BIOL-4980 (undergrad research).</p> | <p>The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.</p> <p>Assessment data will be collected on a 3-year rotating basis. A summary of the results will be shared with the</p> |

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| | | | <p>The rubric for undergraduate research can be found at https://forms.gle/xMxxdpRfdookgBy38.</p> <p>The rubric will be completed by the course instructors and research mentors as they assess student mastery (Fall and Spring).</p> | <p>faculty annually and adjustments to the curriculum and/or assessment process will be made as needed.</p> |
| 3 | Analyze quantitative data. | <p>CHEM-2200 (analytical chemistry) CHEM-2205 (analytical chemistry lab) CHEB-3970/CHEM-3970/BIOL-4980 (undergrad research)</p> | <p>ACS standardized exam for analytical chemistry will be used to quantify student mastery (CHEM-2200/2205) (Fall and Spring).</p> <p>A rubric will be used to collect student learning data from CHEB-3970 mentor evaluations of student performance (Fall and Spring; excludes student in their first semester of research). The rubric for undergraduate research can be found at https://forms.gle/xMxxdpRfdookgBy38.</p> | <p>The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.</p> <p>Assessment data will be collected on a 3-year rotating basis. A summary of the results will be shared with the faculty annually and adjustments to the curriculum and/or assessment process will be made as needed.</p> |
| 4 | Apply chemistry principles to biology. | <p>CHEM-4470 (medicinal chemistry) CHEB-3970/CHEM-3970/BIOL-4980 (undergrad research)</p> | <p>Average exam scores in CHEM-4470 will be used to gauge student mastery of this learning outcome (Spring).</p> <p>A rubric will be used to collect student learning data from CHEB-3970 mentor evaluations of student performance. The rubric will be completed by the course instructors and research mentors as they assess student mastery (Fall and Spring; excludes student in their first semester of research). The rubric for undergraduate research can be found at https://forms.gle/xMxxdpRfdookgBy38.</p> | <p>The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.</p> <p>Assessment data will be collected on a 3-year rotating basis. A summary of the results will be shared with the faculty annually and adjustments to the curriculum and/or assessment process will be made as needed.</p> |
| 5 | Articulate scientific results in both oral and written forms. | <p>CHEM-3100 (chemical literature) CHEB-3970/CHEM-3970/BIOL-4980 (undergrad research) Senior Thesis Senior Poster Session</p> | <p>Score from oral literature presentation in CHEM-3100 will be used to gauge student mastery of oral (Fall).</p> <p>A rubric will be used to collect student learning data from CHEB-3970, the senior thesis and poster presentation (Spring).</p> | <p>The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.</p> <p>Assessment data will be collected on a 3-year rotating basis. A summary of the results will be shared with the faculty annually and adjustments to</p> |

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| | | | <p>The rubric will be completed by the research mentor as they evaluate the senior thesis for written mastery. The rubric for the senior thesis can be found at https://forms.gle/dvN4QDzWgsf8WFp87.</p> <p>The senior posters will be judged as part of the Sigma Xi poster session. Average scores from all the judges will be used.</p> | <p>the curriculum and/or assessment process will be made as needed.</p> |
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Additional Questions

1. On what schedule/cycle will faculty assess each of the above-noted program learning outcomes? (*It is not recommended to try to assess every outcome every year.*)

In year 1, learning outcomes 1 and 2 will be assessed. In year 2, learning outcomes 3 and 4 will be assessed. In year 3, learning outcome 5 will be assessed.

2. Describe how, and the extent to which, program faculty contributed to the development of this plan.

The chemical biology program director revised the plan, distributed and discussed with faculty at the annual faculty retreat in August 2021.

3. On what schedule/cycle will faculty review and, if needed, modify this assessment plan?

Every 3 years, the faculty will review the assessment plan and modify if needed.

IMPORTANT: Please remember to submit any assessment rubrics (as noted above) along with this report.