

## Program Assessment Plan

**Program:** MA in Chemical Biology  
**Department:** Chemistry  
**College/School:** College of Arts & Sciences  
**Date:** 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
	<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"> <li><i>Note: These should be measurable, and manageable in number (typically 4-6 are sufficient).</i></li> </ul>	<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"> <li><i>Note: the majority should provide direct, rather than indirect, evidence of achievement.</i></li> </ul> <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 <i>made in previous years</i>?</p>
1	Assess relevant literature in chemical biology	CHEM-5630 (Chemical Biology) CHEM-5470 (Med Chem)	<p>Course-specific rubrics will be used to collect student learning data from student literature papers presented and/or written for CHEM-5630 and CHEM-5470. The rubric will be completed by the course instructors as they grade the papers.</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	Apply chemistry principles to biology	CHEM-5630 (Chemical Biology) CHEM-5470 (Med Chem)	<p>The final exam in CHEB-5630 (cumulative) and average of exam scores in CHEM-5470 will be used to gauge student mastery of this learning outcome.</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</p>

			The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.	will be made as needed.
3	Articulate arguments or explanations in both oral and written forms	MA Oral Examination	Rubrics are used to collect student learning data from the MA oral examination. The rubric will be completed by the examination committee.  The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.	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.
4	Evidence scholarly and professional integrity in chemical biology	MA Oral Examination	A rubric will be developed and used to collect student learning data from the MA oral examination. The rubric will be completed by the examination committee.  The data will be analyzed by the Chemical Biology Program Coordinator and a small team of faculty.	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.
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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.*)

Year 1: Learning outcomes 1 and 2  
Year 2: Learning outcomes 3 and 4

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

The plan was originally approved when the Chemical Biology Masters program was developed. Substantial changes will be approved by the faculty (no substantial changes have been made to date).

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

Every 3 years.

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

**CHEM-5470 Research Paper Rubric**

Name \_\_\_\_\_

Standards	5 - 4 Exemplary	3 - 2 Satisfactory	1 - 0 Weak	Score	Weight	Total Score
Introduction	Provides background research into the topic and summarizes important findings from the review of the literature; describes problem to be solved; explains the significance of the problem to an audience of non-specialists	Provides background research into the topic and describes the problem to be solved	Provides background research into the topic but does not describe the problem to be solved; insufficient or nonexistent explanation of details to non-specialists		x 3	
Discussion	Integration of Knowledge	Discusses at least four topics covered during the course. Demonstrates full understanding and application of concepts learned in course. Chemical detail of structures and discussion is accurate.	Discusses three topics covered during the course. Demonstrates satisfactory understanding and application of concepts learned in course. Chemical detail of structures and discussion are mostly accurate.	The paper does not demonstrate that the author has fully understood and applied concepts learned in the course.		x 4
	Depth	Paper presents a complete story of the discovery of the selected drug, including medical need, biological target or assay, medicinal chemistry optimization, and development.	Paper presents a partial story of the discovery of the selected drug.	Incomplete coverage of discovery.		x 4
	Cohesiveness	Addresses the topic with clarity; organizes and synthesizes information; and draws conclusions	Addresses the topic; lacks substantive conclusions; sometimes digresses from topic of focus	Presents little to no clarity in formulating conclusions and/or organization		x 4
Summary	Presents a summary of the topic with clear recommendations and/or implications for future research	Presents a summary of the topic	Missing or does not summarize the topic		x 3	
Mechanics and documentation	Is free or almost free of errors of grammar, spelling, and writing mechanics; appropriately documents sources (ACS style)	Has errors but they don't represent a major distraction; documents sources	Has errors that obscure meaning of content or add confusion; neglects important sources or documents few to no resources		x 2	
Comments				Grand Score (max 100)		

CHEM 5630: Introduction to Chemical Biology and Biotechnology  
Oral Presentation Scoring Sheet

Presenter: \_\_\_ Discussion leader: \_\_\_\_\_

Content

- Presentation is organized
- Material is covered with adequate depth
- Subject is appropriate and relevant
- Uses examples to clarify and add interest
- Demonstrates use of multiple sources

Notes:

\_\_\_ Score out of 25. (25 = excellent, 20 = very good, 15 = good, 10 = fair, 5 = poor)

Delivery

- Audible
- Understandable
- Prepared
- Attitude, confidence, and enthusiasm
- Effective use of time

Notes:

\_\_\_ Score out of 10. (10 = excellent, 8 = very good, 6 = good, 4 = fair, 2 = poor)

Questions

Notes:

\_\_\_ Score out of 5. (5 = excellent, 4 = very good, 3 = good, 2 = fair, 1 = poor)

\_\_\_ **Deductions (late assignment, etc.)**

\_\_\_ **Total score out of 40**

**SLU Chemical Biology – Final Oral Exam Rubric for MA students**

	<b>1 (Poor)</b>	<b>2 (Fair)</b>	<b>3 (Good)</b>	<b>4 (Excellent)</b>	<b>Score</b>
Demonstrate advanced level knowledge in both (i) synthesis and materials chemistry and (ii) analytical and physical chemistry methods, with a higher level of knowledge expected in the student's area of focus	<i>Student lacks basic knowledge in chemistry and biology topics.</i>	<i>Student displays knowledge, but is weak in several key concepts.</i>	<i>Student displays knowledge, with minor weaknesses.</i>	<i>Student displays great knowledge chemistry and biology topics.</i>	
Apply learned chemical biology practices and theories to proposed problems	<i>Student unable to solve basic chemistry biology problems.</i>	<i>Student displays knowledge, but is weak in several key concepts.</i>	<i>Student displays knowledge, with minor weaknesses.</i>	<i>Student able to apply knowledge to solve proposed chemical biology problem.</i>	
Communicate chemical biology topics effectively	<i>Student unable to clearly communicate chemical topics.</i>	<i>Student can sometimes communicate chemical topics effectively.</i>	<i>Student can effectively communicate chemical topics.</i>	<i>Student can communicate chemical topics effectively and compellingly.</i>	

Comments:

**Please return to the Chemical Biology Program Coordinator**