### Chemistry

### **Annual Program Report Template**

Year:	2022-2023
Program:	MS in Chemistry
Contact Person (include email & phone#)	Ozge Gunaydin osen@lamar.edu 409-880-8275

#### **Summary of Continuous Improvement Efforts since Last Report**

Provide a brief description of how assessment results have been used for program improvement. Point to a specific example of how an assessment provided the program with data it could use for improvement and what that improvement was, if possible, also show evidence of the improvement. You may look at data from the two previous academic years to support this case.

# Respond here:

Our main goal is to provide students with skills required for them to succeed as working chemists. The learning outcomes involve demonstrating competency in oral communication skills, expertise in scientific writing and ability to effectively perform chemical research. Our assessments for each category have been used for program improvement all described in table1. One specific example on how an assessment provided evidence for improvement is on chemical research performance and oral communication skills. In both, the benchmark expectations of 80% of students scoring was 3.3/4.0 or above. 83% of the students averaged 3.3/4.0 or above in 2021-2022 increased to 100% in 2022-2023 (See table 1) for oral communications skills and chemical research performance. It is important to note that there is a small number of students for research, and we will continue evaluating chemical research performance as well as oral communication skills and scientific writing.

# **Program Highlights Since Last Report**

Identify and briefly discuss any programmatic curriculum changes made since the last report (e.g. new courses, course changes, SLO changes, course deletions).

NA

Respond here:

Table 1. Assessment Results and Analyses for Current Cycle.

STAGE 1: PLAN			STAGE 2: DO		STAGE 3: STUDY	
Departmental Student Learning Goal	Program Student Learning Outcome	Assessment	Assessment Method/Locati on	Benchmark Expectations	Data Results	Actions/Goals Based on Data Results* What do the data tell you? How will you use this data? How were data from the last cycle used to make changes during this cycle, and What were the results of those changes?
The goal is to provide students with the skills required for them to succeed as working chemists.	Graduate Chemistry students will demonstrate competency in oral communication skills.	The oral presentation skills of chemistry graduate students will be assessed during a presentation of their research project/final class/capstone and assessed by a review committee. The assessment rubric was developed by the chemistry faculty members.	The oral presentation skills of chemistry graduate students will be assessed during a presentation of their research project/final class/capstone and assessed by a review committee. The assessment rubric was developed by the chemistry faculty members. This was chosen because these are skills in which our graduate students must exhibit competency as	80% of students will score an average of 3.4/4.0 on the rubric.	2021-2022  83% of students scored an average of 3.3/4.0 or above.  2022-2023  100% of students scored an average of 3.4/4.0 or above. The average score was 3.66/4.0	Comparing with the previous evaluation year there is an increase in the evaluation results from 83% to 100%. We plan to increase the benchmark expectations in the next year, as the number of students assessed was limited.  According to this year's results from the rubric, comprehension was the weakest component. We will mainly focus on improving understanding/comprehension next year.

			working			
			chemists.			
The goal is to	Graduate Chemistry	Graduate	Graduate	80% of students	2021-2022	The assignments to evaluate
provide students	students will	Chemistry	Chemistry	will score an		writing skills were more
with the skills	demonstrate expertise	students	students	average of	55% of the	focused on biochemistry topics
required for them to	in standard scientific	scientific writing	scientific	3.3/4.0 on the	students scored	this year. The action plan is to
succeed as working	writing and the use of	skills will be	writing skills	rubric.	an average of	have two tracks of topics to be
chemists.	English in preparing	assessed by a	will be assessed		3.3/4.0 or	covered, one with more focus
	reports.	review	by a review		above.	on chemistry and the other one
		committee as	committee as			on biochemistry. We anticipate
		part of a	part of a		2022-2023	that this will impact the
		research or	research or			average score and the
		scientific	scientific		47% of the	percentage of students who
		communication	communication		students scored	score 3.3/4.0 and above will
		course. The	course. The		an average of	increase.
		written material	written		3.3/4.0 or	
		will be	material will be		above.	According to this year's results
		evaluated using	evaluated using			from the rubric, we will mainly
		a rubric	a rubric			focus on improving the quality
		developed by	developed by			of information presented
		the chemistry	the chemistry			during the written assignments.
		faculty	faculty			
		members. This	members. This			Although the target was still
		was chosen	was chosen			not met, there was no
		because these	because these			significant change in student
		are skills in	are skills in			scores from 2021-2022 to the
		which our	which our			current 22-23 AY
		graduate	graduate			
		students must	students must			
		exhibit	exhibit			
		competency as	competency as			
		working	working			
		chemists.	chemists.			
The goal is to	Graduate Chemistry	Chemistry	Chemistry	80% of students	2021-2022	Comparing with the previous
provide students	students will	masters	masters	will score an		evaluation year there is an
with the skills	demonstrate the	students are	students are	average of	83% of students	increase in the evaluation
required for them to	ability to effectively	trained to	trained to	3.4/4.0 on the	scored an	results from 83% to 100%. We
succeed as working	perform chemical	function as	function as	rubric.	average of	plan to increase the benchmark
chemists.	research.	professional	professional		3.4/4.0 or above	expectations in the next year,
		chemists. A	chemists. A		on the rubric.	as only a limited number of

committee will	committee will		students were surveyed.
evaluate the	evaluate the	2022-2023	According to this year's results
students'	students'		from the rubric the quality of
research results	research results	100% of	data analysis was the weakest
using a rubric	using a rubric	students scored	component. We will therefore
developed by	developed by	an average of	mainly focus on improving the
the chemistry	the chemistry	3.4/4.0 or above	quality of data analysis next
faculty	faculty	on the rubric.	year.
members. This	members. This	The average	,
was chosen	was chosen	score was	
because these	because these	3.8/4.0.	
are skills in	are skills in		
which our	which our		
graduate	graduate		
students must	students must		
exhibit	exhibit		
competency as	competency as		
working	working		
chemists.	chemists.		
	Analysis was		
	done using the		
	methodology		
	described		
	above by		
	evaluating their		
	research skills		
	in their		
	presentation		
	via quality of		
	their data		
	collection/anal		
	ysis and how it		
	was concluded.		
	Rubric was		
	utilized to get		
	the findings.		

**Table 2. Continuous Improvement Results Since Last Report** 

Stage 4: ACT		
*Copy last cycle's actions/goals and report on progress toward continuous improvement on those here.	Status C=Complete P=Progressing N=No Action Taken	Discussion of Status  If C, describe efforts that led to accomplishment of actions/goals.  If P, provide update on progress made toward accomplishing actions/goals and what tasks remain  If N, discuss why action toward accomplishing actions/goals has been delayed and what work will be initiated toward accomplishment.
The goal is to provide students with the skills required for them to succeed as working chemists.		
Outcomes include demonstrating competency in oral communication skills, expertise in standard scientific writing and use of English preparing reports and effectively perform research at an introductory level.	P	We will continue our actions to evaluate oral communication skills (described in table 1). Comparing with the previous evaluation year there is an increase in the evaluation results from 83% to 100%. We plan to increase the benchmark expectations in the next year. According to this year's results from the rubric, comprehension was the weakest component of those evaluated. We will mainly focus on improving understanding/comprehension next year.  We will continue our actions to evaluate writing skills (described in table 1). The assignments to evaluate writing skills were more focused on biochemistry topics this year. The action plan is to have two tracks of topics to be covered, one with more focus on chemistry and the other one on biochemistry. We anticipate that this will impact the average score and the percentage of students who score 3.3 and above will increase. According to this year's results from the rubric, we will mainly focus on improving the quality of information presented in writing this year.  Although the target was still not met, there was no significant change in student scores from 2021-2022 to the current 22-23 AY

	We will continue our actions to evaluate chemical research performance (described in table 1). Comparing with the previous evaluation year there is an increase in the evaluation results from 83% to 100%. We plan to increase the benchmark expectations in the next year as only a limited number of students were surveyed. According to this year's results from the rubric the quality of data analysis was the weakest component assessed. We will mainly focus on improving the quality of data analysis next year.  In addition, we plan to add tasks to evaluate some of the upper-level classes for scientific writing and oral communication skills in the future.