Action Plan For a Six-Year Program Review Cycle
Years: 2020-2026

Department Chemistry

How we arrived at these action items

All full-time faculty members completed an online survey. Each faculty member was asked to distribute a total of 100 points between 20 recommendations that came from the section "Key Recommendations from PRC and External Reviewer" of the PRC Team Report. The complete results are included in an appendix to this document. The top seven recommendations are included in our Action Plan. Other Action Items will still be considered. For example, although it was the lowest ranked item in terms of its impact, we have already dropped the German recommendation from the Professional track. Appendix II includes all the action items that we identified as part of our six-year report before we heard from the external reviewer or the PRC. Many of those items will also be considered in the coming years.

	A brief description of each **proposed change**	A brief rationale and evidence that support the **proposed change**	Six-year timeline for the **proposed changes** and actions	Who is in charge if known
1	Curriculum / program **Implement pre-orientation bridge program for high-risk students**	The relevant data was student success rates that were brought to our attention by the Provost's office in fall of 2019. We also obtained relevant data by comparing our program with peer institutions.	We will continue the Peer-Led Team Learning supplemental intervention to CHM-005. We will continue to assess the success of underrepresented students in CHM-005. Changes may be considered as new data are acquired or in response to new findings in the chemical education literature.	CHM-005 instructors will oversee PLTL. Department Chair will coordinate annual assessment.
2a	Initiatives to improve teaching and learning	The data that led to this action item is the student scores on a laboratory design assessment	Instructors of upper division courses are encouraged to consider changes to their	Individual faculty for implementation in their courses. Department chair

	A once-per-semester emphasis on the chemical literature in each laboratory course (organic and above) or giving students more opportunities to design their own experiments in advanced laboratory courses could improve students' abilities (and self-confidence) in experimental design.	instrument.	upper-division laboratory courses immediately. This instrument will be used to assess this PLO again in '22-'23 and '25-'26.	for assessment.
2b	Initiatives to improve teaching and learning **The department should implement some of the following additional actions that are known to benefit first-generation and non-Asian students of color, such as…implementing a Friday natural sciences seminar.**	The data that led to this action item is input we received from the external reviewer. (Likely from one-on-one interviews that he had with faculty members.)	The timing for this item is ongoing. Over the next six years we will aim to have at least two chemistry seminars each semester.	All tenure-track faculty are encouraged to consider this. Department Chairperson is responsible for tracking and reporting.
2c	Initiatives to improve teaching and learning **Consider requiring fewer lab reports in general chemistry lab (maybe 3 or 4 per semester) with other kinds of assessments interspersed that directly address learning outcomes that are perhaps undertargeted in the reports and help students think more**	The data that led to this action item is our comparison with other programs and feedback from our external reviewer.	This is already underway. The general chemistry laboratory coordinator revised the CHM-005 laboratory manual and Fall 2021 is the pilot semester for the modified approach. Over the next few years we will continue to monitor student laboratory report	General Chemistry laboratory coordinator (Cowell) will coordinate curricular changes. All CHM-005 instructors will implement and provide feedback.

	creatively/reflectively (and less mechanically) about their experiments and results.		writing.	
3	Possible adjustments in faculty priorities or responsibilities **The department may wish to reflect on how conference attendance might impact the career decisions and trajectory of students, particularly in light of the currently limited off-campus exposures to chemistry that students have.**	The data that led to this action item is input we received from the external reviewer. (Likely from one-on-one interviews that he had with faculty members.)	The timing for this item is ongoing. Over the next six years we will aim to have at least two faculty attending an ACS meeting every year with at least four students.	All tenure-track faculty are encouraged to consider this. Department Chairperson is responsible for tracking and reporting.
4	Learning outcomes that the department will assess in the subsequent years			
5	Reallocation or acquisition of resources that would be necessary or helpful in the pursuit of these goals **The department and college should consider whether a modest teaching-release model could be viable in the future to compensate faculty for intensive research mentoring during the academic year.**	The data that led to this action item is the large enrolments (about 15 per semester) we have in CHM-198 and CHM-199. These research courses are required for our students to graduate, but for which we receive no teaching load credit.	Despite being our highest priority, this will likely add approximately one four-unit course of load to our schedules. It should therefore await a new Provost. If it would be helpful for it to be part of a larger strategic planning discussion, it could be included now.	Department Chairperson, new Provost, Strategic Planning Committee

6	Other important changes **Incentivize faculty pursuit of external funding.**	The data that led to this action item is input we received from the external reviewer. (Likely from one-on-one interviews that he had with faculty members.)	It is not clear to us what specific steps we can take to accomplish this. It seems like a broader conversation than just our department. Perhaps it could be included in the strategic planning process for the college.	Department Chairperson, new Provost, Strategic Planning Committee

Appendix I: Compiled Faculty Ranking of 20 Recommendations

Recommendation	Mean	Median
Teaching release for supervising student research	16.3	16.5
Improve conference attendance	7.7	9.0
Improve Friday Natural Science seminar	10.3	8.0
Incentivize faculty pursuit of external funding	6.2	6.5
Add a literature exercise to every upper-div lab course or increase exp. Design	6.7	6.0
Implement pre-orientation bridge program for high-risk students	5.7	5.5
Revamp 005,6 lab assignments and grading	5.5	5.5
Pro-actively check in on high-risk students	4.7	5.0
Track diversity outcomes beyond CHM-005	5.0	5.0
Assess retention for high-risk students	4.3	5.0
Assess PLTL intervention	5.0	5.0
Establish measurable outcomes regarding equity and diversity	4.7	5.0
Increase in-class group work	4.8	3.5
Elevate minority voices in class	3.3	3.5
Assess and possibly address student time spent on lab courses	2.3	2.5
Relate course material to real-life examples	2.8	2.0
Larger sample size for alumni survey	2.0	1.5
Reconcile MA-010 requirement for Biochem BA/CHM-135	1.7	1.5
Broaden range of voices in CHM-195 (Seminar)	1.0	1.0
Drop German recommendation from Professional Track	0.0	0.0

Apendix II: Action Items Identified by the Department in our Six-Year Report

(Some, but not all, of these were identified by our external reviewer and the PRC.)

General Actions

REFERRING SECTION	DATA	ACTION TO BE TAKEN
Error! Reference source not found.	Alumni Survey Question 16	Faculty teaching CHM-122 and CHM-133 will be mindful of incorporating and calling attention to experimental design principles as they make incremental modifications at the course level.
Error! Reference source not found.	Alumni Survey Question 14	We will encourage the Science-Faith Club to organize events with speakers who can provide examples of ways in which scientists navigate personal questions of faith. Our own faculty could serve a role here.
Error! Reference source not found.	Alumni Survey Question 13	During academic advising, faculty will encourage chemistry majors to get involved in research earlier.
Error! Reference source not found.	Alumni Survey Question 10	1. Establish an annual spring semester event with alumni on a panel representing a variety of careers. 2. Organize at least one field trip to a local business every summer for research students.
Error! Reference source not found. (Q **Error! Reference**	Comparison Institutions	Add a laboratory component to CHM-104 starting Fall 2022.

source not found.)		
Error! Reference source not found. (Q **Error! Reference source not found.**)	Comparison Institutions	Consider offering advanced special topics courses as faculty load allows.
Error! Reference source not found.	Comparison Institutions	Change minor requirement to be "20 units, including at least one course in three of the five major areas of chemistry: organic, biochemistry, inorganic, analytical, and physical."
Error! Reference source not found.	Provost Office, Comparison Institutions	Offer supplemental instruction (PLTL) for General Chemistry
Error! Reference source not found.	Lack of faculty diversity	Seek URM representation in faculty hiring, student TA appointments, and guest speakers
Error! Reference source not found.	F19 General Chemistry grades	Peer-led team learning (PLTL) sessions for General Chemistry, targeting students likely to struggle
Error! Reference source not found. (Q	Number of research credits supervised	Explore models to support faculty supervising student research hours

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Assessment-Related Actions

REFERRING SECTION	DATA	ACTION TO BE TAKEN
Error! Reference source not found.	Experimental Design Instrument	This assessment will be moved to a course (perhaps CHM-133 or CHM-195) that is mostly seniors.
Error! Reference source not found.	Unsuitability of old PLO metrics.	Several minor adjustments to PLO metrics.
Error! Reference source not found.	Unsuitability of old Map.	Several minor adjustments to Curriculum Map
Error! Reference source not found. (Q **Error! Reference source not found.**)	Comparison Institutions	Key Question for 2021–2022: What is the best way to scaffold writing within the curriculum?
Error! Reference source not found.	F19 General Chemistry grades	Key Question for 2020–2021: "How can we achieve equitable outcomes in General Chemistry?" (PLTL analysis, focus group, consultant)

Error! Reference source not found.	Recent Changes	Key Question for 2022–2023: “Is the department adequately funded?”