2019 - 2020

1. Department Goals - Current Progress: Our departmental aim are to provide a high quality education in a series of chemistry courses designed to meet transfer requirements for physical and biological science majors and health majors. We strive to accomplish this by keeping class sizes small and our instrument room fully furnished with state of the art tools. Our discipline is best taught when students can collect their own data using our suite of instrumentation. Teaching chemistry with evidence-driven lab experiments best prepares our students for any STEM field they choose.

We also strive to be efficient as a department. We have structured our lab course offerings to take full advantage of our limited lab space. This is evidenced by our high productivity (see below). We have attempted to use our FTEf as wisely as possible and only request additional sections when we are confident they will fill. Over the past 5 years our WSCH has increased dramatically.

Our vision for the department requires a functioning instrumentation room, fully-staffed lab tech positions, and a supply budget to enable creative and engaging laboratory experiments. Justification for individual resource requests is contained throughout this document.

Our faculty individually monitor equity gaps and have made significant efforts to utilize and advertise the available support services. One avenue we have utilized to increase success, retention and address equity issues is through Science Center and Hands-on Friday Events. The Science Center’s INDIS 314 and 315 courses have been invaluable tools in supporting our students. In addition, the Hands-on Friday events are a rare moment for students to learn in a more relaxed, interactive and informal environment. Often times, professors use these events to reach beyond the restrictions of a typical laboratory environment. Although we don’t have a complete data set to show a direct correlation between attendance in INDIS 314/315 or attendance of Hands-on Events and success in Chem courses, we do see anecdotal evidence of success and rapid growth of student participation in these programs.

Chem students in INDIS 314/315:
Fall 18: 59
Spring 19: 81
Fall 19: 89 (as of 10/17/19)

Chem students in Hands-On activities:
Fall 18: 94
Spring 19: 68
Fall 19: 53 (as of 10/17/19)

Due to the increased enrollment in the Science Center and Hands-on Events, we anticipate the opportunity to grow substantially. Our current method of advertising comes largely from faculty promoting these programs in class. Motivation for attending largely comes in the form of offering extra-credit. We are proposing that these events (Science Center and Hands-on events) be marketed and promoted in a more institutionalized manner. 1) Counselors should be encouraging students to enroll in INDIS 314/315. They are necessary courses for many incoming students and should be viewed as ‘strongly encouraged co-requisites,’ as opposed to an 'optional extra course.' 2) There needs to be a strong online presence for these two programs. A website linked from all STEM homepages should advertise the offerings of the Science Center and Hands-on events.

Currently, funding the Hands-on events has come from the departmental budget (and often times donations from faculty). To create a sustainable program, we are requesting an increased base budget.

We have requested a new full time chemistry hire. As can be seen in the data below, we consistently operate with a higher than desired % adjunct FTE. Ideally, this percentage would be closer to 25%. We expect that we will have a FT faculty retirement in the next year and another following shortly. The combined effect of losing FT faculty and increasing our student population,
requires that we be aggressive in our hiring timeline.

Over the past year, we have launched the VITI program and have made significant progress in the field of Fermentation Science.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sections* Success Rate</th>
<th>Retention</th>
<th>Fill Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/15</td>
<td>40</td>
<td>78.5</td>
<td>85.9</td>
</tr>
<tr>
<td>15/16</td>
<td>40</td>
<td>76.7</td>
<td>84.6</td>
</tr>
<tr>
<td>16/17</td>
<td>42</td>
<td>73.0</td>
<td>80.2</td>
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<tr>
<td>17/18</td>
<td>43</td>
<td>79.2</td>
<td>89.6</td>
</tr>
<tr>
<td>18/19</td>
<td>48</td>
<td>86.0</td>
<td>90.1</td>
</tr>
</tbody>
</table>

*Sections - this data does not reflect an additional 6 new sections of summer classes (2x Chem 305; 3x Chem 400; 1x Chem 401).

2. Department Goals - Future: Continued improvement to our suite of analytical instrumentation. This will require maintenance and supply funds for each instrument.

To grow our Viticulture program and Fermentation Science. Growth of FermSci will come in the following forms: Increased incorporation in core chemistry labs, repair of chemical instrumentation, a designated food-safe lab space in the new science building, community engagement, summer camp brewing events, and an Experimental Course in Brewing.

To achieve these goals as well as our mission statement, we are asking for an increased base budget, a full-time lab tech position, additional FTEf and a full-time chemistry faculty position.

3. Special or Long Term Projects: Our department has been in close collaboration with Kelly MacDonald (CSUS Biology Department) as she submitted an NSF proposal. The proposal, named SIRIUS (Sustainable Interdisciplinary Research to Inspire Undergraduate Success), was denied but highly regarded by the reviewers. Kelly is in the process of resubmitting. The goal of this project is to reorient our lab experience to be research-centric. This is in-line with our philosophy of student-collected data/evidence driven laboratory experiments.

The chemistry department and Innovation Center have continued to develop fermentation science coursework to complement the VITI program. We see FermSci as a perfect vessel to teach chemistry. It is an applied science that touches on many STEM disciplines and prepares students for a variety of fields.

4. Department/Discipline Plans - Curriculum and Course Sequencing: Our 4-semester plan is constructed to give students flexibility when building their schedule. Our offerings extend from early morning to late evening and across all three campuses. We have made efforts to ensure courses listed in the 4-semester plan do not have schedule conflicts with other departments.

5. Program Development & Revision: We are not proposing an additional program at this time. We do, however, anticipate the eventual creation of a Fermentation Science program.

6. Percent of SLOs assessed: 44% according to the SLO report. However, the report includes courses we no longer offer (Chem 306, Chem 410) or courses that are new as of last year. All Chemistry courses that are present in the catalog are engaged in ongoing assessment as defined by the ACCJC.

7. Course SLOs - Synopsis: We have not submitted course SLOs since our last ADP. 100% of our active courses are engaged in ongoing assessment.

8. Course SLOs - Strategies for Improvement/Maintenance: Our latest course SLOs indicate students lack laboratory acumen. This conclusion is made from analyzing SLO results from course SLOs in Chem 305 and Chem 421 (F17/S18). Laboratory related critical thinking skills, laboratory safety, and basic laboratory techniques need improvement.

These outcomes can be improved by increased funding for the Science Center INDIS courses, Hands-on activities, and up to date instrumentation.

9. Program SLOs - Synopsis: N/A

10. Program SLOs - Strategies for Improvement/Maintenance: N/A

11. Improving Course and Program Success Rates - Data Analysis: Chem course success: 86%

Viti course success: 80%
College success: 75.4%

African-American students' success rate is 26% below our departmental average (F18/S19; n = 10). Our data indicates that enrollment in the Science Center courses and Hands-on events aids in success rates. 

12. Improving Course and Program Success Rates - Strategies and Resources Needed: Our success rates continue to be high, but we are straining the limits of our instrumentation room. As our student population continues to grow, our supply budget, and maintenance/consumable budget for our instrumentation will need commensurate growth. Our instrumentation includes the NMR, atomic absorption, 2 GCs, 3 GCMSs, 2 FT-IRs, and various smaller instrumentation. We have requested additional laptops to run some of our instrumentation and to allow students to supplement their lab experience with computational chemistry.

In the past 4 years we have increased our course offerings by 20% percent. In this time we have lost one full-time lab tech. Although the data indicates that course success, retention (78.8%, 86.1%, respectively), and equity gaps are largely unchanged there are unseen consequences of this under-staffing. The first is safety. We have not had a major lab accident, but that will only be true until it is not. Often times, we do not have a lab tech during a night (Chem 305 or 420) lab. If we do have staffing, it is with temporary help. Jeanne is not only responsible for prepping far more sections than she was when we had double the staffing, but she is responsible for training the continuous flux of temporary help. Another missing metric is the quality of laboratory experiments. As faculty, we are hesitant to add or modify experiments for risk of over-burdening our staff. We make the most of our resources, but we miss out on untapped potential when we are under-staffed.

Full-time faculty requested. Our department has maintained a high productivity (18/19; 554, see box 1 for remaining data) and course fill rate (18/19; 98.5%). Our ratio of adjunct FTE to Full-time FTE is too high (see box 1). Planned retirements come at a time when we are growing into a new building and seeing increased demand. These are all strong indicators of need for a full-time chemistry faculty position.

We are requesting the support of an Accessibility Specialist to assist our department meeting compliance with the law and to create an equitable learning environment. Chemistry content can be difficult to make accessible to students with visual disabilities. Solving this problem will require resources and an Accessibility Specialist.

13. Suggestions for Improving the ADP/PR process: Automatically import relevant efficiency and equity (Productivity, FTEf, # courses, student success, etc). To minimize the length of the document ADP authors must reference data between fields. If committees only see specific field responses, they will miss relevant data.

14. Is your ADP complete and ready for review by the Dean and Vice President?: N/A - Completing Program Review

Program Review Questions (skip if not completing program review)

15. Mission Statement: The Folsom Lake College Chemistry Department aims to prepare students for transfer-level chemistry courses, careers in the health fields, and values scientifically competent citizens.

16. Pre-Requisite and Co-Requisite Validation: Due to AB705, we are not validating out-of-discipline prerequisites. Our intra-discipline validation will occur in the following year.

17. Maintaining Program Currency: We are working towards offering a transfer pathway to UCD. This is dependent on the Chancellor's office approving the excess units necessary.

18. Evidence of Program Relevancy: Our program remains relevant as evidenced by our continued growth. We serve students entering STEM fields as well as health majors.