

# Instructional Units Program Review Year Five Update - Chemistry Latest Version

This cycle is for Instructional Units to complete the Year Five Update of the Program Review Cycle.

## Instructional Units Program Review Year Five Update

### 1. Program Update : Version by Capes, Melinda on 02/15/2022 18:36

#### 1a. Provide any important changes or updates within your program since your Program Review Year Three Update (2019-20). (New degrees, new curriculum, staffing changes, etc.)

As with other programs, the pandemic has caused the Chemistry Program to temporarily transition to online/ remote learning. This gave us the opportunity to grow as educators. All of the faculty and staff made efforts to best educate students in the new environment. The virtual labs provided by the Chancellors office were supplemented with "kitchen chemistry" at-home labs and other activities to help students. This also ignited pedagogical discussions around online/ remote learning and labs.

Amidst the pandemic and return to campus, we have made attempts to grow Chemistry and expand to Brentwood.

To best serve students and make Chemistry more accessible, we have written and introduced new in-house Open Educational Resource (OER) laboratory manuals for Chem 6, 7, 25, and 26. In addition to allowing these courses now be offered at zero textbook cost, accompanied with the OER textbooks, the lab manuals are (a) giving the department more flexibility to modify our instruction and labs to meet the unique LMC student population and adding excitement and collaboration among staff and faculty (both full-time and part-time).

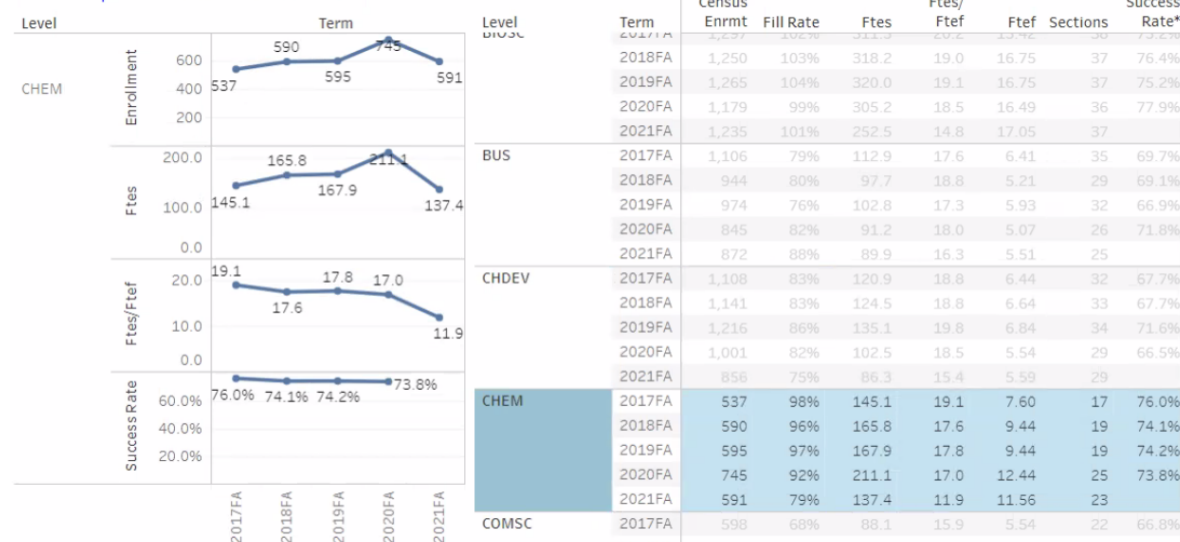
To better support students in accomplishing their educational goals, a dual enrollment section of CHEM-006 was established at Liberty High School in Fall 2018. The course spans both the Fall and Spring terms at Liberty High School. This Fall started the third offering of the course.

#### 1b. Please address the following enrollment data provided for your program.

##### 1.b.1. What are the enrollment trends over the past 3 years, beginning with Fall 2018? (Please address census enrollment, census fill rate, and productivity (FTES/FTEF))

	Census Enrmt	Fill Rate	FTES	FTEF	Sections	Success Rate
2017FA537	98	145.1	19.1	76.0%	17	76.0%
2018FA590	96	165.8	17.6	74.1%	19	74.1%
2019FA595	97	167.9	17.8	74.2%	19	74.2%
2020FA745	92	211.1	17.0	73.8%	25	73.8%
2021FA591	79	137.4	11.9	73.8%	23	73.8%

Click on a topic in the Level column to filter the data.



#### 1b. Please address the following enrollment data provided for your program.

##### 1.b.2. What does the data suggest in terms of future needs/directions?

The current enrollment and FTES in Chemistry are similar to our pre-pandemic levels. There was an enrollment increase during the Fall 2020 term, which may be attributed to a larger number of online courses offered- giving students from other colleges in the district or in other districts the opportunity to take Chemistry in an online format. The transition back to the face-to-face learning that is required for Chemistry along with our growth has resulted in a slight decrease in fill rates and FTES/FTEF for the Fall 2021 term.

During this time our success rate has declined. This decline is troublesome. The growth of the department, pandemic, and online learning could all contribute to this. With an increase in FTEF from 7.6 to 12.44 from Fall 2017 to Fall 2018 with only three full-time faculty, supporting the growth and pedagogy that maintains rigor and best supports students is proving to be difficult. This suggests that the Chemistry Program needs additional full-time faculty to best support our students or our direction should be to limit our growth to support the numerous part-time faculty to provide quality instruction.

**1c. Provide a brief update on the timeline for your program's goals as listed in your Program Review Year Three Update (2019-2020). If your program's goals are in progress or modified, please include action steps and responsible parties in your explanation.**

**Goal 1: Laboratory Best Practices**

In accordance with standard best practices, the Chemical Stockroom has established procedures that roughly fall into three categories:

**1. Initial training of employees and OSHA labeling procedures.**

The Chemical Hygiene Plan is updated approximately every 2 years or when changes are warranted. The most recent update was completed in January 2021.

Safety and operations 2-hour training sessions are required for all student stockroom workers prior to working within the stockroom.

Internal labeling of materials and reagents continues to be done in accordance with OSHA GHS standards.

**2. Operational procedures.**

Internal lists for most experiments are available of materials and quantities needed for teaching experiments (called a 'bin tag').

Abbreviated work instructions for how to prepare the materials for each teaching experiment have been established.

Standard Operating Procedures are written for routine operations. There are 29 procedures that have been written, including advanced preparation techniques such as calibration buffers and standardized acids and bases. An annual review of these is planned to update or deactivate these procedures as appropriate.

**3. Quality procedures**

Nonconformance reporting (NCRs) procedure established to track, investigate, document and resolve problems with reagents or procedures. To date, 13 NCRs have been prepared and closed.

Weekly deionized monitoring started in March 2018 and continues as part of the quality procedures.

The Quality Stockroom Manual was prepared and issued in 2021. Implementation is ongoing. This Manual specifies that two internal audits of stockroom procedures is done annually. One audit has been conducted by a student worker in Fall 2021.

**Goals 2 & 5: Chemistry at Brentwood**

With the addition of Girle to the faculty at the Pittsburg campus and Dennis moving to the Brentwood center, the faculty are eager to expand our program to serve Brentwood students. This semester 3 sections are being offered at the Brentwood center. This expansion was too drastic for the Chemistry program with one Science Lab Coordinator. To be able to do this a Science Lab Coordinator is needed to support Chemistry and other Physical Science disciplines at the Brentwood center.

**Goal 3: Undergraduate Research**

The pandemic has caused a slight modification of the research projects being offered. During the pandemic, and now moving forward in many Chem25 sections, students engage in faculty-mentored mini-projects where they conduct literature research to better understand a selected topic.

Moving forward, wet lab research projects are being embedded in to a few Chem26 sections as well as outreach and support of other Chem26 to also embed research projects.

**Goal 6: Representation of Chemistry.**

As a program, we have spotlighted scientist from a wide range of backgrounds with the lab portraiture project. With this project students in any class, in both labs of the Pittsburg campus are exposed to scientists from diverse cultures and backgrounds. The project has been expanded to give students the opportunity to identify and research scientists of their choosing- this is capitalizing on the unique contributions students make to the Program.

Individually, many faculty are making efforts to incorporate diversity and inclusion into their courses- for example, student-driven research projects, exploring compounds with a social justice lens, and exploring decolonization of our curriculum. Now is the time for us to share this with each other to increase the representation of equity, inclusion, and diversity in Chemistry.

**FOR CTE PROGRAMS ONLY**

**1c. Community and Labor Market Needs (Link Ed Code 78016 ([http://leginfo.legislature.ca.gov/faces/codes\\_displaySection.xhtml?lawCode=EDC&sectionNum=78016](http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=EDC&sectionNum=78016)), Title 5, 51022 ([https://govt.westlaw.com/calregs/Document/I69DDBC0B6CB11DFB199EEE3FF08959C?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=Searchitem&contextData=\(sc.Search\)&navigationPath=Search%2fv1%2fresults%2fnavigation%2f0ad7140b0000016c911a16d7fb7f969b%3fNav%3dREGULATION\\_PUBLICVIEW%26fragmentIdentifier%3dI69DDBC0B6CB11DFB199EEE3FF08959C%26startInde](https://govt.westlaw.com/calregs/Document/I69DDBC0B6CB11DFB199EEE3FF08959C?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=Searchitem&contextData=(sc.Search)&navigationPath=Search%2fv1%2fresults%2fnavigation%2f0ad7140b0000016c911a16d7fb7f969b%3fNav%3dREGULATION_PUBLICVIEW%26fragmentIdentifier%3dI69DDBC0B6CB11DFB199EEE3FF08959C%26startInde)))**

**(sc.Search)&navigationPath=Search%2fv1%2fresults%2fnavigation%2f0ad7140b0000016c911a16d7fb7f969b%3fNav%3dREGULATION\_PUBLICVIEW%26fragmentIdentifier%3dI69DDBC0B6CB11DFB199EEE3FF08959C%26startInde**

No Value

**FOR CTE PROGRAMS ONLY**

**1d. Advisory Board Update and Analysis (CTE related only) Include dates of Advisory Board meetings in 2020-2021, and those completed or planned in 2021-2022.**

No Value

Goals and Objectives	Modified	In Progress	Abandoned	Completed
Goal 1. Strengthen a culture of equity, diversity, inclusion, and racial justice. (District #2 and #4)				

Goals and Objectives			Modified	In Progress	Abandoned	Completed
<b>Recommended Actions</b>	Goal 6: Representation of Chemistry. Increase the representation of Chemistry by and that impacts people from diverse cultures and backgrounds.	0 linked SLOs 0 resource requests				
Goal 2. Increase and maximize equitable opportunities for students to successfully complete courses and programs. (District #1 and #2)						
<b>Recommended Actions</b>	Goal 2: Chemistry at Brentwood: Hire and Mentor a new full-time Chemistry Instructor in anticipation of expansion of the Chemistry Program into the new Brentwood Center	0 linked SLOs 0 resource requests				
	Goal 5: Chemistry at Brentwood: Hire and Mentor a new full-time Science Coordinator to support the expansion of the Chemistry Program into the new Brentwood Center.	0 linked SLOs 0 resource requests				
Goal 3. Increase opportunities that will prepare students to enter high-demand and living-wage occupational fields. (District #3)						
<b>Recommended Actions</b>	Goal 3: : Undergraduate Research. Provide all STEM majors with field-specific or interdisciplinary research experiences to increase awareness and engagement across the LMC campus	0 linked SLOs 0 resource requests				
Goal 4. To better support students in accomplishing their academic and career goals – from entry to completion/transition – and to enhance course-level and program-level achievement, expand and deepen educational, workforce, and community partnerships. (District #3)						
<b>Recommended Actions</b>	Goal 2: Chemistry at Brentwood: Hire and Mentor a new full-time Chemistry Instructor in anticipation of expansion of the Chemistry Program into the new Brentwood Center	0 linked SLOs 0 resource requests				
Goal 5: Effectively utilize institutional resources to meet the needs critical to the College mission. (District #4 and #5)						
<b>Recommended Actions</b>	Goal 1: Laboratory Best Practices: Implement a Chemical Stockroom program modeled after standard best practices of industrial and government labs and Resolve laboratory and stockroom issues that negatively impact student learning.	0 linked SLOs 0 resource requests				

2. Vision for Success Goals Update : Version by Capes, Melinda on 02/15/2022 18:36

2a. The following table lists the *Vision for Success* indicators that we must align to as a College and as a District. Please look at your program data (Tableau) for each of the following *Vision for Success* indicators. Please address all indicators that are relevant to your program and provide a status update on your program goals from your Program Review Year Three Update. Please include action steps if your goal(s) has been modified and an explanation if your goal(s) has been abandoned. \*

*\*NOTE - Please copy and paste the table below in your response and complete accordingly.*

Vision for Success Indicators and ACCJC Indicator	Program Set Goals (from PR Year 3 Update)	Status (Indicate Modified, Completed, or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
Course Success					
Degrees ( AA, AS, ADT)					
Certificates of Achievement					
Unit Reduction					
CTE Jobs					

Vision for Success Indicators and ACCJC Indicator	Program Set Goals (from PR Year 3 Update)	Status (Indicate Modified, Completed, or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
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Strategic Initiative Report

Course Success	80.4 %	73.8% 2020 - 2021 75.1% 2019 - 2020 74.7% 2018 - 2019 78.4% 2017 - 2018 78.4% 2016 - 2017			MESA interactions bring back AEWs
Degrees ( AA, AS, ADT)	AST: 1		AST: 6		Many students transfer without AST because it is permissible and AST has too many units
Certificates of Achievement	N/A				
Unit Reduction	Slow decrease in the number of units. 79 units is not reasonable for STEM majors. Many students take courses beyond the AST requirement in preparation for transfer and BS degrees.		AST: 104		Many students take courses beyond the AST requirement in preparation for transfer and BS degrees. Many students have multiple degrees in preparation for their transfer and BS degrees.
CTE Jobs	N/A				

2b. The *Vision for Success Goal 5 - Equity* is designed to reduce the equity achievement gap on course success for disproportionately impacted (DI) student populations. The College has identified the following three disproportionately impacted (DI) populations: African-American, economically disadvantage students (low income), and foster youth students.

Please review your program data (Tableau) for each of the aforementioned DI populations, and provide a status update on your program goal(s) for your previously selected DI population(s) in your Program Review Year Three Update. If your goal(s) has been modified please include action steps and if your goal(s) has been abandoned please provide an explanation.\*

*\*NOTE - Please copy and paste the table below in your response and complete accordingly.*

Course Success by DI Population	Program Set Goals (PR Year 3 Update)	Status (Indicate Modified, Completed or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
African American					
Low Income					
Foster Youth					

Course Success by DI Population	Program Set Goals (PR Year 3 Update)	Status (Indicate Modified, Completed or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
African American	67.4%	70.4% 2020 - 2021 65.0% 2019 - 2020 67.2% 2018 - 2019 77.0% 2017 - 2018 64.4% 2016 - 2017			continued courageous conversation a look at syllabus language
Low Income	80.7%	73.5% 2020 - 2021 74.1% 2019 - 2020 70.6% 2018 - 2019 76.2% 2017 - 2018 77.7% 2016 - 2017			OER lab manuals EOPS interactions
Foster Youth	81.1%	74.4% 2020 - 2021 60.5% 2019 - 2020 61.1% 2018 - 2019 64.7% 2017 - 2018 78.1% 2016 - 2017			Encourage group work and community-building (the laboratory work especially assists with this goal) intrusive advise & supporting PT faculty to do so as well

3. Assessment Status Update and CSLO Assessment Effectiveness : Version by Capes, Melinda on 02/15/2022 18:36

a. Please review the data provided on the assessment status of courses in your discipline for Cycle Two (2017/18-2020/21). For any courses that were not assessed in Cycle Two please list them in the table below in your response including why they were not assessed, when you are going to assess them, and who is going to assess them.\*

*\*NOTE - Please copy and paste the table below in your response and complete accordingly (add extra rows if needed).*

Course Name/ Number	Reason course was not assessed	When course will be assessed	Faculty Responsible for Course Assessment

All courses have been assessed.

