

**BASIC PROGRAM INFORMATION**

*Program Review is a self-study of your discipline. It is about documenting the plans you have for improving student success in your program and sharing that information with the college community. Through the review of and reflection on key program elements, program review and planning identifies program strengths as well as strategies necessary to improve the academic discipline, program, or service to support student success. With that in mind, please answer the following questions:*

**Discipline Name:** CHEMISTRY

**Department Name:** CHEMISTRY

**Division Name:** MNHS

Please list all participants in this Program Review :

Name	Position
Natarajan Geetha	Department Chair
Tsung Lee	Instructional Support Assistant

**Number of Full Time Faculty:** 5

**Number of Part Time Faculty:** 20

**Please list the Classified positions (and their FTE) that support this discipline:**

Instructional Support Assistants- 2 x 1.0; Academic Department Assistant- 0.9

**What additional hourly staff support this discipline and/or department:**

Student Hourly

**Discipline mission statement:** [Link to "How to Build a Mission Statement"](#)

To prepare students with proficiency in chemistry language, concepts and laboratory skills for further education or a career in chemical, biochemical and health related fields by offering quality educational program which actively engages students in their learning.

**List any new degrees and certificates offered within this discipline since your last comprehensive review:**

No new degrees

Discipline Level Data: <https://sharepoint2.palomar.edu/sites/IRPA/SitePages/PRP%20Summary%20Source.aspx>

## SECTION 1: PROGRAM REFLECTION

### 1A. Program Analysis: Reflect upon and provide an analysis of your summary data.

In 2015-16, Chemistry Department's Fill Rate has gone up to 93.09 % compared to 90.47% the previous year. Though this increase is similar to what is observed for MNHS division and for the college, Chemistry department's fill rate is significantly higher than that of our division (88.49%) and the college (83.93%). We have no challenges in filling our classes; the biggest challenge in offering more classes has been always finding qualified instructors who are committed to teaching. We lose dedicated instructors every semester to higher paying schools near by.

WSCH/FTEF are 506.67 for Chemistry, 443.57 for MNHS and 436.19 for the college- Here again our number has gone up by about 10 points compared to the previous year's ( 496.31) and substantially higher than those of MNHS division and the college

Retention Rates are 90.6 % for Chemistry, 89.6% for MNHS and 91.6% for college for Fall 2015. In a subject conceived as challenging, we are doing as well as MNHS division and the college to attract and retain students, though majority of our classes are taught by PT faculty.

#### Degrees and Certifications:

Our department has awarded only one A.S. degree in 2015-16, since most of our students are only interested in transferring to 4-year schools or take our classes as per-requisites for their degrees in the health-care related fields. Even though we see only 1 student has been awarded a A.S. degree the past year, 65% of our students who have completed all our courses up to Organic Chemistry have transferred to 4 year colleges and a good 20 % of that class is poised to finish the last semester at Palomar and ready to transfer.

**1B. Standards:** ACCJC requires that colleges establish institutional and program level standards in the area of course success rates. These standards represent the lowest success rate (% A, B, C, or Credit) deemed acceptable by the College. In other words, if you were to notice a drop below the rate, you would seek further information to examine why the drop occurred and strategies to address the rate.

#### Discipline Level Course Success Rate:

- The College's institutional standard for course success rate is **70%**.
- Review your discipline's course success rates over the past five years.
- Identify the minimum acceptable course success rate for your discipline. When setting this rate, consider the level of curriculum (e.g., basic skills, AA, Transfer) and other factors that influence success rates within your area. If you set your discipline standard below the College's standard, please explain why.

Standard for Discipline Course Success Rate: 65

#### Why?

For a STEM subject like chemistry, the success rate has to be adjusted relative to the difficulty of the field and has to be compared with other STEM disciplines. Our success rate of 66.4 % is higher than the MNHS division rate of 60.7 % in fall 2015. Since MNHS division contains all stem disciplines it makes this comparison more appropriate.

### 1C. Program Update: Describe your proudest moments or achievements related to student success and outcome.

We have hired a new FT faculty to teach CHEM 104 course. With this new faculty, the course has grown two additional sections resulting in more FTES to the department. The demand for this course is growing every semester.

With the new Organic Chemistry faculty hired two years ago, our enrollment has grown to a point of offering 2 sections of CHEM 221 Lab for the first time in the history of Palomar College, thus increasing FTES.

65% of our students who have completed all our courses up to Organic Chemistry have transferred to 4 year colleges and a good 20 % of that class is poised to finish the last semester at Palomar and ready to transfer.

Two students from this class have earned prestigious summer internships from Johns Hopkins and UCI last summer and successfully completed their programs there.

**1D. Program Improvement:** What areas or activities are you working on this year to improve your program? Please respond to new data as well as feedback from last year's program review.

1. Lab Manuals: To improve the quality of lab experiments and to increase student affordability, FT faculty are working on CHEM100, CHEM105, CHEM 110 and CHEM115 lab manuals in-house which would bring down the cost to a fifth of what is

currently in use.

2. Curriculum Improvement:

- a) Chemistry 104 (General, Organic and Biochemistry) for nursing majors has been revised to decrease the lab hours from 6 to 4 and increase the lecture hours from 3-4 per week. This has brought down the cost of running the lab, increased the time available to cover the content at a reasonable pace for this highly challenging course and has increased the enrollment to two additional sections of lecture and 4 additional labs.
- b) Additional Chem 115 lecture and lab classes are planned to serve night students
- c) We are also planning to offer CHEM 205- Biochemistry course every semester instead of once a year to save the wait time for those students who do not succeed the first time around.
- d) CHEM 110 Prerequisite: Drop the high school Math prerequisite and replace it with Math Placement score; Drop the High School Chemistry prerequisite and may be replace it with a challenge exam.
- e) For the first time in the history of Palomar, we offered Chem 10- Chemistry calculations course during winter inter-session to get students prepared for Spring semester and observed the enrollment and retention were much better compared to the section during regular semester. We plan on offering this course during Summer '17 as well and continue offering it only during inter-sessions.

**1E. Unanticipated Factors:** Have there been any unanticipated factors that have affected the progress of your previous plan?

Challenge Exam for CHEM 110 is stalled until all the details are worked out with the college and the Chancellor's office.

**1F. SLOACs:** Describe your course and program SLO activities this past year. How have you used the results of your assessments to improve your courses and programs? [Refer to the SLO/PRP report – https://outcomes.palomar.edu:8443/tracdat/](https://outcomes.palomar.edu:8443/tracdat/)

CHEM10, CHEM 100 and CHEM 104: All assessed in Spring 2015 and the assessments showed 70% or better achieved the SLOs.

CHEM 105: This course assessed this course in Spring 2016. 71% of the students assessed scored 70% or higher on a 20 point final exam question concerning a basic organic reaction mechanism. The SLO was met.

CHEM 110, CHEM 110L and CHEM115 and CHEM 115L are all due for Assessment in Spring of 2017

CHEM 205: This course was assessed in Spring 2016. For 2 questions related to basic principles of biochemistry, 68% and 82% of the students gave correct response when the understanding of structure relating to reactivity of biochemicals was assessed. Since the criterion was 60% success rate, I would consider the SLO met.

For 2 questions concerning the basic energy cycles of life, 68% and 46% of the students gave a correct response. Instructor would look at the second question closely and make necessary adjustments which include additional instruction in this area and re-writing the question to improve clarity.

CHEM 220: Fall 2015 assessment showed 94% of students successfully answered questions relating to scientific method.

CHEM221: Last assessed in Spring 2015 and is due for assessment in Spring of 2018

**SECTION 2: PROGRAM GOALS**

**2A. Progress on Previous Year's Goals:** Please list discipline goals from the previous year's reviews and provide an update by checking the appropriate status box .

Goal	Completed	Ongoing	No Longer a Goal
1. Revise CHEM 104 curriculum to reduce lab hours	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Challenge exam for CHEM 110 placement	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
3. Hire 4 full time faculty (hired only one and in the process of hiring)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**2B. New Discipline Goals:** Please list all discipline goals for this three-year planning cycle (including those continued from previous planning cycle):

GOAL #1	
Program or discipline goal	Offer CHEM 205 Biochemistry both Spring and Fall semesters
Strategies for implementation	Add to the course schedule by completing necessary paper work
Timeline for Implementation	Fall 2017
Outcome(s) expected (qualitative/quantitative)	Increase FTES; eliminate wait time for students after completing CHEM105; serve students preparing for Medical School admission exam
GOAL #2	
Program or discipline goal	Offer CHEM10 during both summer and winter intersessions.
Strategies for implementation	Add to the course schedule by completing necessary paper work
Timeline for Implementation	Summer 2017
Outcome(s) expected (qualitative/quantitative)	Increase FTES; prepare students with problem solving skills needed to succeed in upcoming chemistry courses.
GOAL #3	
Program or discipline goal	Develop Custom Lab Manuals for CHEM 100, CHEM 105, CHEM 110 and CHEM 115 Labs
Strategies for implementation	Work with low-cost publishers to create manuals on time
Timeline for Implementation	FALL 2017
Outcome(s) expected (qualitative/quantitative)	To reduce lab manual cost for students and increase the quality of lab experiments and exercises.

**Department Chair/  
Designee Signature:** \_\_\_\_\_

**Date:** 03/24/2017 \_\_\_\_\_

**Division Dean Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Vice President Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_