



Program Review & Planning (PRP)

PART 1: 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:	Mathematics
Department Name:	Mathematics
Division Name:	MNHS

Please list all participants in this Program Review:

Name	Position
Jay Wiestling	Department Chairman
Kelli Miller	Department ADA
Fari Towfiq	Department faculty
Cindy Anfinson	Department faculty
Shannon Lienhart	Department Faculty
Perri Gellman	Department Faculty

Number of Full Time faculty	31	Number of Part Time Faculty	56
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Please list the Classified positions (and their FTE) that support this discipline:

Kelli Miller, 1 FTE

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

Discipline mission statement ([click here for information on how to create a mission statement](#)):

The mission of the Palomar College Mathematics Department is to provide an environment where a diverse student body can learn and become competent users of mathematics and mathematical applications. Moreover, the department will contribute to the development of students as mathematical thinkers, to continue to grow in their chosen professions, and to be successful after transferring to a college or university. In pursuing this mission, primary departmental functions are the development, dissemination, and application of mathematical knowledge in the areas of mathematics and statistics. We will serve students who are STEM majors and minors, general education students, at both basic skills and transfer levels.

In fulfilling this mission, the department creates an environment where the faculty can continue to grow as teachers and scholars, while providing public and professional service.

List all degrees and certificates (e.g., AA, AT, Certificates) offered within this discipline:

AS Degree in Mathematics, AT Degree in Mathematics

PART 2: Program Assessment

The first step in completing your self-study is to examine and assess your discipline/program. To accomplish this step, complete the Following Sections:

- Section 1: Program Data and Enrollment
- Section 2: Course Success Rates
- Section 3: Institution and Program Set Course Success Rate Standards
- Section 4: Completions
- Section 5: Labor Market Information (CTE programs only)
- Section 6: Additional Qualitative Information
- Section 7: Curriculum, Scheduling, and Student Learning Outcomes

SECTION 1: PROGRAM DATA & ENROLLMENT

Click on the following link to examine enrollment, efficiency, and instructional FTEF trends for your discipline. Log-in using your network username and password.

<https://sharepoint2.palomar.edu/sites/IRPA/SitePages/Productivity%20Metric%20Summary.aspx>

- A. To access your discipline data, select your discipline from the drop down menu.
- B. To access course level data (e.g., COMM 100 or BIOL 100) use the drop down menus to select “discipline” and “catalog number”.

Use the data to answer the following questions.

1. Discipline Enrollment

Discipline Enrollment (over last 5 years)	Increased		Steady/No Change		Decreased	x
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Reflect on your enrollment trends over the past five years. Was the trend expected? What factors have influenced enrollment?

We have lost about 1,000 students, over the last five years (8,088 to 6,959). Some of this can be attributed to Math 54. A student can now take fewer classes on their pathway to statistics. Another cause of the loss of students may be due to the fact that after years of asking the department to grow, the district has cut about 36 sections from our offerings over the last two years. Furthermore, with the use of true multiple measures placement, students are being placed higher and hence are taking fewer classes. Finally, the district wide enrollment has declined over the last five years.

2. Course-Level Enrollment and Fill Rates

If there are particular courses that are not getting sufficient enrollment, are regularly cancelled due to low enrollment, or are not scheduled, discuss how your discipline is addressing this. For example, are there courses that should be deactivated?

Our fill rates have been declining, from 102.8% (8,088/7,868) in 2011-2012 down to 88.8% (6,959/7,837) in 2016-2017. Still, our fill rate is better than the district as a whole (85.76%), which is also down over four percentage points over the same time

period. Math 15 has been canceled more than any other class, since the use of true multiple measures placement. We are scheduling fewer sections of this course and are considering deactivating it or changing it to a noncredit course.

3. WSCH/FTEF

Although the college efficiency goal is 525 WSCH/FTEF or 35 FTES/FTEF, there are many factors that affect efficiency (i.e. seat count / facilities / accreditation restrictions).

Discipline Efficiency Trend	Increased	x	Steady/No Change		Decreased	
Discipline Efficiency:	Above 525 (35 FTES/FTEF)	x	At 525 (35 FTES/FTEF)		Below 525 (35 FTES/FTEF)	

Reflect on your enrollment trends over the past five years. Was the trend expected? What factors have influenced enrollment?

Although our rate has dropped slightly over the last six years (from 615.04 in 2011-2012 down to 554.58 in 2016-2017), it has increased over the last four years (from 542.06 in 2013-2014 to 554.58 in 2016-2017). This is following in district wide trend. Furthermore, our rate is significantly higher than that of the district as a whole (488.67).

4. Instructional FTEF:

Reflect on FTEF (Full-time, Part-time, and Overload) over the past 5 years. Discuss any noted challenges related to instructional staff resources.

FTEF from contract and from hourly have both increased by about 3 over the last five years, while overload FTEF has increased by 1.36. Part-time FTEF has increased by over 4! Our percent of part-time to total FTEF is 56.53%, similar to what it was five years ago, but still too high.

SECTION 2: COURSE SUCCESS RATES

Click on the following link to review the course success rates (% A, B, C, or Credit) for your discipline. Examine the following course success rates.

- A. On-Campus Course Success Rates
- B. Online Course Success Rates
- C. Course Success Rates by gender, age, ethnicity, and special population (use the filter buttons at the top of the worksheet to disaggregate success rates by demographic variables)
- D. Course Success Rates by class location (Escondido, CPPEN, etc.)

<https://sharepoint2.palomar.edu/sites/IRPA/SitePages/Success%20and%20Retention.aspx>

1. Overall Success Rate:

Reflect on your discipline’s on-campus, online, and by location (ESC, CPPN, etc.) course success rates over the past five years. Compare your success rates to the overall college success rates. Are the rates where you would expect them to be? Have there been changes over time?

Of course the online classes have the lowest success rates and have been flat over the five years. Fallbrook has had the best success rates, though it is a small population. Furthermore, we had an instructor up there who had a reputation as a very easy grader. San Marcos and Escondido have very similar rates.

2. Course Success Rates by gender, age, ethnicity, and special population:

Reflect on your discipline’s success rates by the given demographic variables (gender, age, ethnicity, special population). Are there large differences between groups? If so, why do you think this is happening and what might you consider in the future to address the needs of these groups?

Note: Institutionally, the College has a goal to close the performance gap of disproportionately impacted students, including African-American, Hispanic/Latino, veterans, foster youth, and students with disabilities. You can access the Student Equity Plan on the SSEC website <https://www2.palomar.edu/pages/ssec/>

Gender	Success rates for males and females are similar with males having a slight edge. Strangely enough, in 2014-15, the success rate of students claiming unknown gender was 63.6%, almost 10 points higher than students of known gender. We have no explanation.
Age	We see consistent trends in success rates of different age groups. They are all very similar, each having its ups and downs.
Ethnicity	As is the case throughout the state, Asians have the highest success rate, with whites being a close second, and Black or African Americans having the lowest rate. All other groups have similar rates. From our Student Equity analysis, from the Basic Skills mathematics data, there has been an 8.8% increase in completion rates for African-Americans and an 11.7% increase in the completion rate for Hispanics over the time period 2015-2016.
Special Population (examples- veteran, foster youth, etc)	Students without disabilities do slightly better than students with disabilities. Veterans do slightly better than non-veterans. The biggest difference was seen with foster youth. In 2013-14, the gap between foster youth and non-foster youth students’ success rates was 46 percentage points. By 2015-16, the gap was reduced to 16.3%. The gap stood at 18% last year.

3. Disaggregated Course Success Rates (Select at least two other variables):

Disciplines/programs find it useful to examine course success rates by other types of variables (e.g., time of day, level of course (basic skills, AA, Transfer). Examine course success rates disaggregated by at least two other variables and reflect on your findings.

Evening students have about a 5% success rate advantage over day students. This may be because daytime students may be more socially involved and less serious about their grades than working, evening students.

We were surprised to see that the success rates of first-year students was higher than that of continuing students, thinking the continuing students had settled down and gotten serious. Apparently the continuing students encounter harder and harder classes as they progress.

SECTION 3: INSTITUTION AND PROGRAM SET COURSE SUCCESS RATE 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:

- A. The College’s institutional standard for course success rate is 70%.
- B. Review your discipline’s course success rates over the past five years.
- C. 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:	55%
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Why?

The statewide average is 55%. No one can expect that the success mathematics is the same as it is in dance. It is a very difficult subject for a vast majority of the population. It is, perhaps, the only subject in which it is socially acceptable to fail a class. Students plan on failing. With these conditions, it would be a great feat to even break the 60% mark.

SECTION 4: COMPLETIONS

Click on the following link to review the completions for your discipline.

<https://sharepoint2.palomar.edu/sites/IRPA/SitePages/Degrees%20and%20Certifications.aspx>

- A. To access your discipline data, go to the "Awards" tab at the bottom of the page and click on your discipline.
- B. To access your program level completions, click on the tab titled "Awards by Academic Plan" at the bottom of the page and then click on your discipline.

1. Overall Completions:

Reflect on your discipline's overall completions over the past five years. Are the completions where you would expect or want them to be? What is influencing the number of completions?

Our discipline numbers are all over the place, as indicated by a mean of about 12 and a standard deviation of almost 7.

2. Specific Degree/Certificate Completions:

Do you have degrees or certificates with few or no completions? If so, what factors influence completions within specific programs? If you have degrees/certificates with few completions, are they still viable? What can be done to help students complete programs within your discipline?

Over the last five years, the least number of degree completed was 10, though it was almost 30 last year.

SECTION 5: LABOR MARKET INFORMATION (CTE PROGRAMS ONLY)

If you have CTE programs in your discipline, refer to the following link to obtain relevant labor market data. This data can be found on the Centers for Excellence website at <http://www.coeccc.net/Supply-and-Demand.aspx>

Example of Labor Market Information:

SOC	Description	Counties	2014 Occupations	2017 Occupations	Change	% Change	Openings	Annual Openings	10% Hourly Earnings	Med Hourly Earnings	Entry Level Education (Typical)
13-2011	Accountants and Auditors	Imperial	341	361	20	5.8%	57	19	\$17.70	\$26.09	Bachelor's degree
13-2011	Accountants and Auditors	San Diego	12,554	13,735	1,181	9.4%	2,388	796	\$20.88	\$32.92	Bachelor's degree

1. What is the regional three-year projected occupational growth for your program(s)?

N/A

2. What is being done at the program-level to assist students with job placement and workforce preparedness?

N/A

3. If your program has other program-level outcomes assessments (beyond SLOs and labor market data), including any external mandated regulatory items, discuss how that information has been used to make program changes and/or improvements.

N/A

4. When was your program's last advisory meeting held? What significant information was learned from that meeting? (CTE programs are required by Title 5 to conduct a minimum of 1 advisory meeting each year)

N/A

SECTION 6: ADDITIONAL QUALITATIVE INFORMATION

Not all information important to reviewing your program is quantitative or included in the section above.

Describe other data and/or information that you have considered as part of the assessment of your program. (Examples of other data and factors include, but are not limited to: external accreditation requirements, State and Federal legislation, four-year institution directions, technology, equipment, budget, professional development opportunities).

None

SECTION 7: CURRICULUM, SCHEDULING, AND STUDENT LEARNING OUTCOMES

1. SLO Assessment Results:

How have SLO assessment results impacted your planning over the last three years? Consider curriculum, teaching methodology, scheduling, department discussion (FT & PT faculty included) resources, etc. Refer to the SLO/PRP report – <https://outcomes.palomar.edu:8443/tracdat/>

Due to some unsatisfactory results in our pretransfer classes, we are working on an extensive overhaul of our pretransfer and precalculus curriculum, similar to what Cuyamaca has done.

2. SLO Assessment Methods:

How effective are your current methods/procedures for assessing course and program student learning outcomes? What is working well and how do you know? What needs improvement and why? Refer to the SLO/PRP report – <https://outcomes.palomar.edu:8443/tracdat/>

We feel that our methods are good, because they are having the desired outcomes: discussion and change.

3. Program SLOs:

How do your program SLOs represent the scope and depth of learning appropriate to the degree/certificate programs offered? What needs improvement and why? Refer to the SLO/PRP report – <https://outcomes.palomar.edu:8443/tracdat/>

We have one SLO that deals directly with our AS-T degree, asking if students are well prepared to transfer in a STEM major. We have another that that deals directly with our AS degree, asking if students are well prepared for employment in entry level mathematics positions.

4. Curriculum overview:

Does your program offer sufficient opportunities for students to learn current disciplinary and professional knowledge, skills, competencies, etc. for the type and level of degree/certificate offered? Discuss how your course/program reviews, since the last PRP, have changed and/or impacted your program. How is the potential need for program/course deactivation addressed by the department?

According to program SLO assessments, our program offers sufficient opportunities for students to learn current disciplinary and professional knowledge. We are currently discussing the deactivation of two of our courses.

5. Curriculum scheduling:

Describe how you schedule your courses to include a discussion on scaffolding (how all parts build on each other in a progressive, intentional way), and scheduling of courses so students can follow the best sequence. Address how enrollment issues impact scheduling and student completion/achievement.

Not only do we offer both day and evening sections of all of our courses, but we also offer them in the early morning, late morning, early afternoon, late afternoon, Saturdays and in the summer. We also offer many of our courses in multiple locations, working with these locations to determine what their needs are. Currently we are experiencing a shift in our scheduling from basic skills to statistics and precalculus. This is due to the change in our placement process from testing to a placement based on multiple measures. The guided pathways under development in MNHS, the STEM Academies, are also triggering discussions on scheduling core math courses that will allow students in the Academies to also enroll in their core STEM courses. We are working with our dean to meet these new scheduling needs.

6. Curriculum communication:

How does regular communication with other departments that require your courses in their programs occur – scheduling, review scheduling conflicts/overlaps for courses within same program, etc.?

We communicate frequently with all of our natural and health science departments to insure that we are meeting their needs. Their needs seem to be met, since our department and our offerings are so extensive. Our newest challenge will be meeting the needs of any programs that move to the north or south center. We are already in discussions with Biology, CSCI and CSIT, regarding what they may offer at these new sites.

PART 3: Program Evaluation and Planning

Program Evaluation and Planning is completed in two steps.

Section 1: Overall Evaluation of Program

Using the results of your completed assessment (See Sections 1-6 above), identify the strengths and areas for improvement within your program. Also consider the areas of opportunities and any external challenges your program faces over the next three years. Summarize the results of your assessment in the Grid below.

Section 2: Establish Goals and Strategies for the Next Three Years

Once you have completed your overall evaluation, identify a set of goals and strategies for accomplishing your goals for this upcoming three year planning cycle. Use the template in Section 2 below to document your goals, strategies, and timelines for completion.

SECTION 1: OVERALL EVALUATION OF PROGRAM

1. Discuss your discipline’s strengths, weaknesses, opportunities and threats in regards to curriculum, assessment, enrollment, success rates, program completion, etc. For helpful suggestions on how to complete this section, go to <http://www2.palomar.edu/pages/irp/files/2017/02/Helpful-Tips-for-Completing-a-SWOT.pdf>

Strengths:	We have outstanding faculty who care very much about their students’ success and work hard to help them attain their goals. Perhaps our biggest strength is, for the most part, our faculty are willing to try something new to insure student success while maintaining a quality program.
Weaknesses:	Our main weakness is if we place a student three level below transfer, only 6% of these students succeed in a college level mathematics course. Though this slightly higher than the state average (4%), we still find it unacceptable.
Opportunities:	We are using the above stated weakness as inspirations to get working on an extensive overhaul of our pretransfer and precalculus curriculum, similar to what Cuyamaca has done.
Threats:	The new enrollment management system has cause the reduction of our offerings. This threatens our ability to meet our students’ needs by offering multiple sections of courses at multiple times and locations. When a student looks at our schedule and doesn’t see a convenient time offer for the the class they want, they will go elsewhere.

SECTION 2: Establish Goals and Strategies for the Next Three Years

1. Progress on Previous Year’s Goals: Please list discipline goals from the previous year’s reviews and provide an update by placing an “X” the appropriate status box .

Goal	Completed	Ongoing	No longer a goal
Raise student success rates		x	
Decrease the Part-time/total FTEF percent.		x	
Decrease the number of buildings in which we have faculty offices		x	

2. 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	Improve the number of students who successfully complete a college level mathematics course and comply with AB705.
Strategies for implementation	<p>We have a group trying to convince the department to make the following changes.</p> <ul style="list-style-type: none"> • Math 60, 110, 120, 130, and 135 would be offered with and without an integrated support corequisite class, placement determined by MM. • These classes, along with their corequisite class, would be scheduled back-to-back and taught by the same instructor. Students would not feel like they are in two different classes.

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	<ul style="list-style-type: none"> ● A class and its support class would be linked (students would not be able to register for one and not the other). ● Instructors would either pick a linked pair or a class without support. ● Other than their initial placement, students would have the choice of taking future classes with or without support. ● If a student fails a corequisite pairing, they may be allowed to take the class again without the support class. Department chair will make the determination, after consultation with the instructor. ● Classes with support would need to be taught with pedagogy that includes classroom activities. ● Faculty training will be provided. ● Support classes will be two units, except, possibly, 135. ● Change 135 to six units and remove the trigonometry prerequisite. ● Math 10, 15, 50, and 53 will be removed from the mainstream schedule. There will be some form of 15/50 or 53 offered to those who need it (non-credit, hybrid only, etc.) ● Grading will be similar in both the main class and the corequisite. If a student gets a C or better in the main class, they get a Pass in the corequisite class. If they get a D or F in the main class, they get a No Pass in the corequisite.
<p>Timeline for implementation</p>	<p>Fall 2019</p>
<p>Outcome(s) expected (qualitative/quantitative)</p>	<p>We hope to have outcomes similar to some states who have implemented co-requisite models, such as</p> <ul style="list-style-type: none"> ● The State of Tennessee: Completion rates went from 12.3% to 51% ● Georgia: Traditional: 20% success rate in two years Corequisite: 63% success rates ● West Virginia: Traditional: 14% success rate in two years Corequisite: 62% success rates

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Goal #2	
Program or discipline goal	Accelerated Pathways
Strategies for implementation	We plan to grow our Accelerated Mathematics Gateway program, and we are going to offer pathways for non-STEM majors to finish their mathematics in one year.
Timeline for implementation	Fall 2019
Outcome(s) expected (qualitative/quantitative)	AB 705 requires a community college district or college to maximize the probability that the student will enter and complete transfer-level coursework in mathematics within a one-year timeframe. We want to increase the number of students who complete transfer-level coursework in mathematics within a one-year timeframe
Goal #3	
Program or discipline goal	Reduce the class cap on our pre-transfer level courses to 32.
Strategies for implementation	We need to convince the union and the district that this is best for our students.
Timeline for implementation	Fall 2019
Outcome(s) expected (qualitative/quantitative)	We expect the success rates to improve as instructors will have additional time to work with students and use active learning techniques. The CONFERENCE BOARD OF THE MATHEMATICAL SCIENCES states on its website <i>“we call on institutions of higher education, mathematics departments and the mathematics faculty, public policy-makers, and funding agencies to invest time and resources to ensure that effective active learning is incorporated into post-secondary mathematics classrooms.”</i> Inside Higher Ed’s website states, “instructors in small (10-14) and medium (15-34) classes are more likely to involve students in hands-on projects and real-life activities, assign projects that require original or creative thinking, form teams or discussion groups to facilitate learning, and ask students to help each other understand concepts or ideas.” Furthermore, they state “The evidence found in this analysis unequivocally leads to the conclusion that class size has a negative impact on the student-rated outcomes of amount learned, instructor rating, and course rating.” We need smaller class sizes.
Goal #4	
Program or discipline goal	New Building
Strategies for implementation	We don’t know. Maybe the department needs to buy some lumber. Maybe we just need to change the culture of putting the largest department in the district last.
Timeline for implementation	Fall 2019
Outcome(s) expected (qualitative/quantitative)	As the largest department in the district (larger than some divisions), we

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	<p>see the vast majority of Palomar College students at some point or another. It would be nice if most of our students didn't have to track us down as our offices are located in five different buildings, two of which are extremely ugly and inefficient. This is the view of Palomar that we give students. Our faculty teach in 11 different buildings on the main campus, and have to haul around calculators, document cameras, and laptops from building to building. Valuable instruction time is lost with all the setup before and after class our faculty currently engage in. Most important is the need for all math faculty to be located together in one space as well as have the Math Center embedded within the department. This will result in more communication, more collaboration and help us improve the way we educate and serve our students.</p>
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Goal #5

Program or discipline goal	
Strategies for implementation	
Timeline for implementation	
Outcome(s) expected (qualitative/quantitative)	

3. How do your goals align with your discipline's mission statement?

Our goals are tied tightly to the department's mission of student success.

4. How do your goals align with the College's Strategic Plan Goals?

All of our goals are aligned with Strategic Plan Goal 2 and student success.

PART 4: FEEDBACK AND FOLLOW-UP

This section is for providing feedback.

Confirmation of Completion by Department Chair

Department Chair	Jay Wiestling
Date	

***Please email your Dean to inform them that the PRP has been completed and is ready for their review**

Reviewed by Dean

Reviewer(s)	Margie Fritch
Date	March 13, 2018

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1. Strengths and successes of the discipline as evidenced by the data and analysis:
Faculty collaborating to address student success.
2. Areas of Concern, if any:
none.
3. Recommendations for improvement:
Staying updated on the new initiatives and continuing to look at student success data.

***Please email your VP to inform them that the PRP has been completed and is ready for their review**

Reviewed by: Instructional Planning Council PRP Sub-Committee	
Reviewer(s)	Sarah De Simone
Date	4/4/18
1. Strengths and successes of the discipline as evidenced by the data and analysis:	
Enrollment, demographics and goals are thoroughly explained.	
2. Areas of Concern, if any:	
3. Recommendations for improvement:	
4. Recommended Next Steps:	
<input checked="" type="checkbox"/>	Proceed as Planned on Program Review Schedule
<input type="checkbox"/>	Repeat Comprehensive Review

Reviewed by: Vice President	
Reviewer(s)	Jack S. Kahn Ph.D.
Date	1/18/18
1. Strengths and successes of the discipline as evidenced by the data and analysis:	
<ol style="list-style-type: none"> 1. Enrollment, fill rate, and wsch/ftcf section is excellent- good use of data and analysis 2. Demographic data is interesting- list success rates (raw data)- some of it is here but not all throughout 3. Interesting about evening success rates 4. Rationale for success rate makes sense – difficult spot to be in 5. Math certainly offers classes at all times in a variety of ways – and also offer creative opportunities for students 6. Goals are thorough and really well done 	
2. Areas of Concern, if any:	
a. List the actual success rates (raw data) as you did above	

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- b. List raw data for success rates of evening students
- c. SLO section is incomplete (see rubric)
- d. The enrollment management system didn't cause the reduction – the reduction happened because there are less students

3. Recommendations for improvement:

4. Recommended Next Steps:

X	Proceed as Planned on Program Review Schedule
	Repeat Comprehensive Review

Upon completion of PART 4, the Program Review document should be returned to discipline faculty/staff for review, then submitted to the Office of Instruction and Institutional Research and Planning for public posting. Please refer to the Program Review timeline.