Full Review

PALO VERDE COLLEGE

Mathematics and Science Division Program Review
Reporting Fall 2014 to Spring 2017

Associate of Arts with Emphasis in Mathematics and Science

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1. PURPOSE OF THE PROGRAM

"Palo Verde College provides opportunities for personal and professional growth to a diverse community of learners in an academic environment committed to student success and equity by supporting student achievement of basic skills, certificate, degree, university transfer, and career goals." PVC Mission Statement 01/2016

a. Describe the purpose of program and its mission.
    i. Students can obtain an Associate of Arts with an emphasis in Mathematics and Science. The degree can also prepare them for transfer.
    ii. The courses in the Mathematics and Science program that have CIDs can be transferred to CSU system, UC system, and any community college in California.
    iii. Upon completion of the Mathematics and Science program, students may enter mathematics, engineering, medicine, biology, actuarial studies, physics, and chemistry.
    iv. In the Mathematics and Science program, students gain quantitative reasoning and critical thinking skills.

b. How does the program support the College Mission?
    i. Transferability of our courses supports the college Mission.
    ii. Pre-college level basic skills mathematics courses are accessible to students.
    iii. The Associate of Arts in Mathematics and Science leads to employment opportunities.
    iv. The courses in the Mathematics and Science program enhance personal and professional growth.
    v. This program feeds into the Nursing program, allied health fields, and natural sciences.
    vi. Mathematics and Science program addresses and promotes critical thinking, scientific methods, and problem solving.

2. POPULATION(S) SERVED

a. Describe the populations served by the program, identifying special populations, if any.

    The population includes correspondence education students, face-to-face students, community students, basic skills students, Needles students, students from diverse backgrounds, online students, hybrid students, transfer students, students who take mathematics/science for professional enrichment, nursing students, science students, students going into medicine, transfer students, students obtaining an Associate of Arts in Mathematics and Science. The modalities of the courses include online and hybrid and are offered in Blythe and in Needles.

b. Describe other populations that should be served by the program and identify plans for serving them in the future.

The Associate of Arts with Emphasis in Mathematics and Science program serves a diverse population of students. We will offer more face-to-face courses. AB 705 (Assembly Bill 705 from California) mandates placement by multiple measures and accelerated MAT 084 and MAT 088 courses being offered. This will benefit a wider variety of students and will enable students to complete the AA degree sooner. Some students are already taking MAT 080 and MAT 082 in a compressed calendar (9 weeks each).

3. ACCOMPLISHMENTS IN ACHIEVING GOALS

a. Describe progress in achieving each goal outlined in the previous Full Review, providing evidence documenting such achievements.

i. ASTRONOMY

Previous Goal: Hire another full-time Astronomy instructor.

2017 Update: A full-time Astronomy instructor was hired.

ii. BIOLOGY

Previous Goals: Obtain another full-time Biology instructor. Hire tutors for Biology.

2017 Update: A full-time Biology instructor was hired. Online tutoring was obtained.

iii. CHEMISTRY

Previous Goals: Obtain tutors for Chemistry. Reinstate the face-to-face Chemistry lab.

2017 Update: Online tutoring was obtained. The face-to-face Chemistry lab was reinstated.

iv. MATHEMATICS

Previous Goals: Additional tutoring venues. Embedded tutoring within Mathematics courses. Condense two mathematics courses within a semester (compressed calendar). Continually keep Hawkes training updated.

2017 Update: BrainFuse (online tutoring platform) was put into practice. Many math courses have in-class tutors. Peer tutors were available in the Library and also at the desk near the IT department. MAT 080 and MAT 082 were (are) offered as two 9-week classes within one semester. Online updates for Hawkes Learning along with face-to-face conferences with Hawkes representatives were held regularly.

v. GEOLOGY and GEOGRAPHY

Previous Goals: Offer these courses after the departure of our former full-time instructor.

2017 Update: Both courses were offered and taught by adjunct faculty.

b. Explain modifications, if any, of goals outlined in the previous Full Review, providing evidence documenting such modifications.

No modifications of the goals were reported.

4. STRENGTHS, WEAKNESSES & NEW GOALS

a. List and comment on the major strengths of the program.

i. Student enrollment data for the years 2014-2017 and math and science requirements in other programs contribute to increased enrollments in math and science courses. Mathematics and Science program offers classes in face-to-face, ITV, and correspondence modalities, which make our courses more accessible to the students, and thus increase student enrollment in Mathematics and Science program.

ii. Adaption of Hawkes Learning System (HLS) helped math program improve its quality by offering online tutoring support, student engagement, and ultimately in support of student success.

iii. Since the last program review, math program improved tutoring services offered at the library and in classroom.

iv. Math program is offering compressed courses for MAT 080 and MAT 082.

v. Mathematics and Science division hired two new faculty members to meet the demand in Biology and Astronomy/Mathematics courses.

b. List and comment on the major weaknesses of the program.

There is one weakness Mathematics and Science program needs to work on: high cost of textbooks.

c. List continuing and new goals. Describe activities to achieve these goals, timelines to complete these goals, and measures for evaluating success in achieving them.

i. Mathematics and Science division continues to explore open educational resources to reduce the cost of textbooks to the students. Currently, Mathematics and Science faculty have been using the same textbook editions for about three years to lower the cost of the textbooks. In addition, we are reviewing Flat World textbooks for a possible adoption and investigate other alternatives to reduce cost of textbook. The textbook adoption decision will be finalized within 12 months.

ii. By offering accelerated courses, we plan to incorporate Guided Pathways in our division. We plan to incorporate Guided Pathways in the next 12 to 18 months.

iii. Due to the need of a chemistry and a geoscience instructor, the division will move forward to propose hiring of a full-time chemistry/geoscience instructor.

iv. Our division will implement AB-705 by addressing curriculum, assessment, and placement in accordance with the new law's guidelines. We will be in compliance with AB 705 by Fall 2019 when the law is set to take effect. Reorganization of mathematics curriculum will require additional supports to address student needs. With AB 705 implementation, most students of diverse mathematics abilities will be in college-level mathematics within their first year. Creation of a mathematics laboratory may be a good option to provide necessary mathematics support to our students.

d. Describe the alignment between continuing and new program goals and institutional goals and objectives stated in the current Integrated Strategic Plan, which can be found on the college website.

Table 4.1 Alignment between continuing and new program goals and institutional goals and objectives stated in the current Integrated Strategic Plan.

Institutional Goals	Division Goals
Goal 1, Strategy 1.3 Design and implement Guided Pathways.	By offering accelerated courses, we plan to incorporate Guided Pathways in our division.
Goal 2, Strategy 2.1 Implement strategies to increase access and success for underrepresented and disproportionately impacted students.	To increase access and success of students, Mathematics and Science division continues to explore open educational resources to reduce the cost of textbooks to the students.
Goal 6 Make continuous quality improvements in all programs and services through an ongoing and systematic cycle of integrated planning, assessment, and refinement of the college mission and all programs and services.	Our division will comply with AB-705 by using multiple measures in student placement.
Goal 10, Strategy 10.1 Identify current and future human resources that are needed to achieve the Institutional Goals and the overall Strategic Plan of the District.	Due to the need of a chemistry and a geoscience instructor, the division will move forward to propose hiring of a full-time chemistry/geoscience instructor.

5. CURRICULUM HISTORY

a. List all the courses in the program. Of the courses constituting the program, identify those that have not been successfully offered at least once during the preceding six (6) semesters.

Table 5.1 All the courses in the AA with Emphasis in Mathematics and Science program, where x represents courses that were not offered at least once during the preceding six semesters.

AA with Emphasis in Mathematics and Science	x = Not offered in previous 6 semesters
AST 101	
AST 105	
AST 110	
BIO 100	
BIO 101	
BIO 110	x
BIO 111	
BIO 140	x
BIO 141	x
BIO 210	
BIO 211	
CHE 101	
CHE 108	x
CHE 109	x
CHE 210	x
CHE 211	x
GEO 101	
GEO 103	x
GEO 104	x
GEO 107	x
GEL 101	
GEL 103	
GEL 105	
GEL 110	x
MAT 106	
MAT 110	
MAT 210	
MAT 220	
PHY 101	
PHY 110	x
PHY 220	x
PSY 155	

b. Explain in specific terms why these courses were not successfully offered. Provide a strategy for improving their success or explain why they should not be removed from the program.

Table 5.2 Course that were not successfully offered (rows marked x in Table 5.1) are listed here with an explanation and strategy for improvement.

Not offered in previous 6 semesters	Explanation and Strategy for Improvement
BIO 110	Low enrollment and not enough biology faculty. Successfully offered subsequently to this program review period.
BIO 140	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
BIO 141	Low enrollment. It is inactive as of Fall 2017
CHE 108	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
CHE 109	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
CHE 210	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
CHE 211	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
GEO 103	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
GEO 104	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
GEO 107	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
GEL 110	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
PHY 110	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.
PHY 220	Low enrollment. Confer with faculty, Instruction Office and Needles Center whether to inactivate course.

i. Some courses, especially upper level, should stay active for careers such as medicine, engineering, computer science, mathematics, and science, which require them. The strategy for improving success is to offer courses with mix of schedule; different day times and modalities should be scheduled to accommodate the needs of all types of students.

ii. Additionally, working on the four pillars of guided pathways namely clarifying the path, onboarding to the path, staying on the path and meeting learning outcomes along the way is a process to implement system wide changes to the student's experience at Palo Verde College.

Once faculty and counselors have made the necessary changes to the various programs and services, we can rationalize the changes to the course structure of various disciplinary pathways, like STEM, medicine, Allied Health, business, etc. to better match student needs with our course offerings. This effort is expected to launch the summer of 2018 and implemented over the next few years.

6. COURSE SCHEDULING & AVAILABILITYCOURSE SCHEDULING & AVAILABILITY

Describe how the scheduling of classes in the program optimizes class availability and supports student success.

Mathematics and Science division offers astronomy, biology, chemistry, geography, geology, mathematics, psychology, and physics courses in face-to-face, ITV, and correspondence modalities

to meet evolving needs of students. Face-to-face courses are being offered via ITV in the morning, afternoon, and in the evening to insure availability of classes for working and non-working Blythe and Needles students.

7. STUDENT LEARNING OUTCOMES (SLO)STUDENT LEARNING OUTCOMES (SLO)

SLO QUANTITATIVE DATA

Using the Program Level CLO Worksheets, aggregate data annually. Identify all Courses within that Program that have CLOs which map to PLO #1 in the first column of the table below. For each academic year since your last full program review, enter the % of Successful Students for the CLOs that map to PLO #1. Do the same for each PLO within the program.

Table 7.1 Average percent of successful students for each academic year from each course within the AA with Emphasis in Mathematics and Science program that to map to PLO #1. Data is aggregated annually from the Program Level CLO Worksheets. Asterisk (*) are courses that were not offered, or data is missing or course not part of the program.

Average Percentage Program Learning Outcome #1 AA with Emphasis in Mathematics and Science *Upon successful completion of the AA, Liberal Arts, Mathematics and Science program students will have: Acquired fundamental grounding in communication, critical thinking, scientific inquiry, and quantitative reasoning, the arts, literature and humanities, social, political and economic institutions, and self-development.*			
Course IDs within the Program that map to PLO#1	% Successful Students 2014-2015	% Successful Students 2015-2016	% Successful Students 2016-2017
AST 101	72.2	87.5	*
AST 105	77	81.8	95
AST 110	79.3	88.2	89
BIO 100	73.5	46	25
BIO 101	87	79	78
BIO 110	*	*	*
BIO 111	69	100	83
BIO 140	*	*	*
BIO 141	*	*	*
BIO 210	77	81	*
BIO 211	*	100	81
CHE 101	45.3	62.7	75
GEO 101	70.7	69	*
GEO 103	*	*	*
GEO 104	*	*	*
GEO 107	*	*	*
GEL 101	*	*	*
GEL 103	*	*	*
GEL 105	*	*	*
GEL 110	*	*	*

Average Percentage Program Learning Outcome #1 AA with Emphasis in Mathematics and Science			
Upon successful completion of the AA, Liberal Arts, Mathematics and Science program students will have: Acquired fundamental grounding in communication, critical thinking, scientific inquiry, and quantitative reasoning, the arts, literature and humanities, social, political and economic institutions, and self-development.			
MAT 106	80	94	*
MAT 110	79.1	81.8	*
MAT 210	*	80	*
MAT 220	*	*	*
MAT 224	*	*	*
MAT 226	*	*	*
PHY 101	66.7	100	85
PHY 110	*	*	*
PHY 220	*	*	*
Average % of Successful Students by Year	**67.5**%	**76.8**%	**68.0**%

Table 7.2 Average percent of successful students for each academic year from each course within the AA with Emphasis in Mathematics and Science program that to map to PLO #1. Data is aggregated annually from the Program Level CLO Worksheets. Asterisk (*) are courses that were not offered, or data is missing or course not part of the program.

Average Percentage Program Learning Outcome #2 AA with Emphasis in Mathematics and Science			
Upon successful completion of the AA, Liberal Arts Mathematics and Science program students will have: An understanding of the process of photosynthesis leading to formation of oxygen and carbohydrates.			
Course IDs within the Program that map to PLO#1	% Successful Students 2014-2015	% Successful Students 2015-2016	% Successful Students 2016-2017
AST 101	72.2	87.5	*
AST 105	77	81.8	95
AST 110	79.3	88.2	89
BIO 100	73.5	46	25
BIO 101	87	79	78
BIO 110	*	*	*
BIO 111	69	100	83
BIO 140	*	*	*
BIO 141	*	*	*
BIO 210	77	81	*
BIO 211	*	100	81
CHE 101	45.3	62.7	70
GEO 101	70.7	69	*
GEO 103	*	*	*
GEO 104	*	*	*
GEO 107	*	*	*
GEL 101	*	*	*
GEL 103	*	*	*
GEL 105	*	*	*
GEL 110	*	*	*

Average Percentage Program Learning Outcome #2 AA with Emphasis in Mathematics and Science			
Upon successful completion of the AA, Liberal Arts Mathematics and Science program students will have: An understanding of the process of photosynthesis leading to formation of oxygen and carbohydrates.			
Course IDs within the Program that map to PLO#1	% Successful Students 2014-2015	% Successful Students 2015-2016	% Successful Students 2016-2017
MAT 106	80	94	*
MAT 110	79.1	81.8	*
MAT 210	*	80	*
MAT 220	*	*	*
MAT 224	*	*	*
MAT 226	*	*	*
PHY 101	66.7	100	85
PHY 110	*	*	*
PHY 220	*	*	*
Average % of Successful Students by Year	**67.5**%	**76.8**%	**67.4**%

From the each of the tables above enter the "AVERAGE % of Successful Students by Year" in the appropriate box below.

Table 7.3 Average percentage of successful students by academic year for each PLO.

Average Percentage for all Program Learning Outcomes For Mathematics & Science Program			
PROGRAM LEARNING OUTCOME	*% Successful Students ACADEMIC YR 1*	*% Successful Students ACADEMIC YR 2*	*% Successful Students ACADEMIC YR 3*
PLO #1	67.5	76.8	68.0
PLO #2	67.5	76.8	67.4
Average % of Successful Students by Year	73.3	82.2	76.6

SLO ACTION PLANS

In the table below, describe the action plans that your department has made since your last program review. These action plans should be in identified in the Program Level CLO Worksheets.

Table 7.4 Action plans identified in the Program Level CLO Worksheets.

Program Name	Associated PLO #	Course IDs Affected	Identified Gap	Action Plan(s)	Resources Used to Implement Plan	Outcome	Academic Year(s) this was addressed
AA	1, 2	BIO 100	The textbook used for reading assignments by correspondence students does not include information on phototropism or hydrotropism.	Correspondence modality will be examined for areas where baseline success may be improved and fill content gaps with other resources.	Biology instructors.	Outcomes to be reviewed during the next program review.	Beginning FA 2017. Improve-ments are ongoing.
AA	1, 2	BIO 111	Students in FA 2014 exhibited poor attendance accounting for the low success rate.	Modifying the course assessments and comparing the results to see whether attendance improved.	Biology instructor.	Outcome reviewed in Spring 2015.	Issue was identified during FA 2014 and resolved in SP 2015.
AA	1, 2	GEO 101	Students struggled with the material.	Re-evaluate the exam/mid-term. Advocate for incarcerated students to have access to computers so they can have access to visual aids and multimedia items.	Geography instructor.	Outcomes to be reviewed at next assessment Spring 2018.	Issue found during FA 2015.
AA	1, 2	CHE 101	Low success rate reported for SLO #2 and SLO #3 for a face-to-face modality.	Adopt instructional techniques that augment the regular instruction techniques and develop experiments that expand on conceptual ideas.	Time to develop innovative instructional techniques and money to buy additional lab equipment required.	Data for the following year 2016 – 2017 show improved outcomes.	Issue found during 2015-2016 and addressed in the 2016 – 2017 year.

a. List courses for which CLOs have not been assessed. Provide an explanation why assessments of these CLOs have not been performed.

Courses for which CLOs were not assessed are BIO 110, BIO 140, BIO 141, GEO 103, GEO 104, GEO 107, GEL 101, GEL 103, GEL 105, GEL 110, MAT 220, MAT 224, MAT 226, PHY 110, and PHY 220. The two reasons assessments were not performed are the following: the courses were not offered and difficulty in getting course assessments from adjunct faculty. GEO and GEL courses were taught by a full-time instructor, who left Spring 2012. Since then, GEO and GEL courses have been taught by an adjunct.

b. Were any CLOs or PLOs revised/deleted in the past year based on assessment evaluations or revision of the Course Outline of Record? If so, indicate the courses or the program and a detailed explanation for the changes.

No CLOs or PLOs were revised/deleted in the past year based on assessment evaluations or revision of the COR.

c. Provide specific examples of course improvements resulting from the assessment of course SLOs.

i. The course improvements in PHY 101 increased student success from 66.7% in the academic year 2014-2015 to 100% in 2015-2016 and 85% in 2016-2017, respectively. The student success improved due to administering additional quizzes to assess whether students are understanding the material and adjusting accordingly during the next course offering.

ii. Another example is BIO 111. With this course, the student success increased from 69% in the academic year 2014-2015 to 100% in 2015-2016 and 83% in 2016-2017, respectively. The low success in the first academic year 2014-2015 was due to poor student attendance in Fall 2014. Assessment of this course allowed us to determine the cause of low success rate.

iii.

d. Provide specific examples of program and certificate improvements resulting from the assessment of program SLOs.

i. We are implementing uniform SLO assessments for math faculty to be used in all different modalities. When we collect data, we plan to draw a conclusion that will help to improve our programs.

ii. Assessment of previous program SLOs suggests that we need to improve the Biology program by equipping biology laboratories with essential scientific equipment and supplies. This venture will enable the program to implement hands-on biology learning.

e. Describe any differences in CLO achievement for different modalities (online, ITV, correspondence, face-to-face).

The CLO achievement for different modalities differed for BIO 100. This is due to the SLO of BIO 100 was outdated and affected only the correspondence modality adversely because the students in correspondence modality had limited access to the supplemental study material. For all other courses, the differences in CLO achievement for different modalities were negligible.

8. COURSE CURRENCYCOURSE CURRENCY

a. List the courses in the program and the year in which the course outline of each was most recently reviewed and approved by the Curriculum Committee.

Table 8.1 Year in which the course outline for each course within the AA with Emphasis in Mathematics and Science program was most recently reviewed and approved by the Curriculum Committee.

List of courses in the program	Year in which the course outline was most recently reviewed and approved by the Curriculum Committee
AST 101	12/2015
AST 105	12/2015
AST 110	12/2015
BIO 100	11/2014
BIO 101	04/2013
BIO 110	05/2015
BIO 111	11/2014
BIO 140	11/2014
BIO 210	05/2015
BIO 211	05/2015
CHE 101	05/2015
GEO 101	12/2014
GEO 103	05/2015
GEO 104	12/2014
GEL 101	12/2014
GEL 103	12/2014
GEL 105	12/2014
GEL 110	12/2014
MAT 106	04/2016
MAT 110	12/2014
MAT 210	04/2016
MAT 220	12/2014
PHY 101	12/2015
PSY 155	10/2015

b. Describe plans to revise and update course outlines of record that have not been reviewed and approved by the Curriculum Committee within the three (3) years preceding this program review report.

The plans to revise and update the course outlines of record are the following:

i. BIO 101 is updated and submitted to the Curriculum Committee for review and is to be approved.

ii. BIO 141 has not been offered during the preceding six (6) semesters and is inactive as of Fall 2017.

iii. MAT 226 was part of the program the first two academic years, during which it was not offered. During the third year, it was inactivated.

iv.

9. PROGRAM AND COURSE COVERAGEPROGRAM AND COURSE COVERAGE

a. List the courses in the program and identify which are taught by full-time faculty only, which are taught by adjunct faculty only, and which are taught by both.

Table 9.1 Course within the AA with Emphasis in Mathematics and Science program that were taught by full-time, adjunct, and both faculty.

Course IDs	Full-Time Only	Adjunct Only	Both Full-Time and Adjunct
AST 101	1		
AST 105			1
AST 110	1		
BIO 100			1
BIO 101			1
BIO 111			1
BIO 210			1
BIO 211	1		
CHE 101			1
GEL 101		1	
GEL 103		1	
GEL 105		1	
GEO 101		1	
MAT 106	1		
MAT 110	1		
MAT 210			1
MAT 220	1		
PHY 101	1		
PSY 155	1		
Total	**8**	4	7

b. Explain how effectively the program is served with the current coverage.

Out of nineteen (19) courses taught, 42.1% were taught by full-time faculty, 21.1% were taught by adjunct faculty, and 36.8% of the courses were taught by both adjunct and full-time faculty. Full-time faculty taught overload to meet the demand. Overall, the total coverage was 100% out of all the courses that were offered.

c. Describe plans to correct deficiencies, if any, in course and program coverage.

The deficiencies in the program coverage were corrected by hiring two full-time faculty in BIO and AST/MAT. The current GEL and GEO adjunct faculty provide sufficient coverage for the courses.

10. PROFESSIONAL DEVELOPMENTPROFESSIONAL DEVELOPMENT

a. Describe specific professional development activities in which faculty members in the program have participated over the past three (3) years and explain how such activities benefited the program and supported and facilitated student learning outcomes.

   i. Dr. Alejandro Garcia, Paul Shibalovich, Dr. Solomon Osayande, Sandra Sher and Biju Raman have attended the following conferences/workshops/trainings.

      a. Active Shooter Training - 2014
      b. Basic Skills Initiative Leadership Institute (Sandra only) - Summer - 2016
      c. Bubble Grader - 1/20/17
      d. CPR - 1/20/17
      e. Canvas Training- 8/12/16
      f. Multiple Measures Assessment - 8/12/16
      g. Correspondence Course Preparing - 8/13/15

   ii. Dr. Alejandro Garcia has participated in the RECON project managed by the Cal Poly, Pomona campus beginning June 2014 to present.

   iii. Biju Raman has participated in the math content development for the California Assessment Initiative between 2014 and 2017. He also advices the Chancellor's office Assessment Committee beginning 2017 as Math Content expert.

   iv. All these activities have contributed to the knowledge base of the instructors preparing them to deliver the most up to date content in their disciplinary areas.

b. Describe areas of unmet professional development needs among faculty in the program and identify specifically plans to address those needs.

   i. To remain engaged and informed with the scientific community and the newest developments in science and science careers, Instructor Hartline would like to become a member of the *American Association for the Advancement of Science* (AAAS). This professional organization seeks to “advance science, engineering, and innovation throughout the world for the benefit of all people.” Membership would help insure Instructor Hartline to remain up to date with the latest developments in science to provide the students of Palo Verde College with the most current knowledge in science and science fields. An annual fee is required for AAAS membership.

   ii. Dr. Patel would like to become member of American Physical Society (APS), American Astronomical Society, and American Association of Physics Teachers. Becoming a member in these organization will help Dr. Patel keep abreast with current research in physical sciences and its applications as well as physics education, and careers in science and

engineering professions. An annual fee is required for membership in each of these organization.

iii. Instructor Biju Raman would like to continue his professional development by being an active member of the following organizations, American Institute of Chemical Engineer, American Chemical Society, National Association of Science Teachers, all of which require an annual fee to claim the benefits.

iv.

11. STUDENT SUCCESSFUL COMPLETION & RETENTIONSTUDENT SUCCESSFUL COMPLETION & RETENTION

Note: The Program Review Committee will research the required completion and retention data and provide it to program faculty members for their review and analysis for this report. ***Completion*** *is defined as number of grades of A,B,C,CR divided by A,B,C,D,F,CR,NC,W,MW,IP.* ***Retention*** *is defined as number of grades of A,B,C,D,F,CR,NC, MW,IP divided by A,B,C,D,F,CR,NC,W,MW,IP*

a. Assess semester-by-semester course completion performance in each course in the program over the preceding six (6) semesters and compare those rates with the Institutional Set standards.

According to the California Community Colleges Chancellor's Office Institutional Effectiveness Report, the Current Institutional Set Standard is 70.6%.

Table 11.1 Summary of course completion success for courses meeting or exceeding (+) or not meeting or exceeding (-) the Current Institutional Set Standard for each academic year.

Course IDs	2014 – 2015	2015 – 2016	2016 – 2017
AST 101	+	+	
AST 105	+	-	
AST 110	+	+	+
BIO 100	-	-	-
BIO 101	+	+	+
BIO 111	-	+	-
BIO 210	-	+	+
BIO 211	+	+	+
CHE 101	-	+	+
GEL 101		-	+
GEL 103			+
GEL 105			-
GEO 101	-		-
MAT 106	+	+	+
MAT 110	-	-	-
MAT 210		-	-
MAT 220		-	
PHY 101		+	+

Majority of courses in the Mathematics and Science program met or exceeded the Current Institutional Set Standard for course completion for each of the academic years between 2014 and 2017. The following courses consistently met or exceeded the standard: AST 101, AST 110 BIO 101, MAT 106, and PHY 101. Two out of the three years, the standard was reached in CHE 101. BIO 111 course completion had inconsistent results. GEL 105 and MAT 220 were taught only in one of the three academic years but did not meet the set standard in these years.

The course completion standard was consistently not met in BIO 100, GEO 101, MAT 110, and MAT 210. For BIO 100, data indicate face-to-face completion exceeded correspondence and online completion, but on average still failed to exceed course completion standards. BIO 100 CLOs for this time period indicate correspondence students tended to have low exam scores and neglected to take exams and/or withdraw before the deadline. GEO 101 has been taught as correspondence and online only. MAT 110 correspondence completion on average has met or exceeded the Current Institutional Set Standard for completion, whereas face-to-face modality has not. MAT 110 student participation in face-to-face classes was skewed due to small enrollment in such courses. Although MAT 210 course completion was below the Current Institutional Set Standard, average completion was greater than the state completion rates for Math and English courses (state completion for Math and English courses is below 55%).

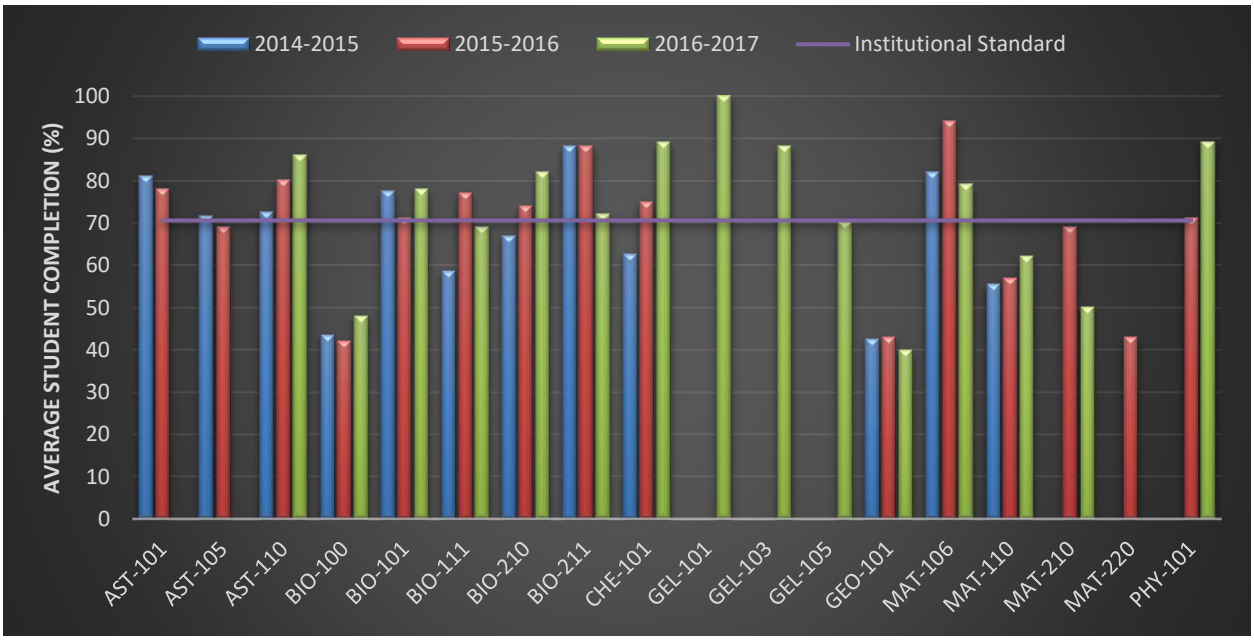

Figure 11.1 Average student completion for each course based on course modality. Error bars show the standard error and the Institutional standard is set at 70.6%.

Table 11.2: Student completion for each semester during the program review period.

	2014 – 2015		2015 – 2016		2016 – 2017	
Course IDs	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017
AST 101	81%	-	78%	-	-	-
AST 105	75%	66%	65%	73%	81%	88%
AST 110	64%	81%	-	80%	-	86%
BIO 100	47%	40%	48%	36%	59%	38%
BIO 101	72%	83%	76%	64%	-	78%
BIO 110	-	-	-	-	-	-
BIO 111	44%	73%	88%	67%	-	69%
BIO 140	-	-	-	-	-	-
BIO 141	-	-	-	-	-	-
BIO 210	67%	-	74%	-	82%	-
BIO 211	-	88%	-	88%	-	72%
CHE 101	43%	82%	62%	91%	93%	83%
GEL 101	-	-	-	-	-	100%
GEL 103	-	-	-	-	88%	-
GEL 105	-	-	-	-	58%	82%
GEL 110	-	-	-	-	-	-
GEO 101	52%	33%	45%	41%	30%	50%
GEO 103	-	-	-	-	-	-
GEO 104	-	-	-	-	-	-
MAT 106	79%	85%	-	94%	58%	100%
MAT 110	43%	68%	57%	67%	58%	65%
MAT 210	-	-	69%	-	50%	-
MAT 220	-	-	-	43%	-	-
PHY 101	-	-	71%	-	-	89%
PSY 155	-	-	-	-	-	-

Table 11.3: Student completion for each academic year under review based on course modality.

	FALL 2014 – SPRING 2015			FALL 2015 – SPRING 2016			FALL 2016 – SPRING 2017		
Course IDs	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online
AST 101	-	81%	-	-	78%	-	-	-	-
AST 105	69%	-	-	69%	-	-	84%	-	-
AST 110	73%	-	-	80%	-	-	86%	-	-
BIO 100	35%	57%	52%	33%	67%	65%	40%	69%	59%
BIO 101	-	78%	-	-	71%	-	-	78%	-
BIO 110	-	-	-	-	-	-	-	-	-
BIO 111	-	58%	-	-	77%	-	-	69%	-
BIO 140	-	-	-	-	-	-	-	-	-
BIO 141	-	-	-	-	-	-	-	-	-
BIO 210	-	67%	-	-	74%	-	-	82%	-
BIO 211	-	88%	-	-	88%	-	-	72%	-
CHE 101	-	71%	61%	-	75%	-	-	89%	-
GEL 101	-	-	-	-	-	-	-	-	100%
GEL 103	-	-	-	-	-	-	-	-	88%
GEL 105	-	-	-	-	-	-	-	-	70%
GEL 110	-	-	-	-	-	-	-	-	-

	FALL 2014 – SPRING 2015			FALL 2015 – SPRING 2016			FALL 2016 – SPRING 2017		
Course IDs	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online
GEO 101	40%	-	56%	46%	-	39%	40%	-	-
GEO 103	-	-	-	-	-	-	-	-	-
GEO 104	-	-	-	-	-	-	-	-	-
MAT 106	74%	87%	-	-	94%	-	58%	100%	-
MAT 110	74%	39%	31%	73%	57%	13%	69%	48%	-
MAT 210	-	-	-	69%	-	-	50%	-	-
MAT 220	-	-	-	43%	-	-	-	-	-
PHY 101	-	-	-	71%	-	-	89%	-	-
PSY 155	-	-	-	-	-	-	-	-	-

b. Assess semester-by-semester course retention performance in each course in the program over the preceding six (6) semesters.

Average Institutional Retention for Palo Verde College (86%) is used to analyze course retention for the 2014 – 2017 time period shown in Table 11.4. This average value was identified through the California Community Colleges Chancellor's Office Data Mart found at http://datamart.cccco.edu. These data were queried for Palo Verde College for the Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, and Spring 2017 semesters, which corresponds with the time period under review herein.

Table 11.4 Summary of course retention meeting or exceeding (+) or not meeting or exceeding (-) the Average Institutional Retention for each academic year.

Course IDs	2014 – 2015	2015 – 2016	2016 – 2017
AST 101	+	+	
AST 105	+	+	+
AST 110	-	+	+
BIO 100	-	-	-
BIO 101	+	+	+
BIO 111	-	-	-
BIO 210	+	+	+
BIO 211	+	+	+
CHE 101	-	-	+
GEL 101			+
GEL 103			+
GEL 105			+
GEO 101	-	-	-
MAT 106	+	+	+
MAT 110	-	-	-
MAT 210		-	-
MAT 220		-	
PHY 101		-	+

Retention is primarily a measure of the rate at which students have received a W in a course (withdrawals after the drop period and before the withdrawal period closes). Courses meeting or exceeding the Palo Verde Institutional Average for retention include AST 101, AST 105, AST 110, BIO 210, GEL 101, GEL 103, GEL 105, and MAT 106. Greater than average withdrawal rates are noted in BIO 100, BIO 111, CHE 101, GEO 101, MAT 110, MAT 210, and MAT 220. Retention in BIO 100 and CHE 101 seem to be influenced by teaching modality with face-to-face courses exhibiting improved retention. Low retention in GEO 101, MAT 210, and MAT 220 could also be influenced by use of distance education modalities, but due to lack of face-to-face sections during this time period direct comparison cannot be made.

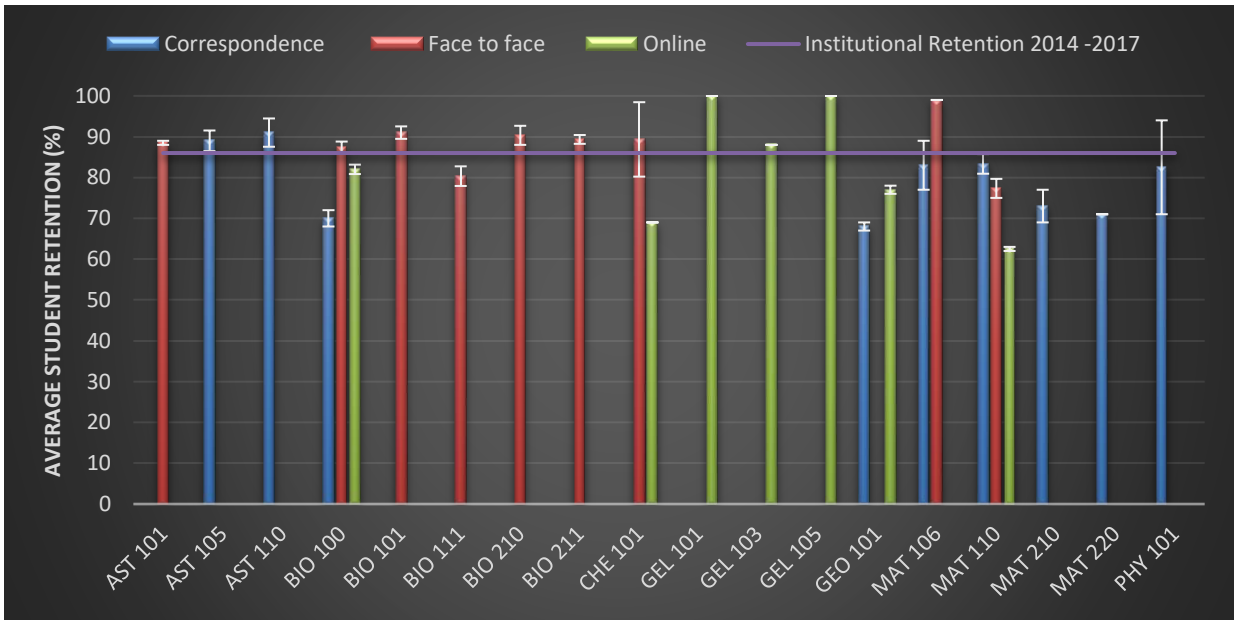

Figure 11.2: Average student retention for the period under review based on modality. Error bars show standard error. The Institutional Retention rate for the year 2014-2017 is 86%.

Table 11.5: Student retention for each semester during the review period.

Course IDs	2014 – 2015		2015 – 2016		2016 – 2017	
	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017
AST 101	88%	-	89%	-	-	-
AST 105	92%	85%	80%	93%	95%	93%
AST 110	86%	84%	-	91%	-	97%

Course IDs	2014 – 2015		2015 – 2016		2016 – 2017	
	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017
BIO 100	76%	73%	75%	69%	84%	73%
BIO 101	83%	94%	100%	79%	-	94%
BIO 110	-	-	-	-	-	-
BIO 111	89%	80%	88%	67%	-	79%
BIO 140	-	-	-	-	-	-
BIO 141	-	-	-	-	-	-
BIO 210	86%	-	91%	-	94%	-
BIO 211	-	91%	-	88%	-	89%
CHE 101	52%	95%	62%	91%	100%	83%
GEL 101	-	-	-	-	-	100%
GEL 103	-	-	-	-	88%	-
GEL 105	-	-	-	-	100%	100%
GEL 110	-	-	-	-	-	-
GEO 101	74%	64%	73%	72%	64%	70%
GEO 103	-	-	-	-	-	-
GEO 104	-	-	-	-	-	-
MAT 106	93%	95%	-	100%	77%	100%
MAT 110	68%	81%	82%	79%	76%	89%
MAT 210	-	-	77%	-	69%	-
MAT 220	-	-	-	71%	-	-
PHY 101	-	-	71%	-	-	94%

Table 11.6: Student retention for each academic year during the review period based on course modality.

Course IDs	2014 – 2015			2015 – 2016			2016 – 2017		
	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online
AST 101	-	88%	-	-	89%	-	-	-	-
AST 105	87%	-	-	86%	-	-	94%	-	-
AST 110	85%	-	-	91%	-	-	97%	-	-
BIO 100	68%	85%	82%	68%	88%	80%	74%	89%	84%
BIO 101	-	89%	-	-	90%	-	-	94%	-
BIO 110	-	-	-	-	-	-	-	-	-
BIO 111	-	85%	-	-	77%	-	-	79%	-
BIO 140	-	-	-	-	-	-	-	-	-
BIO 141	-	-	-	-	-	-	-	-	-
BIO 210	-	86%	-	-	91%	-	-	94%	-
BIO 211	-	91%	-	-	88%	-	-	89%	-
CHE 101	-	100%	69%	-	75%	-	-	93%	-
GEL 101	-	-	-	-	-	-	-	-	100%
GEL 103	-	-	-	-	-	-	-	-	88%
GEL 105	-	-	-	-	-	-	-	-	100%
GEL 110	-	-	-	-	-	-	-	-	-
GEO 101	67%	-	78%	70%	-	76%	67%	-	-
GEO 103	-	-	-	-	-	-	-	-	-
GEO 104	-	-	-	-	-	-	-	-	-
MAT 106	89%	97%	-	-	100%	-	77%	100%	-
MAT 110	80%	78%	62%	88%	73%	63%	82%	81%	-
MAT 210	-	-	-	77%	-	-	69%	-	-
MAT 220	-	-	-	71%	-	-	-	-	-
PHY 101	-	-	-	71%	-	-	94%	-	-

c. Indicate the number of annual awards over the preceding three (3) years and assess trends in the number of program certificates and degrees awarded.

Table 11.7 The number of AA with Emphasis in Mathematics and Science degrees awarded annually over the preceding three years.

Name of Award	2014-15	2015-16	2016-17
AA, Liberal Arts, emphasis in Mathematics and Science	39	29	28

The 2014 – 2015 academic year exhibited a high number of AA degrees with Emphasis in Mathematics and Science. Since this spike, the number of degrees for this program has shown a decline. The decline in AA degrees with Emphasis in Mathematics and Science may be a result of students pursuing other careers, a reflection of students going back to work with the improving economy, or an increase of students who transfer to other institutions.

12. ENROLLMENT TRENDSENROLLMENT TRENDS

Note: The Program Review Committee will research the required enrollment data and provide it to program faculty members for their review and analysis for this report.

Comment on semester-by-semester enrollments, providing explanation of increases, declines or erratic fluctuations in enrollment. Be sure to comment on enrollment trends based on modality as well.

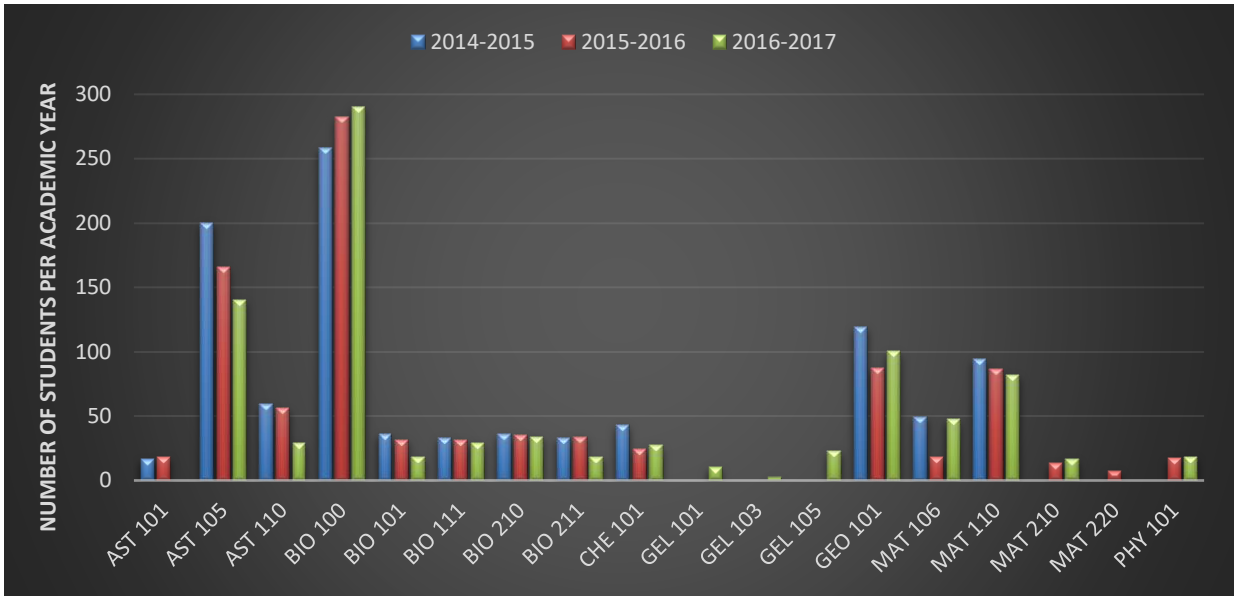

Figure 12.1: Course enrollments by academic year.

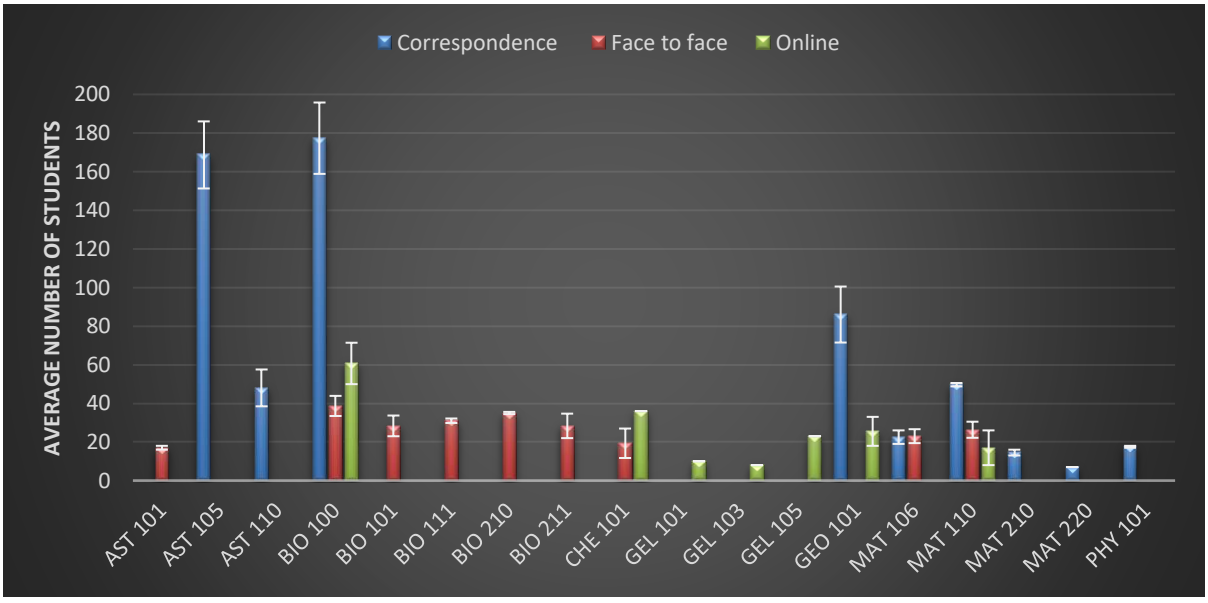

Figure 12.2: Average course enrollment based on course modality for the time period under review. Error bars show standard error.

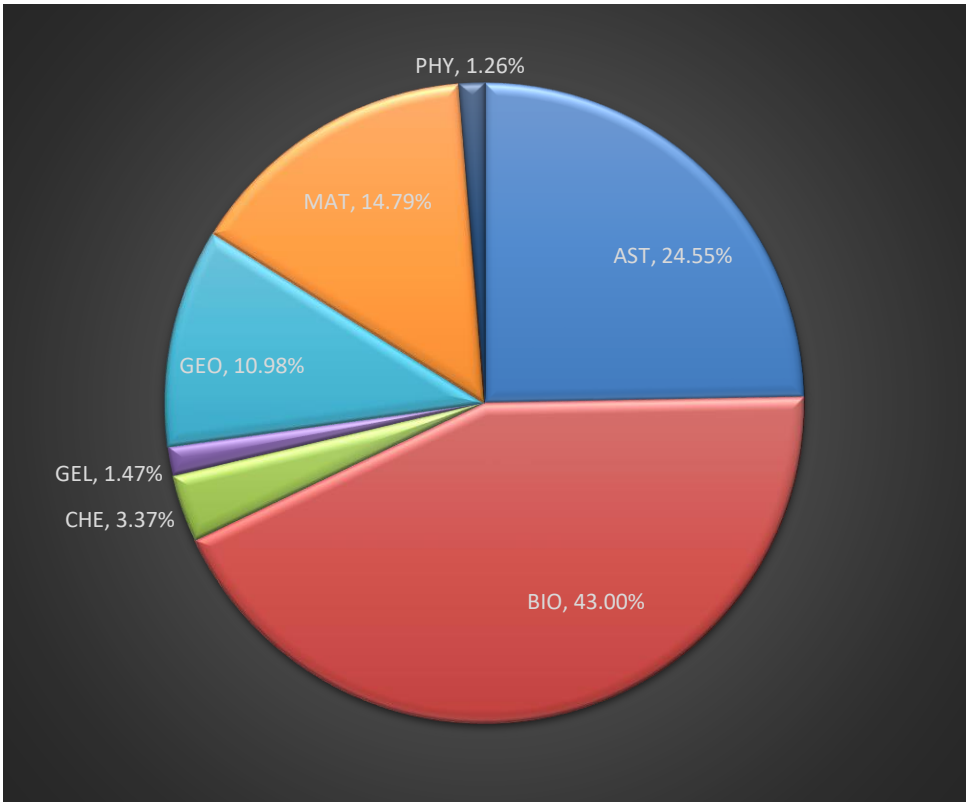

Figure 12.3: Average course enrollment by program within the division for the time period under review.

Table 12.1: Course enrollments by semester for the program review period.

	2014 – 2015		2015 – 2016		2016 – 2017	
Course IDs	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017
AST 101	16	-	18	-	-	-
AST 105	59	141	83	83	84	56
AST 110	28	31	-	56	-	29
BIO 100	114	144	143	139	146	144
BIO 101	18	18	17	14	-	18
BIO 110	-	-	-	-	-	-
BIO 111	18	15	16	15	-	29
BIO 140	-	-	-	-	-	-
BIO 141	-	-	-	-	-	-
BIO 210	36	-	35	-	34	-
BIO 211	-	33	-	34	-	18
CHE 101	21	22	13	11	15	12
GEL 101	-	-	-	-	-	10
GEL 103	-	-	-	-	8	-
GEL 105	-	-	-	-	12	11
GEL 110	-	-	-	-	-	-
GEO 101	58	61	51	39	50	50
GEO 103	-	-	-	-	-	-
GEO 104	-	-	-	-	-	-

Course IDs	2014 – 2015		2015 – 2016		2016 – 2017	
	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017
MAT 106	29	20	-	18	26	21
MAT 110	47	47	44	42	45	37
MAT 210	-	-	13	-	16	-
MAT 220	-	-	-	7	-	-
PHY 101	-	-	17	-	-	18
PSY 155	-	-	-	-	-	-
Total	**444**	**532**	**450**	**458**	**436**	**453**

Table 12.2: Course enrollments based on course modality.

Course IDs	2014 – 2015			2015 – 2016			2016 – 2017		
	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online	Correspon-dence	Face-to-face	Online
AST 101	-	16	-	-	18	-	-	-	-
AST 105	200	-	-	166	-	-	140	-	-
AST 110	59	-	-	56	-	-	29	-	-
BIO 100	145	47	66	209	33	40	178	36	76
BIO 101	-	36	-	-	31	-	-	18	-
BIO 110	-	-	-	-	-	-	-	-	-
BIO 111	-	33	-	-	31	-	-	29	-
BIO 140	-	-	-	-	-	-	-	-	-
BIO 141	-	-	-	-	-	-	-	-	-
BIO 210	-	36	-	-	35	-	-	34	-
BIO 211	-	33	-	-	34	-	-	18	-
CHE 101	-	7	36	-	24	-	-	27	-
GEL 101	-	-	-	-	-	-	-	-	10
GEL 103	-	-	-	-	-	-	-	-	8
GEL 105	-	-	-	-	-	-	-	-	23
GEL 110	-	-	-	-	-	-	-	-	-
GEO 101	101	-	18	57	-	33	100	-	-
GEO 103	-	-	-	-	-	-	-	-	-
GEO 104	-	-	-	-	-	-	-	-	-
MAT 106	19	30	-	-	18	-	26	21	-
MAT 110	50	18	26	48	30	8	51	31	-
MAT 210	-	-	-	13	-	-	16	-	-
MAT 220	-	-	-	7	-	-	-	-	-
PHY 101	-	-	-	17	-	-	18	-	-
PSY 155	-	-	-	-	-	-	-	-	-
Total	574	256	146	573	254	81	558	214	117

Table 12.3 Total enrollment for each academic year.

	2014 – 2015	2015 – 2016	2016 – 2017
Total Enrollment	976	908	889

In general, math and science enrollments are high and remain high, in part due to the general education requirements in demand from the prison populations for correspondence courses evidenced by high enrollment in correspondence courses, particularly for biology, astronomy, geography, and math. Course enrollment trends exhibit either steady or increasing enrollment.

Online math classes (MAT 084, MAT 088, MAT 110) were offered. Due to the lack of enrollment, the online modality has been eliminated. MAT 210 and MAT 224 are being offered despite low enrollment to create future interests in these higher-level classes.

13. FINANCIAL TRENDSFINANCIAL TRENDS

Comment on annual budgeted-vs.-actual program expenditures for each of the preceding five (5) years as to personnel salaries, benefits, supplies, contract services, capital outlay and other expenditures. Explain deviations from budget exceeding 10% of any line item. Describe plans for future budget changes.

Table 13.1 Annual budgeted versus actual program expenditures for each of the preceding five (5) years.

Year	2012-2013

Row Labels	Budgeted	Expended	Difference	Variation
AST				
Salaries	$56,794.26	$59,044.20	-$2,249.94	3.96%
Benefits	$8,419.91	$8,319.77	$100.14	-1.19%
Overload Salaries	$0.00	$2,250.00	-$2,250.00	100.00%
Overload Benefits	$0.00	$276.36	-$276.36	100.00%
BIO				
Salaries	$110,991.00	$122,514.30	-$11,523.30	10.38%
Benefits	$26,840.17	$30,284.93	-$3,444.76	12.83%
Overload Salaries	$0.00	$11,430.00	-$11,430.00	100.00%
Overload Benefits	$0.00	$1,403.46	-$1,403.46	100.00%
Supplies	$400.00	$0.00	$400.00	-100.00%
CHE				
Salaries	$25,976.00	$33,131.02	-$7,155.02	27.54%
Benefits	$7,752.00	$7,984.38	-$232.38	3.00%
Overload Salaries	$0.00	$1,512.00	-$1,512.00	100.00%
Overload Benefits	$0.00	$185.72	-$185.72	100.00%
GEL				
Salaries	$0.00	$0.00	$0.00	100.00%
Benefits	$7,943.00	$802.42	$7,140.58	-89.90%

GEO				
Salaries	$45,401.00	$40,946.40	$4,454.60	-9.81%
Benefits	$14,749.00	$6,519.71	$8,229.29	-55.80%
Supplies	$100.00	$0.00	$100.00	-100.00%
MAT				
Salaries	$313,962.71	$279,645.55	$34,317.16	-10.93%
Benefits	$70,816.99	$83,164.82	-$12,347.83	17.44%
Overload Salaries	$0.00	$20,088.00	-$20,088.00	100.00%
Overload Benefits	$0.00	$2,466.54	-$2,466.54	100.00%
Supplies	$105.00	$0.00	$105.00	-100.00%
PHY				
Salaries	-$19,877.97	$450.00	-$20,327.97	-102.26%
Benefits	$0.10	$156.26	-$156.16	156160.00%
Overload Salaries	$0.00	$450.00	-$450.00	100.00%
Overload Benefits	$0.00	$55.28	-$55.28	100.00%

Year	2013-2014

Row Labels	Budgeted	Expended	Difference	Variation
AST				
Salaries	$56,794.00	$50,928.50	$5,865.50	-10.33%
Benefits	$11,818.00	$6,510.78	$5,307.22	-44.91%
Overload Salaries	$0.00	$10,440.00	-$10,440.00	100.00%
Overload Benefits	$0.00	$1,181.18	-$1,181.18	100.00%
BIO				
Salaries	$90,871.00	$110,449.70	-$19,578.70	21.55%
Benefits	$27,475.00	$27,634.82	-$159.82	0.58%
Overload Salaries	$0.00	$33,075.00	-$33,075.00	100.00%
Overload Benefits	$0.00	$3,741.54	-$3,741.54	100.00%
Supplies	$172.28	$115.14	$57.14	-33.17%
CHE				
Salaries	$23,781.00	$17,305.80	$6,475.20	-27.23%
Benefits	$7,678.00	$5,623.69	$2,054.31	-26.76%
Overload Salaries	$0.00	$7,290.00	-$7,290.00	100.00%
Overload Benefits	$0.00	$824.84	-$824.84	100.00%
Supplies	$30.00	$30.00	$0.00	0.00%
GEL				
	$0.00	$0.00	$0.00	0.00%
GEO				
Salaries	$0.00	$37,346.40	-$37,346.40	100.00%
Benefits	$0.00	$4,225.37	-$4,225.37	100.00%
Supplies	$100.00	$0.00	$100.00	-100.00%
MAT				
Salaries	$248,273.00	$277,600.12	-$29,327.12	11.81%
Benefits	$79,436.00	$78,558.88	$877.12	-1.10%
Overload Salaries	$0.00	$48,015.00	-$48,015.00	100.00%
Overload Benefits	$0.00	$5,431.89	-$5,431.89	100.00%
Supplies	$105.00	$18.05	$86.95	-82.81%

PHY				
Overload Salaries	$0.00	$2,610.00	-$2,610.00	100.00%
Overload Benefits	$0.00	$295.28	-$295.28	100.00%

Year	2014-2015

Row Labels	Budgeted	Expended	Difference	Variation
AST				
Salaries	$47,329.00	$57,427.80	-$10,098.80	21.34%
Benefits	$6,613.00	$7,747.23	-$1,134.23	17.15%
Overload Salaries	$0.00	$32,564.26	-$32,564.26	100.00%
Overload Benefits	$0.00	$3,958.31	-$3,958.31	100.00%
BIO				
Salaries	$80,458.00	$105,400.50	-$24,942.50	31.00%
Benefits	$21,861.00	$27,595.59	-$5,734.59	26.23%
Overload Salaries	$0.00	$51,340.53	-$51,340.53	100.00%
Overload Benefits	$0.00	$6,234.16	-$6,234.16	100.00%
Supplies	$223.00	$222.28	$0.72	-0.32%
CHE				
Salaries	$17,742.00	$23,654.60	-$5,912.60	33.33%
Benefits	$5,002.00	$6,350.26	-$1,348.26	26.95%
Overload Salaries	$0.00	$2,079.00	-$2,079.00	100.00%
Overload Benefits	$0.00	$251.88	-$251.88	100.00%
GEL				
	$0.00	$0.00	$0.00	0.00%
GEO				
Salaries	$0.00	$30,962.40	-$30,962.40	100.00%
Benefits	$0.00	$3,766.59	-$3,766.59	100.00%
MAT				
Salaries	$274,195.00	$261,557.90	$12,637.10	-4.61%
Benefits	$74,872.00	$77,288.39	-$2,416.39	3.23%
Overload Salaries	$0.00	$78,409.80	-$78,409.80	100.00%
Overload Benefits	$0.00	$9,505.24	-$9,505.24	100.00%
Books/Magazines	$700.00	$628.09	$71.91	-10.27%
PHY				
Salaries	$0.00	$4,732.85	-$4,732.85	100.00%
Benefits	$0.00	$655.70	-$655.70	100.00%
Overload Salaries	$0.00	$4,515.76	-$4,515.76	100.00%
Overload Benefits	$0.00	$548.74	-$548.74	100.00%

Year	2015-2016

Row Labels	Budgeted	Expended	Difference	Variation
AST				
Salaries	$70,993.00	$50,168.20	$20,824.80	-29.33%
Benefits	$22,631.00	$18,771.51	$3,859.49	-17.05%
Overload Salaries	$30,800.00	$12,078.00	$18,722.00	-60.79%
Overload Benefits	$4,317.00	$1,699.00	$2,618.00	-60.64%
Copying/Printing	$0.00	$2.94	-$2.94	100.00%
BIO				
Salaries	$108,417.00	$114,645.60	-$6,228.60	5.75%
Benefits	$31,664.00	$35,793.70	-$4,129.70	13.04%
Overload Salaries	$42,000.00	$45,133.70	-$3,133.70	7.46%
Overload Benefits	$5,887.00	$6,348.57	-$461.57	7.84%
Copying/Printing	$2.11	$2.11	$0.00	0.00%
Supplies	$397.89	$205.13	$192.76	-48.45%
CHE				
Salaries	$24,516.00	$22,825.30	$1,690.70	-6.90%
Benefits	$7,141.00	$7,944.00	-$803.00	11.24%
Overload Salaries	$2,000.00	$931.50	$1,068.50	-53.43%
Overload Benefits	$281.00	$131.04	$149.96	-53.37%
Supplies	$10,200.00	$0.00	$10,200.00	-100.00%
GEL				
	$0.00	$0.00	$0.00	0.00%
GEO				
Salaries	$8,500.00	$32,239.20	-$23,739.20	279.28%
Benefits	$1,191.00	$4,535.11	-$3,344.11	280.78%
MAT				
Salaries	$260,457.00	$286,771.11	-$26,314.11	10.10%
Benefits	$87,822.00	$102,157.20	-$14,335.20	16.32%
Overload Salaries	$57,000.00	$68,385.58	-$11,385.58	19.97%
Overload Benefits	$7,989.00	$9,618.17	-$1,629.17	20.39%
Copying/Printing	$0.00	$13.52	-$13.52	100.00%
Supplies	$400.00	$177.77	$222.23	-55.56%
PHY				
Salaries	$0.00	$10,885.55	-$10,885.55	100.00%
Benefits	$0.00	$4,165.67	-$4,165.67	100.00%
Overload Salaries	$5,000.00	$2,808.00	$2,192.00	-43.84%
Overload Benefits	$702.00	$395.00	$307.00	-43.73%

Year	2016-2017

Row Labels	Budgeted	Expended	Difference	Variation
AST				
Salaries	$60,252.72	$60,252.72	$0.00	0.00%
Benefits	$21,302.81	$21,302.81	$0.00	0.00%
Overload Salaries	$0.00	$18,338.40	-$18,338.40	100.00%
Overload Benefits	$0.00	$2,899.80	-$2,899.80	100.00%

BIO				
Salaries	$96,311.00	$122,210.06	-$25,899.06	26.89%
Benefits	$34,800.00	$38,323.24	-$3,523.24	10.12%
Overload Salaries	$0.00	$34,245.46	-$34,245.46	100.00%
Overload Benefits	$0.00	$5,414.75	-$5,414.75	100.00%
Copying/Printing	$0.00	$34.39	-$34.39	100.00%
CHE				
Salaries	$24,211.58	$24,211.58	$0.00	0.00%
Benefits	$8,710.93	$8,710.93	$0.00	0.00%
Overload Salaries	$0.00	$2,030.67	-$2,030.67	100.00%
Overload Benefits	$0.00	$321.08	-$321.08	100.00%
Division				
Professional Growth	$2,500.00	$564.00	$1,936.00	-77.44%
Supplies	$250.00	$0.00	$250.00	-100.00%
GEL				
Salaries	$16,234.55	$16,234.55	$0.00	0.00%
Benefits	$1,531.39	$1,531.39	$0.00	0.00%
GEO				
Salaries	$33,928.18	$33,928.18	$0.00	0.00%
Benefits	$5,365.07	$5,365.07	$0.00	0.00%
MAT				
Salaries	$0.00	$347.93	-$347.93	100.00%
Benefits	$0.00	$32.82	-$32.82	100.00%
Overload Salaries	$0.00	$62,897.14	-$62,897.14	100.00%
Overload Benefits	$0.00	$9,943.95	-$9,943.95	100.00%
PHY				
Salaries	$10,299.60	$10,299.60	$0.00	0.00%
Benefits	$2,746.70	$2,746.70	$0.00	0.00%
Overload Salaries	$0.00	$1,863.90	-$1,863.90	100.00%
Overload Benefits	$0.00	$294.75	-$294.75	100.00%

In the past, individual instructors had been submitting their budget to the Budget Committee. Due to misunderstanding of responsibility of financial planning, some instructors had been submitting course offerings without budgets for salaries, overload salaries, and overload benefits. Data in the tables above show 100% variation for all such courses.

GEL courses for 2012-16 as well as GEO course for 2013-15 have $0 budgeted and $0 expended, because these courses have not been successfully offered.

In the future, division chair will assist faculty, when needed, to appropriately budget funds for overload salaries, overload benefits, copying, and supplies based on the past expenditures.

14. FACILITIES AND EQUIPMENTFACILITIES AND EQUIPMENT

a. Are current facilities, such as classrooms, offices and equipment adequate to support the program? Explain.

i. To enable the implementation of hands-on Biology laboratory learning, laboratory equipment and supplies needs to be expanded and improved. At the time of this review, the process of outfitting Biology laboratory equipment and supplies at the Blythe campus has made great strides (beginning in Fall 2017). The microscope slide collection has been expanded (amoebae, *Paramecium*, human blood, *Allium* roots, the letter 'e', stage micrometers, *Tryanosoma cruzi*, *Trichomonas vaginalis*, *Giardia lamblia*, *Plasmodium falciparum*, *Dipylidium canium*, *Schistosoma mansoni*, *Enterobius vermicularis*, and flatworm and roundworm eggs slide set) and other supplies and equipment have been added to its facilities including chemical reagents (such as iodine, Biuret's reagent, Benedict's reagent, 95% ethanol, Gram stain solutions, and flagella stain), molecular modeling kits, small rulers and meter sticks, reaction time sticks, plain microscope slides and cover slips, a canning pressure cooker (an inexpensive solution for sterilization since an autoclave is not available), an incubator, a water bath, a micropipette set, an electrophoresis chamber and power supply, LabQuest2 data loggers, CO_2 probes, O_2 probes, microbiological culture tubes and caps, Bunsen burners with tubes and strikers, racks for culture/centrifuge tubes, glassware cleaner and cleaning brushes, Durham tubes to trap gases in microbiological fermentation cultures, microbiological culture media (TSA and TSB), and a range of bacterial cultures for BIO 111 Microbiology.

ii. In the process of outfitting the Biology laboratories, the number of items ordered has been kept extremely minimal to keep costs as low as possible (only the bare-minimum of essential items for hands-on biology learning is available). However, the quantity of some items should be increased since students often must wait substantial amounts of time for use of the limited supplies in the instructional laboratories. Additionally, glassware and other supplies currently in used in Biology laboratories have been borrowed from the Chemistry laboratory. As a result, Biology requires its own supplies including ring-stands and glassware such as beakers, flasks, pipets, and graduated cylinders. Spectrophotometer probes compatible with the LabQuest2 data loggers should also be made available, especially for BIO 111 Basic Microbiology where spectrophotometery is a basic skill that should be learned by students in this course. The compound microscopes also require professional servicing since a long period of time has lapsed since their last service and many of the microscopes are challenging to use or unusable due to the normal instructional wear and tear (lenses must be cleaned, knobs and dials are malfunctioning, etc.).

It should also be noted that Biology supplies already purchased will occasionally require replacement as items are used up including blank slides, cover slips, chemicals, biological media, Petri plates, and biology kits. Glassware and other supplies such as prepared slides will also sometimes break and will therefore require replacement from time to time. Additionally, microbiological cultures age and will require annual replacement to maintain the quality of the cultures for use in BIO 111 Basic Microbiology.

iii. In addition to classrooms and offices, the current facilities used by MAT courses also include computer software and peripheral devices. Software licenses must be renewed whenever a new version of the software is available. Various computer software, such as Microsoft Office and Hawkes Learning Software, are used to prepare lectures, assign homework, and administer exams. In addition, peripheral devices such as a Wacom tablet is an essential tool to effectively communicate ideas covered in lectures.

Chemistry program's SLO attainment, will be supported by the purchase of Atomic Absorption Spectrometer, HPLC, GC-MS, bench scale Nuclear Magnetic Resonator, and an additional spectrophotometer. These instruments and allied support equipment will not only enhance the students' theoretical and practical grasp of chemistry concepts and bring our labs to meet current industrial and research trends.

iv. Further these instruments can be shared between agriculture, biology and other disciplinary areas that require training in cutting edge technology.

b. Describe plans for future changes in facilities or equipment that would better support the program.

i. In the process of outfitting the Biology laboratories, the number of items ordered has been kept extremely minimal to keep costs as low as possible (only the bare-minimum of essential items for hands-on biology learning is available). However, the quantity of some items should be increased since students often must wait substantial amounts of time for use of the limited supplies in the instructional laboratories. Additionally, glassware and other supplies currently in used in Biology laboratories have been borrowed from the Chemistry laboratory. As a result, Biology requires its own supplies including ring-stands and glassware such as beakers, flasks, pipets, and graduated cylinders. Spectrophotometer probes compatible with the LabQuest2 data loggers should also be made available, especially for BIO 111 Basic Microbiology where spectrophotometery is a basic skill that should be learned by students in this course. The compound microscopes also require professional servicing since a long period of time has lapsed since their last service and many of the microscopes are challenging to use or unusable due to the normal instructional wear and tear (lenses must be cleaned, knobs and dials are malfunctioning, etc.).

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Biology faculty would like to offer BIO 100 online in the future. To provide high-quality online learning for BIO 100, a camera, a microphone, and software for creating videos and animations are required. Additionally, to maintain student-centered learning in Biology lectures, classroom clickers would be a welcome addition to Biology classrooms. Clickers are devices students pick up at the beginning of class that allow them to answer multiple choice questions asked during the lecture. A student clicks A, B, C, D, or E to choose the answer they believe to be correct and the answers given by students are anonymously tabulated with a software program. This is an excellent tool to keep students engaged during lectures, to assess student learning and understanding, and to clear up misconceptions.

ii. To address the mandate of implementing AB 705 such that all incoming students will be placed in college level math with adequate co-requisite support, new curriculum will be developed that will adequately address all student deficiencies.

iii. A team of math faculty will attend the California Acceleration Project between June 22-24 at Skyline College. Regardless of students meeting the multiple measures criteria, after this training, faculty will lead the effort to develop curriculum for supporting student success in Math.

Also, to increase student engagement, retention, persistence and success the Math faculty request software to engage in clicker-based instruction in the classroom. This will also benefit instructors in receiving immediate feedback about common misconceptions and mistakes made by the students and remedying them on the spot.

iv. The Math Department will create at least one new lab-based course as the department modifies its curriculum to meet the requirements of AB 705. Additional supports may be required to support the department in this venture.