



GAVILAN COLLEGE

*Research, Planning, and
Institutional Effectiveness*

Program Integrated Planning and Review

Instruction

Program Name:	Physical Sciences and Engineering
Academic Year:	2019-2020

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Gavilan College

Program Integrated Planning and Review

Instruction

Academic Year 2019-20

Contents

Purpose, Standards and Resources.....	4
Purpose	4
Resources:	4
Program Plan and Review Timeline.....	5
A. Executive Summary.....	6
B. Program Mission and Accomplishments	8
Gavilan College Mission Statement.....	8
Response and follow-up to previous program reviews.....	8
C. Program Overview.....	10
D. Student and Program Outcomes.....	11
College Goal for Student Achievement	11
Success	11
Equity.....	12
Conferred Award Trends.....	14
curriQunet	15
Learning and Outcomes Assessment	16
E. Curriculum and Course Offerings Analysis.....	18
Curriculum Analysis.....	18
Course Time, Location and Delivery Method Analysis	19
F. Program and Resource Analysis.....	20
Program Personnel.....	20
Departmental Productivity Measurements	21
Evaluation of Resource Allocations	22
Integrated Planning and Initiatives.....	23
Other Opportunities and Threats	23
G. Career Education Questions	25
Appendix	26
Optional Questions	26
Review Process Feedback.....	27
Example Three-Year Program Plan Goal Setting Worksheet.....	28

Three-Year Program Plan Goal Setting Worksheet 29
Signature Page 33

Purpose, Standards and Resources

Purpose

The fundamental purpose of ongoing, Program Integrated Planning and Review (PIPR) is to maintain and if possible improve the effectiveness of every College program and service, and of the institution as a whole, based on the results of regular, systematic assessment. The ultimate beneficiaries of program integrated planning and review are our students and the community we serve.

Specifically, program review facilitates:

- Creation of a three-year plan for each program
- Institutional & program improvement through the comprehensive self-study, peer review, and planning process
- Development of a three-year budget request plan, including data to support annual budget requests
- Creation of a living document that provides all basic information and forward planning for each program; can be referenced by stakeholders via public website
- Program leadership continuity of expertise (e.g., a department chair change)
- A baseline for the integrated planning process and cycle
- Assessment of program viability
- Accreditation compliance; board policy / administrative procedure compliance (c.f. [BP/AP 4020](#))

Another purpose of the process is to focus available resources—staff time, budget, technology, space - on the achievement of goals and objectives intended to maintain or improve effectiveness of the program itself, but also the programs' contribution to the College's Strategic Plan. Achieving some objectives requires resources over and above what is available, which means that a resource request is necessary. But achieving others requires no extra resources—only the reallocation of existing ones.



Whenever this symbol appears, consider creating a goal on this topic in your three year planning grid at the end of the document.

Resources:

Please refer to the accompanying PIPR Handbook which you can find [here](#). In addition, there are links and paths to information throughout the document.

Program Plan and Review Timeline

When	Description	Participation
2019 Aug	Program Lead training, including website 'tour', GavDATA and other data site overview.	PIPR Chair All Program Leads in Review Cycle
Sept	Program Lead provides budget codes to PIPR for submission to Business Office (Sept 20).	Program Lead
Sept - Nov	Program Lead seeks assistance from support team, department faculty, Dean, others to gather information for report (on-going, as needed). Write Program Report draft (Sept 2 – Nov 15).	Program Lead
Nov	Initial draft due (Nov 15). Peers review report, make suggestions, and identify areas of improvement. Sign off on last page of report (No later than Nov. 22). First Draft revision begins (Nov. 19).	Program Lead Peer Review Team
Dec	2nd draft due to Dean to review, request additions/ clarifications (Finals Week).	Program Lead Supervising Admin
2020 Feb	Dean-reviewed document returned to Program Lead with revision and planning recommendations, if needed. If report is complete and approved, Dean signs and forwards completed report to PIPR (Jan 27-31). If report needs revision, Dean returns to Program Lead.	Program Lead PIPR Supervising Admin
Feb - March	If needed , Program Lead makes edits as needed to report (Feb 3-28). Final report sent to Dean for approval and signature (March 2-6). Dean forwards approved document to PIPR (March 13).	Program Lead Supervising Admin
Feb - May	PIPR reviews final documents. Approves final report (Feb 3 – May 22).	PIPR
June	PIPR Chair presents annual report to Board	PIPR Chair, Board
June- Aug	Final reports submitted to President's Cabinet as information item.	Deans Council, Cabinet
Sept	Final documents to Academic Senate and ASGC as information item.	Academic Senate, ASGC

A. Executive Summary

1. Please provide a brief executive summary regarding program trends and highlights that surfaced in the writing of this report. Summarize, using narrative, your program goals for your next three years. Your audience will be your Peer Review Team, the PIPR Committee, President's Cabinet, Dean's Council, ASGC, Academic Senate, Budget Committee and Board of Trustees (300 words or less).

The Physical Sciences and Engineering Program at Gavilan includes the following academic subfields: Physics, Geology, Astronomy, Physical Sciences and Engineering.

There are two main goals for course offerings:

- (a) Preparation for transfer in the sciences.
- (b) Courses that meet the general education requirements for non-majors.

Within the transfer focus (a), there are three paths:

1. Transfer to a four-year college program in engineering,
2. Transfer to a four-year college program in the sciences (physics, chemistry, astronomy, etc.)
3. Support of transfer to a four-year college program in the life sciences.

The degree to which individual disciplines within Physical Sciences and Engineering support an individual student depends upon the particular degree and the destination transfer institution.

Within the general education focus (b), Physical Sciences and Engineering offers courses in the sciences, both with and without a laboratory, to meet the general education requirements.

Unique elements of this program are:

- Only transferrable courses are offered. Courses are articulated at CSU and UC four-year schools.
- The core courses required for a A.S or A.D-T degree have lots of prerequisites that must be taken in order and require mastery of the prerequisite material before success is possible (i.e. many math courses are prerequisites for physics courses, physics courses are prerequisites for engineering courses). This last element has proven difficult for virtually all groups on campus to understand. Students don't understand the ramifications of falling "out of step" within the hierarchical prerequisite structure. Counselors sometimes prepare education plans for students that don't reflect the sequential order of classes based upon the prerequisite pathway, or don't acknowledge that these are "college level" transferrable classes and 18-unit semesters aren't practical. Lastly, many students seem to advance to engineering courses without mastery of basic ideas and skills (i.e. algebra, vectors and trigonometry) that are needed in almost all subsequent physics and engineering courses.
- Before students take an engineering class for their specific engineering track (mechanical, electrical, etc) they need to pass at least two semesters of calculus and two semesters of physics. The size and/or composition of an engineering class depends directly upon the success in prerequisite courses (math, chemistry and physics). Therefore, most engineering classes are taken only students who have made it through a gauntlet of prerequisites and proven their abilities as successful learners.
- Most students eligible to take calculus in the first year are also CSU and/or UC eligible. This group of students have proven to be successful learners in high school and therefore go directly to a four-year school. Engineering students at Gavilan typically enroll initially unprepared for college level math courses and will have several years of prerequisite course work before taking an engineering course.

As the ENGR course start to be offered, appropriate advising documents are being provided to counselors, students, and staff describing the Engineering Program, its courses, and suggested pathways to transfer.

The general goals of the program are to support student achievement and to ensure that we provide top quality instruction. Specific goals for the program are:

1. Increase success rate in Phys 2A and Phys 2B by 5% by May 2022.
2. Increase success rate in Phys 4A and Phys 4B by 5% by May 2022

3. Increase the number of students obtaining an Engineering A.S. degree and transferring to 4-year colleges.
4. Increase student success rate across all courses in the Physical Sciences and Engineering program by 3% over the next 3 years.
5. Increase the number of enrolled Engineering and Physical Science Majors by 5%.
6. Increase the current number of articulations in the Science and Engineering programs by 5% over the next 3 years.
7. Map all courses SLOs to PLOs and ILOs and update course SLOs.

Most of the courses in our program have a laboratory component. In order for the program to successfully achieve goals 1-4, Gavilan needs to ensure laboratory spaces and equipment are meeting the needs of the institution and of the student. The department needs both, a laboratory technician and full-time faculty, to better support our students.

B. Program Mission and Accomplishments

Gavilan College Mission Statement

Gavilan College actively engages, empowers and enriches students of all backgrounds and abilities to build their full academic, social, and economic potential.

1. Provide a brief overview of how the program contributes to accomplishing the mission of Gavilan College. In addition to a basic overview of your program's structure and services, be specific in connecting your program's services to elements of the mission statement (300 words or less).

Gavilan is in an ideally position to help the young people of southern Santa Clara and San Benito counties to transfer to a 4-year college and start a successful engineering and science career that will improve their life prospects. The close proximity of our campus to Silicon Valley Companies is a tremendous motivator for students who would like to pursue fields in STEM. High tech companies in our area (Google, Apple, Amazon, eBay, etc.) and new start-ups have kept increasing the demand for highly skilled workers. Our program provides a high-quality education and it is ready to prepare students to fill in the high demand for the STEM jobs in Silicon Valley and across the United States.

Specifically, our program supports Gavilan's mission by:

1. Ensure the courses taught for general education students are meeting the criteria of quality instruction, at a college level, with appropriate standards of performance.
2. Ensure classrooms and laboratory spaces are meeting the needs of the institution and of the student.
3. Procure sufficient space to offer the increased number of course offerings by reevaluation of room allocations in the science cluster.
4. Make the campus community aware of the unique position of programs containing only transferable, lower-division university courses that are laden with multiple skill-based prerequisites.
5. Increase the Engineering Program's visibility to the community and to Gavilan students not yet at the academic level of engineering courses.
6. Make sure instructors of prerequisite courses realize the definition of success has changed slightly to include sufficient mastery in the prerequisite course that the skills translate across discipline boundaries.

Response and follow-up to previous program reviews

On the [PIPR website](#), locate and review your previous program plan and review (self-study) and subsequent program plan updates. After studying, please complete the following questions:

2. Briefly describe the activities and accomplishments of the department with respect to
 - a) Each goal since the last program plan and review and
 - b) PIPR recommendations.

To add additional rows, click in the bottom cell on the right and push 'tab' on the keyboard.

IEC Recommendation or PIPR Program Goal	Accomplishment
Coordinate with STEM, MESA, and Career center to identify appropriate internship opportunities.	Partially Accomplished. STEM has provided internship opportunities at SJSU but mainly focused on biology, chemistry. Faculty have helped students with applications and reference letters to REU opportunities and the NASA fellowship program.
Regularly assess all courses and program SLOs.	Partially Accomplished. For Physics, Astronomy, Geology the Course SLO assessments are up-to-date with the exception of courses that are due for assessment this semester. Since there was no Engineering Program at Gavilan over the past 3 years, there has been no SLO assessments.

Continue efforts to educate campus on the engineering program and the rigors of the corresponding pipeline.	Not Accomplished. There was no Engineering Program for the past 3 years.
Develop an outreach plan and materials, utilizing the newly formed Engineering Club.	Not Accomplished. There was no Engineering Program and no engineering club for the past 3 years.
Increase involvement of other physical science disciplines in the development of future program plans and reviews.	Gavilan currently offers an Associate Degree Transfer ADT: Physics AST - CSU Transfer.

3. Have the services of your program changed over the past three years? Please explain (300 words or less).

Gavilan recently started offering an Associate in Science in Physics for Transfer degree (ADT), where all the courses can be taken at Gavilan. For the past 3 years there was no Engineering course offerings at Gavilan. For the 2019-2020 academic year, we have re-structured the engineering program. We have modified the General Engineering AS degree such that it is attainable by students in 2 or 3 years. The new model curriculum for the Engineering AS follows closely the Intersegmental Model Curricula (ISMC) developed by the Engineering Liaison Council (ELC) between community colleges and four-year public colleges and universities. In addition, the new model allows students to select ONE out of FIVE engineering tracks (mechanical, electrical, civil/industrial, computer and biomedical tracks). In the Fall of 2019, we started offering ENGR courses again. The plan is to introduce ONE ENGR course per semester.

C. Program Overview

1. List program degrees and certificates under this department according to the [college catalog](#).

To add additional rows, click in the bottom cell on the right and push 'tab' on the keyboard.

1. ADT: Physics AST – CSU Transfer
2. Engineering General AS.
3. Physical Science and Engineering AS (We have submitted a petition to deactivate this AS degree as it does not offer any additional benefits to the new Engineering General AS.)

2. List any collaboration you have had with external community stakeholders, for example – advisory committees, articulation agreements, community partnerships, etc. If this does not apply, enter N/A. (200 words or less).

N/A

D. Student and Program Outcomes

College Goal for Student Achievement

Increase Scorecard Completion Rate for Degree and Transfer

The College has a primary aspirational goal of increasing the Completion rate from 46% to 53.5% on the **CCCCO Scorecard Completion Rate for Degree and Transfer** [\[view\]](#) by 2022. The completion rates in the Scorecard refers to the percentage of degree, certificate and/or transfer-seeking students tracked for six years who completed a **degree, certificate, or transfer-related outcomes (60 transfer units)**.

As you answer the questions below, please consider how your program is helping the college complete this aspirational goal of increasing the Gavilan College Degree, Certificate, and Transfer Completion rate by 7.5 percentage points on the CCCCCO Scorecard by 2022.

Success

The following questions refer to data regarding student achievement.

Path: [GavDATA](#) → Program Review/ Equity → D1. Course Success Rates by Group

Find your discipline's course success information. Consider your department success rate trends over the last three years. Compare your overall-success to the college average.

1. Are these rates what you expected after comparing with the college average? Are there any large gaps? Is there anything surprising about the data? What trends are suggested by the data (200 words or less)?

* ENGINEERING COURSES DATA NOT AVAILABLE.

* College Average is 70% in the 2017-2018, and 71% in 2018-2019.

1. Success rate in Physical Science is 67% in the 2017-2018, and 64% in 2018-2019. This numbers are slightly lower than the college average. The success rate of PSci 1 (54%) in 2017-2018 was significantly lower than the college average. PSci 1 is offered only faces to face and was cancelled the following fall. Time of offering, and number of days the class meets per week should be reconsidered. One meeting time per week for 3h and 10min can be contributing to the low success rates. PSci 2 offered online has a higher success rate (~66% for the two academic years).
2. Success rate in Geology is very high (88% and 89%). Overall, the success rate of Geology students is well above what is typical in other math and science classes at Gavilan.
3. Success rate in Physics () are higher than college average. This is surprising at first, but after analyzing the data it seems that the reasons are:
 - 3.1 There is a high success rate for Phys 1 (90% and 95%). More than 60% of the Phys 1 students are GECA students, who have traditionally shown to be high achievers.
 - 3.2 The success rate for Physics in 2017/2018 (88%) was remarkably high in comparison to the 2018/2019 rate (80%). This difference is attributed to the unusually high success rates of Phys 2A and Phys 2B in 2017/2018 (81% and 100% respectively).
4. Success rate in Astronomy is 67% in the 2017-2018, and 69% in 2018-2019

Now find your division persistence information. Consider your retention rate trends over the last three years. Compare your overall retention to the college average.

Path: [GavDATA](#) → Program Review/ Equity → D2. One Year Persistence Rate

2. Are these rates what you expected after comparing with the college average? Are there any large gaps? Is there anything surprising about the data? What trends are suggested by the data (200 words or less)?

*ENGINEERING DATA NOT AVAILABLE

Gavilan College one-year persistence rate is as follows:

2015: 45%

2016: 48%

2017: 47%

Math and Natural Sciences one-year persistence rate is as follows:

2015: 57%

2016: 57%

2017: 61%

There are generally high retention rates in all disciplines. Students in STEM sciences are usually highly driven to success. Students enrolled in STEM are aware of the high demands required in the coursework, yet they have decided to pursue that path because of the future career prospect. For that reason, students taking Math and Natural Sciences come with a mindset to persist, struggle, and grow.

3. What are your set goals for course success? Do your individual course and department rates meet this goal? Helpful Question: If your rates for success are lower than your goals, what are your plans to improve them (200 words or less)?

Path: [GavDATA](#) → Program Review/ Equity → D3. Course Rates by Unit

*ENGINEERING DATA NOT AVAILABLE

2017- 2018

College Average: 71%

Physical Sciences: 64%

Geology: 87%

Physics: 88%

Astronomy: 67%

2018- 2019

College Average: 71%

Physical Sciences: 67%

Geology: 87%

Physics: 80%

Astronomy: 69%

We are setting a goal of 80% course success (this is arbitrary and was chosen as ~ 10% higher than college average). Geology and Physics have high success rates +10% over college average. We need to work more on Astronomy and Physical Sciences. The plan for all fields is:

1. increased use of online resources (LMS, textbook ancillaries, videos)
2. For online courses, create more engagement and interaction among students.
3. Reaching out to part-time faculty to standardize expectations
4. Modify lab coursework to emphasize the learning and application of skills rather than repetition of procedures. Labs should reinforce and help students learn the lecture material.

4 – 6: N/A



Consider addressing success goals in your Three-Year Program Plan at the end of this document.

Equity

Gavilan College has identified the following populations as experiencing disproportionate outcomes: Males (African American, Asian, White, Two or More Races, and First Generation), Students with Disabilities, Veterans and Foster Youth.

7. Using the path above, locate your program in GavDATA. Examine your equity results over the last three years. If there are differences in success rates and/ or retention across groups, comment on any differences in success rates across groups. Helpful Questions: What current factors or potential causes can be connected to these areas of disproportional impact? How might your program or department address student equity gaps (200 words or less)?

Path: [GavDATA](#)→Program Review/Equity→D7. Disproportionate Impact with Margin of Error by Year. Locate your department. Filter by Year

Contact your support team for any needed assistance in using GavDATA.

ENGINEERING DATA NOT AVAILABLE.

1. Physics:

1.1 For years 2016/2017, there is no significant differences across the different populations.

1.2 For the 2017/2018 - 2018/2019 year, there is a significant difference between the average (80%) and the following populations:

* Filipinos (30 point difference in 2018/2019, although the sample is very small as there was only 4 credit);

*Foster Youth (-20 point difference in 2018/2019 and -21 point difference in 2017/2018).

*Individuals with disabilities (-23 point difference in 2018/2019 and -18 point difference in 2017/2018);

* Low Income Students, this is large population close to ½ of the credit courses. (-17 point difference in 2018/2019 and -7 point difference in 2017/2018)).

It is difficult to draw strong conclusions because the discrepancies show no consistency among the 3 years. One possible reason for the growing discrepancy between the average and the mentioned groups, is that a larger number of students are taking more advanced physics courses (2A,2B, 4A,4B and 4C). Low-income students are usually part time students working demanding jobs. Coupling working time with difficult physics courses can lead to a decline in the success rate of low-income students. However, this point needs to be analyzed more carefully.

2. Physical Sciences: The enrollment over the 3 years has been declining. In the 2018/2019 academic year there was only a total of 49 credit courses. The data shows that African Americans are a small population that has consistently get disproportionate lower results.

3. Geology: The data shows that Foster youth is a small population that has consistently get disproportionate lower results.

4. Astronomy: The data shows that Foster Youth and African Americans are small populations that have consistently get disproportionate lower results.

I think that the small data available for just 3 years does not allow to draw strong conclusions. This is an important question, but maybe data should be analyzed for a longer period. In addition, there is suggestive evidence from research that small populations in a class (a minority in a classroom) tend to have lower success. The reason underrepresentation of a group lead to a feeling of isolation, and students loose motivation.

8. [BP 3420](#) (Equal Employment Opportunity) states:

The Board supports the intent set forth by the California Legislature to assure that effort is made to build a community in which opportunity is equalized, and community colleges foster a climate of acceptance, with the inclusion of faculty and staff from a wide variety of backgrounds. It agrees that diversity in the academic environment fosters cultural awareness, mutual understanding and respect, harmony and respect, and suitable role models for all students. The Board therefore commits itself to promote the total realization of equal employment through a continuing equal employment opportunity program.

How does your department align with the District's Equal Opportunity Board Policy? Helpful Question: How do you plan to address EEO outcomes in your employee hires (300 words or less)?

- the hires over which we have most influence are PT faculty
- we value diversity in our program/department very highly
- Currently our program is shows cultural and racial diversity. But our will greatly benefit from hiring women faculty.

9. Find your Distance Education success information. If distance education is offered, consider any gaps in success rates between distance education and face-to-face courses. Do you notice any trends? Do these rates differ?

Path: [GavDATA](#) → Program Review/ Equity → D9. Course Success Rates → Locate your department. Filter by Delivery Methods

Helpful question: If disparity exists, how do you plan on closing the achievement gaps between distance education and face-to-face courses (300 words or less)?

ENGINEERING DATA NOT AVAILABLE

1. Physics and Geology only offer face to face courses.
2. Physical Sciences: On 2018/2019 there was no course offering PSci 1 (face to face) only PSci 2 (online). Considering the data from 2012-2017. The face-to-face course has consistently shown significantly better results.
3. Astronomy: We started offering an online section of Astronomy on 2018/2019. The online method had significantly lower results than the face-to-face instruction.

Research in educational delivery methods has shown that in general online courses have lower success rates. One plausible explanation suggested by the research community is that online courses rely significantly on self-motivation. Purely online courses are attractive to students because they can dictate the pace of the course according to their needs. This kind of freedom also allows students to procrastinate on their readings and assignments. Eventually students lose interest on the course content, and do the bare minimum to pass. Student engagement is KEY for success in online courses. Constant communication with instructor and other students via online discussion has shown to increase motivation in students. Project based learning at home, where students share photos, videos, and prototypes of their works can keep the class more engaged. For that reason the plan is:

- Have equal expectation expectations in face-to-face and online courses (i.e same midterm and final assessments)
- Have instructors constantly update their knowledge on how to deliver a high-quality online course

10. N/A

Conferred Award Trends

11. Review the number of certificates and/ or associate degrees awarded in your program. Please supply the number of degrees and certificates awarded for the past three years. For reference, review the "[Majors by Program, 2008-2019](#)" for declared majors by year, unduplicated headcount.

Path: [GavDATA](#) → Program Review and Equity → D11. Count of Degrees and Certificates Awarded

To add additional rows, click in the bottom cell on the right and push 'tab' on the keyboard.

*ENGINEERING DATA NOT AVAILABLE. To answer this question I have used the .xls documents: Majors by Program 2008-2019 and Degrees and Certificates Awarded by Program 2008-2019. I did not use GavDATA as this data does not separate math from physical sciences and engineering.

Year	Degree/ Certificate	Goal for Completion	Actual Degree Completion
2018	Physics AS-T	16 majors enrolled	1
2018	Physical Science and Engineering AS	14 majors enrolled	1

12. What is your set goal for degrees and certificates awarded? Do your totals meet this goal? Helpful question: If your totals for degrees/ certificates awarded are lower than your goals, what are you plans to improve them (200 words or less)?

I don't really know an objective way to set the goal for degrees and certificates. Is this an arbitrary goal set based on what we think is reasonable? If yes, then this is my answer:

As shown by the data on "Major by Program,2009-2019.xls" on 2019 there was 126 General Engineering majors and 15 Physics Majors. The ideal goal should be that all declared majors get either and AS or AS-T. But a more realistic goal would be that all students who successfully transfer to a 4 year college, leave Gavilan with a AS or AS-T. The Engineering AS (not only at Gavilan), requires students to take up to 80+ credit units. Most students transfer to 4-year colleges before they complete the credits. For that reason, we have recently modified the Engineering General AS. The new Engineering AS offers a lot of flexibility to students. The new degree covers the core courses needed to transfer to several 4-year colleges (the engineering transfer path is complex as there is no consensus among the CSU/UCs about the core courses). The new engineering program also has a reduced number of required credits can be completed within 2 or 3 years.

Currently we are working on a new Physics AS-T, that follows the guidelines established by Guided Pathways. This should ensure a clear path for Physics Majors to get a degree and transfer.

In addition to reducing the number of credits is our department degrees we will:

- Increase tutoring for our courses (currently we lack a good system to recruit student tutors and usually there is only one faculty member on campus to help students)



If your totals for degrees/ certificates awarded are lower than your goals, consider addressing this in your Three-Year Program Plan at the end of this document.

[curriQunet](#)

Click Link above and go to Intranet page in My.Gav

13. Are your SLOs, PLOs and ILOs mapped in [curriQunet](#)?

Yes:

No:

14. Are your SLOs and PLOs up to date in [curriQunet](#) AND on the [reporting website](#) (←requires your email log-on)?

Yes:

No:

15. Have all of your SLOs and PLOs been assessed in the last five years?

Yes:

No:

16. Have you reviewed all of your SLOs to ensure that they remain relevant for evaluating the performance of your program?

Yes:

No:

17. If you answered no to any of the above questions, what is your plan to bring SLOs/ PLOs into compliance (200 words or less)?

- #13: Dept Chair will map SLOs, PLOs, and ILOs in Curricunet
- #14: Dept Chair will update SLOs and PLOs in Curricunet
- #15: Next time SLOs/PLOs are assessed, Dept Chair will assure that previously unassessed outcomes are first to be newly assessed
- #16: Dept Chair will reach out to appropriate faculty to review SLOs



Consider addressing this in your Three-Year Program Plan at the end of this document.

Learning and Outcomes Assessment

Review Learning Outcomes data located in the Course and Program Reports for your area (path below). After you have examined your results, reflect on the data you encountered. Please address the student learning outcomes (SLO), program outcomes (PLO), and institutional outcomes (ILO) in your analysis.

Student Learning Outcomes (SLO)

Path: Gavilan College Intranet → [curriQunet](#)

18. What are your individual course goals for SLO success? If you don't have set goals, what should they be? Helpful question: If your SLO results are lower than your goals, what are your plans to improve them (200 words or less)?

I am confused by the question (maybe I do not understand the question). This again seems arbitrary SLO success rate will depend on how ambitious is the SLO. SLOs and SLOs assessments can be made such that success is high. In any case, we would want to have a SLO success rate of 70% or higher (arbitrary number that has been discussed by the Natural Science Department).

Plans:

1. Establish if the SLOs are reasonable.
2. Determine if the SLOs assessment truly measures the expected outcome.
3. Clarify the expectations of the class to students, and what we want them to get from our class.

SLO Disaggregation

19. How do your SLO results vary across your courses? Are there any patterns that stand out (200 words or less)?

For each course we use the last year of assessment and we report the average of the assessed SLOs

Physics and Astronomy

Major sequence: Phys 4A (64.3%), Phys 4B (66.3%), Phys 4C (73.3%)

Biological Science Major and Pre-Medicine: Phys 2A (81.7%) and Phys 2B (79.2%)

GE: Phys 1 (Data from last 2 assessments states: "Most Students"), Astr 1 (Data from last 2 assessments states: "Most Students")

ENGR

Enrg 10A (no data), Enrg 1 (no data)

Enrg 2 (72.5%), Enrg 3 (72.7 %)

Enrg 4 (80%), Enrg 5 (no data)

Geology

Geol 1 (94.7%)

Physical Science

Psci 1 (78.3%) and Psci 2 (84%)

Geology has a surprisingly high SLO success.

Program Learning Outcomes (PLO)

Path: [Gavilan College Intranet](#) → Program Planning → Student Learning Outcomes Assessment Reporting → Program Level SLO (Far left) → Instructional → Select program

20. What is your set goal for PLO success? Helpful question: If your PLO results are lower than your goals, what are your plans to improve them (200 words or less)?

I don't know the answer to this question. We have recently reviewed the PLOs for our programs and we have not quantified the results. I need to go over the PLOs assessment for each program. This will be part of the 3 year plan.

Institutional Learning Outcomes (ILO)

21. How aligned are your SLOs and PLOs to the ILOs (200 words or less)?

We have recently modified the PLOs for our Engineering and Physical Sciences programs, such that they are aligned with the Institutional Goals. Currently we are working on the SLOs of our classes such that they align with the PLOs.

22. N/A



Consider addressing LOs in your Three-Year Program Plan at the end of this document.

E. Curriculum and Course Offerings Analysis

Curriculum Analysis

1. Are there plans for new courses or educational awards (degrees/certificates) in this program? If so, please describe the new course(s) or award(s) you intend to propose (200 words or less).

The Engineering Program underwent an update in 2018-19:

- Chancellor's Office System Approved a new Engineering (A.S). The degree format was updated to make less confusing and Tracks were re-written. Used Program Control # 37896. Curriculum Approval Date 6/11/2019.

In addition, we are also deactivating the Physical Science and Engineering (A.S). This item is pending.

2. Provide your plans to either inactivate or teach each course not taught in the last three years (200 words or less).

Yes. We are planning to start offering the entire ENGR course sequence by introducing one course per semester:

1. **ENGR 10A—Introduction to Engineering A (2.0) – Active Fall 2019.**
2. **ENGR 5—Engineering Programming and Problem Solving (3.0) – Active Spring 2020**

We start with ENGR 10A as this course is designed to help students choose an engineering track and also provide students with the tools to become a successful engineering student. ENGR 5 introduces students to programming. This skill will prove useful for future classes not only in Engineering, but also in physics, math, biology and chemistry.

3. **ENGR 2—Statics (3.0) – Active Fall 2020**
4. **ENGR 3—Electric Circuit Analysis (4.0) – Active Spring 2020**

The following year we plan to introduce ENGR 2 and ENGR 3. At this point we will have a working engineering program. Students will have all the options to complete the General Engineering AS and with this course offerings they will be able to transfer to almost all 4-year colleges in California.

5. **ENGR 4—Properties Of Materials (3.0) – Active Fall 2021 (Tentative)**
6. **ENGR 1—Graphical Communication and Design (3.0) – Active in Spring 2021 (Tentative).**

The final two courses that we will introduce on 2021 are ENGR 4 and ENGR 1. This two courses will expand the options of students and in certain cases will strengthen the transfer application of students to 4-year colleges.

Finally, the following course have not been offered in a while: **PSCI 3—Ocean Studies (maybe we will consider deactivation)**

Course Time, Location and Delivery Method Analysis

Using the copy of the Master Schedule from [Argos](#), find the information regarding when, where, and in which method the courses in this program are taught.

Path: Gavilan Intranet→Argos→Gavilan Schedule→Schedule by Division and Department→Select term, division and your department then press 'run dashboard'.

To Create a PDF of your results above: After obtaining results, go to the top of the screen: Reports→Schedule Reports by Division and Dept svc→Run

Location/Times/Delivery Method Trend Analysis:

3. Consider and analyze your location, time, and delivery method trends. Are classes offered in the appropriate sequence/ available so students can earn their degree or certificate within two years? Are courses offered face-to-face as well as have distance education offerings? Are they offered on the main campus as well as the off-site areas? Different times of day? (300 words or less).

Engineering

- Engr 10A is offered only in the Fall in Gilroy campus (LS 106)
- ENGR 5 will be offered only in the SPRING on Gilroy campus.

The ENGR courses will be offered only every other semester. For that reason, if a student fails a prerequisite of an ENGR course or an ENGR course itself, then the students transfer will be delayed by one year.

Physics

- All Physics courses are only offered Gilroy (either PS 102 or PS 105).
- Phys 1 is offered both semesters because of its high demand (two sections)
- Phys 2 series is offered in sequence. Phys 2A (Fall) and Phys 2B (spring)
- Phys 4 series is offered in sequence: Phys 4A (Spring), Phys 4B (Fall), Phys 4C (spring)
- Recently we offered two sections of Phys 2A (morning and afternoon) because of its increasing demand. Students interested in physics, engineering, chemistry, computer science majors often taken at least up to Phys 4B. Most students taking Phys 4A are required to take Phys 2A at Gavilan. Failing to complete Phys 2A, 4A or 4B delays the transfer time by a whole year because courses are only offered every other semester.
- In addition, Physics courses must very carefully coordinate with Math, Chemistry, and Biology to ensure students can earn their degree in two years.

That said, it is **highly** unlikely that students begin at a level of Math and/or Physics to feasibly earn their degree in two years

Geology

Geology only offered in Gilroy. One of the courses is face-to-face and the other one is hybrid model.

Physical Sciences

- PSCI 1 and PSCI 2 are going to only be offered online. PSCI 3 has not been offered in a long time.

Astronomy

- Astr 1 is a very popular course. There is 4 sections: One in Gilroy, One in Morgan Hill, and two online sections.



Consider goal creation around more efficient and beneficial locations, delivery method and/or time of day trends in your Three-Year Program Plan at the end of this document.

F. Program and Resource Analysis

Program Personnel

1. Please list the **number** of Full and Part Time faculty in this program for the past **two** years (DATA NOT AVAILABLE)

* Path: [GavDATA](#) → Program Review/ Equity → F1. Faculty workload (FTEF) by Full-time/ Part-time → Find Program

ASTRONOMY

Academic Year	Number of Full Time faculty	Number of Part Time faculty	Faculty Workload* FT PT	Overall FTEF*
Example	3	7	FT: 7.2 or 39.9% PT: 10.4 or 57.6%	8.63
2017-18	0	1	FT: PT: 1.2 or 100%	1.2
2018-19	0	2	FT: PT: 1.8 or 100%	1.8

Geology

Academic Year	Number of Full Time faculty	Number of Part Time faculty	Faculty Workload* FT PT	Overall FTEF*
2017-18	0	1	FT: PT: 2.2 or 100%	2
2018-19	0	1	FT: PT: 3.0 or 100%	3

Physics

Academic Year	Number of Full Time faculty	Number of Part Time faculty	Faculty Workload* FT PT	Overall FTEF*
2017-18	0	2	FT: PT: 4.7 or 100%	4.7
2018-19	1	1	FT: 3.4 or 67.6% PT: 1.6 or 32.4%	5

Physical Science

Academic Year	Number of Full Time faculty	Number of Part Time faculty	Faculty Workload* FT PT	Overall FTEF*
2017-18	0	1	FT: PT: 0.6 or 100%	0.6
2018-19	0	1	FT: PT: 0.4 or 32.4%	0.4

Engineering Data Not Available.

How have and will faculty with reassigned time, grant commitments and activity, projected faculty retirements and sabbaticals affected personnel and load within the past in the next three years? What future impacts do you foresee (200 words or less)?

The department is in need of more full time faculty. For the past 3 years the Physical Sciences and Engineering department has been missing a consistent full time faculty member. In addition, there has been high turn over of part-time faculty. The students taking classes in the Physical Sciences and Engineering will benefit from the consistency of having full-time faculty members and the additional benefit of having more full-time faculty members that are available on campus regularly.

Departmental Productivity Measurements

2. Use the Enrollment Trends section of your Program Review Data Sheet to determine information for below. Please review and enter data for the past three years. (DATA NOT AVAILABLE)

* Path: [GavDATA](#) → Program Review/ Equity → F2. Enrollment Variables and Trends → Find Program

Astronomy, Geology and Engineering: No Budget.

Astronomy

Year	Total FTEF	Total FTES*	Productivity *(WSCH/FTEF)	Total Dept. Allocated Budget	Total Departmental Spending
Ex: 1999	7.1	153	377	\$385,462	\$366,273
2016	1.0	18	312		
2017	1.2	18	245		
2018	1.8	26	239		

Geology

Year	Total FTEF	Total FTES*	Productivity *(WSCH/FTEF)	Total Dept. Allocated Budget	Total Departmental Spending
2016	1.8	32	301		
2017	2.2	32	248		
2018	3.0	32	180		

Physical Sciences

Year	Total FTEF	Total FTES*	Productivity *(WSCH/FTEF)	Total Dept. Allocated Budget	Total Departmental Spending
2016	0.6	7	217	21610.00	33209.89
2017	0.6	7	182	21848.00	36248.30
2018	0.4	5	199	36192.00	78524.22

Physics

Year	Total FTEF	Total FTES*	Productivity *(WSCH/FTEF)	Total Dept. Allocated Budget	Total Departmental Spending
2016	1.8	37	353	47003.00	50602.49
2017	4.7	55	193	46800	72814.45
2018	5.0	55	185	110175.38	72391.16

Your Program Cost per FTES average is: **1278.94**. Physical Science: 8542.48. Physics: 1335.91

College-wide Cost per FTES average is: \$7,203.44

Statewide Funding per FTES: \$3,727.00

3. Evaluate your program cost per FTES. Is your cost in alignment with your FTES generation? If not, what improvements can be made (200 words or less)?

The total Program cost is calculated by adding all the spending/total FTES across the 4 disciplines.

Total Spending for 2018 = 72391.16 + 78524.22 = 150915.38

Total FTES = 55+5+32+26 = 118

TOTAL Cost per FTES = 1278.94

If my calculations are justified, our department cost per FTES is very low compared to very college-wide cost and the statewide funding. Our cost is very much in alignment with our FTES generation. However, this does not take into account STEM III, from which we get funding for certain lab equipment.

In addition, it has come to my attention that half the salary of the full time Physics/Engineering Instructor comes from the Physical Science funding.

Evaluation of Resource Allocations

4. List the resource allocations from all sources (e.g., annual college budget request appropriations, Guided Pathways funds, grant funds, etc.) received in the last three years. For annual college budget request appropriations, reference your previous three-year plan and annual updates.

Please evaluate the effectiveness of the resources utilized for your program. How did these resources help student success and completion? For college budget request appropriations, list the result of the evaluation strategy outlined in your previous three-year plan and annual updates. For all other sources of funding, list the results of the evaluation strategy contained within the program or grant plan.

To add additional rows, click in the bottom cell on the right and push 'tab' on the keyboard.

Resource Allocated	Funding Source	Academic Year	Purpose of Funding	Result
Ex: \$10,000	Equity	2017-18	Purchase text for students in Math 5	83% of students turned homework in on time, an increase from 72% in 2016-17

Resource Allocated	Funding Source	Academic Year	Purpose of Funding	Result
36258	STEM 3	2017-18	30 Laptops for Physical Science and Engineering	We can have simulation labs, when lab equipment is not available.

Integrated Planning and Initiatives

5. What other areas is your program partnering with (i.e. guided pathways, grant collaboration) in new ventures to improve student success at Gavilan College? What is the focus of this collaboration? Helpful question: What are the department and your Integrated Planning/ Guided Pathways partners' plans for the next three years (200 words or less)?

- Physics program map is one of the pilot program maps (GP)
- Collaboration with the STEM grant to get students in the engineering pipeline and keep them (GP)
- Revised engineering curriculum (GP and IP)



Consider addressing this in your Three-Year Program Plan at the end of this document.

Other Opportunities and Threats

6. Review for opportunities or threats to your program, or an analysis of important subgroups of the college population you serve. Examples may include environmental scans from the [Educational Master Plan](#), changes in matriculation or articulation, student population, community and/ or labor market changes, etc. Helpful Question: What are the departmental plans for the next three years (200 words or less)?

I know my answer is much longer than 200 words. Consider this the answer to question 6 but also to the Appendix Question 4.

Trends for the program are hugely optimistic! The need for engineers remains great. Both large and small employers see the need to support the education of non-foreign engineers for both social and economic reasons. Our community base is a target population for many employers for their efforts to support education of their future work forces. With so many community college engineering programs in the Bay Area, Gavilan's program in South Santa Clara county and San Benito is perfectly located to prepare the underrepresented students that are attractive to so many four-year schools and employers. Yet there are some possible threats that can affect the success of the program:

1. The purpose of the new Engineering A.S. is to help students map a path to transfer to 4-years colleges. Presently, several engineering courses do not have an articulation with some 4-year institutions that are geographically close to Gavilan (San Jose State, San Francisco State, Cal Poly, etc.). Seeking the articulation is a priority for the Engineering program
2. Campus awareness about Engineering Program. Given the relaunching of the Engineering program is important to reassure Gavilan and the community that we are committed to a success. We have recently started a new Engineering Club with the idea of increasing the visibility of the Engineering Program and involving the community in the goals of the program.
3. Long pipeline of prerequisites course in preparation for Engineering. Many of these courses are only offered once per year. Missing one course or failing a course, can significantly delay the transfer process.

4. Although there is high number of declared engineering majors, the number of students who are prepared for the rigors of the Engineering Program is much lower. This leads to longer times to transfer and small size upper level physics and engineering courses. Clearly, the demand for Engineering is high, but students need to be better prepared in lower division courses: Math 8A and 8B, Phys 2A, Chem 1A, Math 1A, Phys 4A and Phys 4B. A possible solution would be to increase the number of credits for Phys 4A and Phys 4B. Other schools in the area: Cabrillo College, College of Marin, Foothill, Evergreen offer the physics with calculus series for 5 credit units (one more hour per week used as an opportunity for students to practice problem solving skills in class)
5. There is a lack of appropriate internship opportunities for Physical Science and Engineering. One of the main goals of the department is to grow our network of internships to include physics and engineering.
6. As the number of courses and section grown in the department there will be scheduling challenges in the Physical Sciences building (PS 105 and PS 102).
7. We have also noticed that the number of students taking Physics courses has increased steadily over the past 5 years. Currently more than 60% of the Phys 2A students identify either physics/engineering/computer science as their intended career, and these students will continue to take on the Phys 4 series. A large percentage of these students lacks the mathematical and problem-solving skills required to succeed in the Phys 4 series and the engineering courses. Although Phys 2A is intended to be a physics course for the biological and life sciences, the large percentage of students that will be moving to Phys 4 series has transformed Phys 2A into a preparation course for the engineering/physics/computer science tracks. It would be interesting to consider a separation of Phys 2A into two different courses: one for the biological/life sciences and second Phys 2A equivalent that prepares students for the rigor of Phys 4 series (this is the model that Cabrillo college follows).



Consider addressing this in your Three-Year Program Plan at the end of this document.

G. Career Education Questions

External Regulations

1. Does your program have external regulations and/ or accreditation requirements? If yes, list the regulatory body. What is your current status? When is your next renewal **(200 words or less)?**

Our courses are in agreement with the C-ID descriptors.

Employment

The following questions can be answered using the labor data from Cal-PASS Plus on [Launchboard](#). **You will need to create an account before accessing Launchboard.**

Path: Once you have a Launchboard account, go to the main page, hover over the Community College tab, and from the drop down menu select 'Launchboard'. On the next screen, scroll down to 'Doing What Matters' and press on the 'Explore' button under Strong Workforce Program. Now enter Gavilan College, your program TOP code, and the latest academic year in the cells provided to gather information regarding your program.

2. Are students obtaining and keeping gainful employment in their field **(100 words or less)?**

Path: Under the Strong Workforce Program Metrics page (path listed above), click 'Job Closely Related to Field of Study' AND 'Employed in the Fourth Fiscal Quarter after Exit' for information.

For all fields under Physical Science and Engineering Department: "There are insufficient data to calculate this metric"

3. What percentage of students is attaining a living wage **(100 words or less)?**

Path: Under the Strong Workforce Program Metrics page (path listed above), click 'Attained a Living Wage' for information.

For all fields under Physical Science and Engineering Department: "There are insufficient data to calculate this metric"

Appendix

Optional Questions

Please consider providing answers to the following questions. While these are optional, they provide crucial information about your equity efforts, training, classified professional support, and recruitment. **All replies should consist of 100 words or less.**

1. What training does your program provide for faculty and/ or classified professionals regarding professional development?

We don't offer any training.

2. Is there a need for more faculty and/ or classified professional support in your area? Please provide data to justify this request. Is there a need for expanded support services (i.e. counseling, security, tutoring or math lab at the off-sites, in the evening, etc.) in your area? Indicate how it would support the college mission and college goals for success, and completion.

1. LAB TECH FOR PHYSICAL SCIENCES AND ENGINEERING.

Currently there is no lab technician for Astronomy, Geology, Physics and Engineering. In 2016 there was a lot of new equipment bought. The equipment was stored and labelled in PS102, but some of it was never assembled or tested. Since 2016, part-time faculty have been finding/assembling the equipment to carry the labs. Some of the part-time faculty have left. There is no consistency in the physics/astronomy labs between years. There is no lab manual for astronomy, physics or engineering. For that reason, each faculty member makes their own labs. Since most of the department is part-time (with a high turn-over rate) there has been no incentive to create a standard lab manual for each class. In addition, the preparation and cleaning time for labs is an additional burden on the faculty. Some lab section have 30 students, meaning instructors have to prepare 10-15 lab stations and clean up 10-15 lab stations. With little time between classes and labs, this can create situations where equipment is not returned to the right place and the lab environment is disorganized. A lab technician will be key in helping create an organized lab environment and standard lab manual (for each course) to be followed by both full time and part time faculty. There will be a large initial investment of time from full time, part-time and the lab technician. But once an organized system is achieved, this will make labs run more smoothly, and allow faculty to focus on more important aspects of the lab than just logistics. Currently Astronomy 1, Geology 1, Physics 1, Physics 2A, 2B, 4A, 4B and 4C have a lab section. Most of the lab sections are held in PS102. Currently, each semester there is approximately 6-7 lab activities per week taking place on PS102. A lab technician will save a lot of time in preparation for the labs and also help keep clean the space in PS102. In 2020 and 2021 we will also be offering ENGR 3 (Circuits) and ENGR 4 (Materials), which also have a lab section.

2. A full time physics instructor (in 2 or 3 years). Although Gavilan did not have Engineering program, the number of Engineering declared Majors have been growing steadily for the past 6 years. Engineering declared major went from 46 in 2012/2013 to 126 in 2018/2019). This trend is also reflected in the increased enrollment in Physics 2A and Physics 4A. Phys 2A enrollment went up from 55 in 2012/2013 to 93 in 2019/2020. We recently had to open a second lecture section for Phys 2A. Similarly Phys 4A enrollment reach 35 students (maximum capacity for the class, and some students were not able to enroll in the class do to the size constraint), and it is likely that we will have to move the class to a bigger auditorium in the near future, or maybe have two section of Phys 4A. Similarly, Phys 1 section (Introductory Physics) is often near maximum enrollment. By 2021, we expect to be offering 5 engineering courses, and expect that the enrollment in physics courses will keep increasing. Students taking Phys 2 series and Phys 4 series often seek additional help on campus for homework and exam preparation, but physics faculty resources are limited. An additional full time faculty will greatly benefit the Physical Science and Engineering students.

3. What, if anything, is your department doing to assist the District in attracting and retaining faculty and classified professionals who are sensitive to, and knowledgeable of, the needs of the continually changing constituencies, and reflect the make-up of our student body.

NA

4. Provide any additional information that has not been mentioned elsewhere in this program plan, if necessary.

Please see section 6 above (Other opportunities and threads)

Review Process Feedback

1. Please share any recommendations for improvements in the Program Integrated Plan and Review process, analysis, and questions. Your comments will be helpful to the PIPR Committee and will become part of the permanent review record.

During the semester classes take a lot of time. I suggest that we do this over the summer or winter breaks.

Example Three-Year Program Plan Goal Setting Worksheet

To add additional rows, click in the bottom cell on the right and push 'tab' on the keyboard.

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<p style="text-align: center;">Goal</p> <p>One sentence limit.</p>	<p>Connection of Goal to Mission Statement, Strategic Plan and SAO Results.</p> <p>Use one sentence for each item.</p>	<p>Proposed Activity to Achieve Goal</p> <p>One sentence limit.</p>	<p>Responsible Party</p> <p>One sentence limit.</p>	<p>Fund amount requested.</p> <p>If a collaboration, what % required from each partner?</p> <p>If applicable, list each budget partner / source separately</p>	<p>Timeline to Completion</p> <p>Month / Year</p>	<p>How Will You Evaluate Whether You Achieved Your Goal</p> <p>Two sentence limit.</p>
<p>Increase proportion of EOPS students completing degrees by five percentage points</p>	<p>Mission statement: engages students of all backgrounds. Strategic Plan: Goal 4 SAO Results: Outcome 1; 76% of students completed 3 counseling visits</p>	<p>Increase counseling touch points from three times per semester to five times per semester by restructuring appointment and communication schedule</p>	<p>Dean, Special Programs</p>	<p>None</p>	<p>December 2021</p>	<p>In three years, compare EOPS student graduation rates from before the touchpoint increase to graduation rates after the increase</p>
<p>Eliminate ENGL1A course success rate achievement gap between Foster Youth and general student population</p>	<p>Mission statement: Supports innovate practices Strategic Plan: Goal 4: Improve Equity SLO Results: No direct connection</p>	<p>Partner with EOPS to create a Foster Youth ENGL1A intervention team</p>	<p>Chair, Department of English</p>	<p>None</p>	<p>September 2020</p>	<p>Compare foster youth success rates in ENGL1A before the intervention and after implementation of the intervention</p>

Three-Year Program Plan Goal Setting Worksheet

Physical Science and Engineering

****Personnel-related requests must follow the hiring practices of the appropriate area and will not be considered through Program Review**

To add additional rows, click in the bottom cell on the right and push 'tab' on the keyboard.

<p style="text-align: center;">Goal</p> <p style="text-align: center;">One sentence limit.</p>	<p style="text-align: center;">Connection of Goal to Mission Statement, Strategic Plan and SAO Results.</p> <p style="text-align: center;">Use one sentence for each item.</p>	<p style="text-align: center;">Proposed Activity to Achieve Goal**</p> <p style="text-align: center;">One sentence limit. <i>For certain goals I have two activities to achieve goal, so will write two sentences.</i></p>	<p style="text-align: center;">Responsible Party</p> <p style="text-align: center;">One sentence limit.</p>	<p style="text-align: center;">Fund amount requested.</p> <p style="text-align: center;">If a collaboration, what % required from each partner?</p> <p style="text-align: center;">If applicable, list each budget partner / source separately</p>	<p style="text-align: center;">Timeline to Completion</p> <p style="text-align: center;">Month / Year</p>	<p style="text-align: center;">How Will You Evaluate Whether You Achieved Your Goal</p> <p style="text-align: center;">Two sentence limit.</p>
<p>Increase success rate in Phys 2A and 2B by 5% by May 2022</p>	<p>Mission Statement: Increase the success rates biological and life sciences majors Strategic Plan: Goal 1</p>	<p>Increase the number of SI student tutors in Physics 2A and 2B (6 tutors for Phys 2A and 3 tutors for Phys 2B).</p> <p>Create a document with of basic skills that students should have before enrolling in Phys 2 series (this document is to be used by the prerequisite course instructors to align the content with skills needed)</p>	<p>Dean and Physics Faculty prepare student tutors.</p> <p>Faculty</p>	<p>5000-8000</p>	<p>05/2022</p>	<p>Look at the statistics</p>

Increase success rate in Phys 4A and Phys 4B by 5% by May 2022	Mission Statement: Increase the success rates in Physics and Engineering Majors. Strategic Plan: Goal 1	Increase the number of credits to 5 (one hour of problem solving) and create a new section of Phys 2A that specializes in preparing student for the calculus based physics sequence.	Entire Curriculum Process? Dean, President, Curriculum Committee, Faculty	None?	05/2022	Look at the statistics
Increase the number of students obtaining an Engineering A.S. degree and transferring to 4 year colleges. Our goal is to have 10 students with an Engineering A.S. degree by 05/2022	Mission Statement: Prepare students for the rigors of an engineering major Strategic Plan: Goal 1	Start offering the ENGR course sequence (one per semester)	Faculty	Lab equipment for ENGR 3 and ENGR 4 Have to calculate those numbers	We expect to get our first cohort of students obtaining A.S. degrees in 05/2021. But given the program is fairly new, we are setting the goal to be completed by 05/2022	Look at the statistics
Increase student success rate across all courses in the Physical Sciences and Engineering program by 3% over the next 3 years.	Mission statement: Increase the efficiency of laboratory/discussion activities and organize the laboratory space Strategic Plan: Goal 2 SLO Results: no direct connection	Ensure laboratory spaces and equipment are meeting the needs of the institution and of the student. To achieve this part-time and full time will work together to create a standard lab manual for each class. Hire a part-time or full time lab tech.	Faculty Hiring Process? President, Hiring Committee, Dean	25000\$ - 50000\$	I hope that by 05/2021.	Look at the statistics

Increase the number of enrolled Engineering and Physical Science Majors by 5%.	Mission statement: Increase program's visibility to Gavilan community not yet at the academic level of engineering courses Strategic Plan: Goal 1 SLO Results: no direct connection	Promote the Engineering Club and campus events	Engineering Club and Faculty	None?	05/2022	Look at the statistics.
Seek a larger number of course articulations with the 4-year institutions that are geographically close to Gavilan. Increase the current number of articulations in the Science and Engineering programs by 5% over the next 3 years.	Mission Statement: effective communication and clear objectives Strategic Plan: Goal SLO Results: no direct connection	Take the time to do it by reviewing the requirement of each 4-year college	Dept Chair, FT Faculty Counselors	None	05/2022	Look at the numbers of new articulations achieved over the next 3 years.
Map all courses SLOs to PLOs and ILOs and update course SLOs	Mission Statement: effective communication and clear objectives Strategic Plan: Goal SLO Results: no direct connection	Take the time to do it	Dept Chair, Natural Science FT faculty	None	December 2020	Assess if the alignment took place. Curricunet will have the updated SLOs and they will be mapped to PLOs and ILOs

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Signature Page

Program being reviewed: **Physical Science and Engineering**

Date: [Click here to enter text.](#)

How to use form:

Sign off after final review and no later than:
Peer Reviewers: Nov. 27, 2019
Dean: Mar. 6, 2020

Role	Name	Assignments/ research assigned, if any	Initial and Date upon final review
Team Lead/ Chair	David Argudo		
Dean			
Peer Reviewer			
Peer Reviewer			
Student			
PIPR Support Team	Susan Sweeney		12-2-19
PIPR Support Team	Lelannie Diaz		