



## Engineering/ Physical Sciences [1]

### Main

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#### Overview

**Academic Year** 2022 - 2023

**Originator** Argudo, David

**Division** Curriculum Division 10 - Liberal Arts and Sciences

**Department** Natural Sciences & Math

**Program** Engineering/ Physical Sciences

**Program Type** Instructional

### Co-Contributors

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Contributor

### Program Mission and Accomplishments

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## 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.**

**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 ideal position to help the young people of southern Santa Clara and San Benito counties 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 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 meet the criteria of quality instruction, at a college level, with appropriate standards of performance.
2. Ensure classrooms and laboratory spaces meet 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.

**On the PIPR website, locate and review your previous program plan and subsequent annual updates. After studying, please list:**

Response and follow-up to previous program reviews

1. **Increase success rate in Phys 2A and 2B by 5% by May 2022 (acomplished)**
2. **Increase success rate in Phys 4A and Phys 4B by 5% by May 2022 (acomplished)**
3. **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 (not accomplished and no longer meaningful: we should focus on transfer rates not on A.S degree).**

**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 (AD-T), where all the courses can be taken at Gavilan. In the 2019-2020 academic year, we re-structured the engineering program. We 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).

In the Fall 2019 we started offering ENGR courses again, and we now have a functional Engineering program that provides a path to transfer to most of our students. Our expectation was to be able to offer all our ENGR courses by 2023, but due to the pandemic our plans shifted, and we have not been able to offer ENGR 3 (Circuits). Currently, enrollments in STEM are very low. A ~40% decline in enrollment in the Math Department between 2018-2019 and 2021-2022 has significantly impacted physics and engineering enrollments. Although as a program, our numbers in Physics and Engineering have continued to grow slightly, the enrollments are not high enough to warrant the offering of ENGR 3 (Circuits).

## Student and Program Outcomes

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College Goal for Student Achievement

**The following questions refer to data regarding student achievement.**

**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.**

**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?**

Success Rates	College	Physics	Engr
2019-20	70.4%	81.4%	46.7%
2020-21	70.3%	85.9%	67.3%
2021-22	69.4%	82.1%	77.5%
Average	70.0%	83.1%	63.8%

Physics doing well in comparison to the college, ENGR is improving.

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

**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.**

**Path: Tableau - Program Review/ Equity - D2. One Year Persistence Rate**

Retention Rates	College	Physics	Engr
2019-20	84.9%	88.5%	83.3%
2020-21	85.2%	92.7%	90.9%
2021-22	86.8%	91.9%	95.8%
Average	85.6%	91.0%	90.0%

Both Physics and ENGR are doing well in comparison to the rest of the college.

Success

**The following questions refer to data regarding student achievement.**

**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: Tableau - Program Review/ Equity - D3. Course Rates by Unit**

Physics Success in %	Phys 1	Phys 2A	Phys 2B	Phys 4A	Phys 4B	Phys 4C
2019-20	90.7	71.6	80.0	71.4	100.0	83.3
2020-21	88.8	74.7	83.3	97.1	96.6	90.9
2021-22	85.9	65.3	100.0	81.8	96.0	100.0
Average	87.9	70.5	89.6	83.3	97.3	93.9

ENGR Success in %	ENGR 10A	ENGR 2	ENGR 1	ENGR 5	ENGR 4	ENGR 3
2019-20	46.7					
2020-21	63.4	78.6				
2021-22	68.6	75.0	78.6	100.0		
Average	60.4	77.3	78.6	100.0		

We are setting a goal of 80% course success (arbitrary; chosen as ~ 10% higher than the college average). Physics has high success rates +10% over college average. We need to work more on engineering.

**How many students did your area serve (if you don't have an exact count, please provide an estimate)? How did they perform in comparison to those that did not use your services, if applicable? Given this information, how has your service or area supported student success and retention over the past three years (200 words or less)?**

**See Success and Retention dashboard in Tableau's Program Review section.**

Data	School	Physics	ENGR
Total Headcount - 3 years	93991	958	156

Physics Retention in %	Phys 1	Phys 2A	Phys 2B	Phys 4A	Phys 4B	Phys 4C
2019-20	93.8	83.2	86.7	80.0	100.0	100.0
2020-21	96.3	84.8	91.7	97.1	96.6	100.0
2021-22	93.8	83.2	86.7	80.0	100.0	100.0
Average	94.1	83.6	94.0	92.2	98.7	100.0

ENGR Retention in %	ENGR 10A	ENGR 2	ENGR 1	ENGR 5
2019-20	83.3			
2020-21	85.7	92.7		
2021-22	93.8	87.5	92.9	100
Average	91.5	86.4	92.9	100

## Equity

### Equity

**Gavilan College has identified the following populations as experiencing disproportionate outcomes: Males, African American, Native American, Students with Disabilities and Foster Youth.**

**For EOPS/ CalWORKs, MESA, TRiO, Puente, and VRC: LOCATE Success and Retention dashboard in Tableau's Program Review section. 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)?**

**For all other areas, how can your area help increase disproportionate student success? Contact your support team for any needed assistance in interpreting these data (200 words or less).**

**Please find Equity information in Tableau's Success and Retention dashboard.**

**Contact your support team for any needed assistance in using Tableau.**

Gender Data	School	Physics	ENGR
Total Headcount	93991	958	156

Headcount Gap (Female% - Male%)	+14.4%	-18.9%	-61.6%
Success Gap (Female% - Male%)	+2.1%	+7.8%	+10.8%
Retention Gap Female	-0.2%	+0.6%	+2%

In contrast to the school Gender Data, Physics/ENGR shows a disproportionate representation of male students. Interestingly, women have a significantly higher success rate than men in Physics/ENGR.

Race Data	School	Physics	ENGR
Success Gap (Hispanic%-White%)	-7.1%	-0.7%	-14.9%
Retention Gap (Hispanic%-White%)	0%	-0.2%	-0.2%

Negligible gap in success between Hispanics and White students on Physics, substantial gap in ENGR.

### Our Equal Employment Opportunity (EEO) Plan States

**"Ensuring equal employment opportunity involves creating an environment that fosters cooperation, acceptance, democracy, free expression of ideas and is welcoming to persons of all gender expressions, persons with different abilities, and individuals from all ethnic and other groups protected from discrimination."**

**What is your area doing to support district efforts in creating an inclusive college environment? With what departments are you partnering? Did you identify barriers and institute change? How is you creating/ ensuring diversity in your department or in the classroom?**

**Some examples might be sponsoring cultural events and diverse speakers on issues dealing with diversity, exploring how to infuse diversity into the classroom and curriculum, integrating diversity into the evaluation of employees, promoting learning opportunities and personal growth in the area of diversity, or evaluating how the physical environment can be responsive to diverse employee and student populations.**

- We invite diverse speakers to our ENGR 10 (Introduction to engineering course).
- We are trying to hire women instructors in engineering and physics. This has proven to be a difficult task.
- We constantly advertise events to showcase women in science and engineering.
- open to suggestions.

**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: Tableau 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)?**

couldn't find this data.

In addition, our ENGR offerings have a single section (so there is no way to compare success rates between DE sections and face to face sections. Most of our physics courses (with the exception of Physics 1) also have a single modality offering.

In the future I would like to create DE models for Phys 2A and Phys 2B.

## Learning and Area Outcome

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**Have you reviewed all of your Service Area Outcomes (SAOs) to ensure that they remain relevant for evaluating the performance of your area?**

**Are your SAOs mapped in curiQunet?**

No

**Are your SAOs up to date in curriQunet?**

No

**Have your SAOs been assessed in the last five years?**

No

**Have you reviewed all of your SAOs to ensure that they remain relevant for evaluating the performance of your area?**

No

**If you answered no to any of the above questions, what is your plan to bring your assessments into compliance (200 words or less)?**

Instructional Programs don't have SAOs. The SLOs of our courses are in compliance and aligned with the ILOs.

## Outcome Assessments

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**Services Area Outcomes (SAO)**

**Review your SAOs data located in curriQunet. What is your department's acceptable achievement score goal for each outcome?**

Instructional Programs don't have SAOs

**Institutional Learning Outcomes (ILO)**

**How do your SAO support the college ILOs? Be specific (200 words or less).**

Instructional Programs don't have SAOs

**Are you meeting your SAO success goals? What patterns stand out in your results? If your SAO results are lower than your goals, what are your plans to improve them (200 words or less)?**

Instructional Programs don't have have SAOs

## Curriculum and Course Offerings Analysis

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**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).**

**Fundamentals of Engineering certificate:** Students completing the Fundamentals of Engineering certificate will learn to identify various engineering problems and integrate math and science to solve them, have proficiency in the design, execution, analysis, and interpretation of experiments, demonstrate familiarity with the engineering design process, and demonstrate an ability to communicate effectively using written, oral, electronic, and graphical means. In addition, the certificate will prepare students for industry and academic internships. When combined with further study, the Fundamentals of Engineering certificate will lead to the Engineering Associate in Science Degree and/or transfer. This certificate is intended to be completed at the beginning of a student's course of study and is specifically designed to encourage and guide students to select their courses in a sequence which enables them to transfer as fast as possible. Therefore, depending on the student's engineering path, they will be able to select specific courses to get the certificate. Units: 18-19

**Support for Physics 4A:** This course is being proposed to help increase success and retention. The purpose is to replace the old pre-requisite of Physics 2A, which does assist students in preparing for Physics 4A, but does add an additional semester of Physics to their coursework.

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

ENGR 4 - Start on 2022-23

ENGR 3 - The plan is to increase enrollment in the pipeline to engineering. ENGR 3 is only taken by electrical engineering and computer engineering majors. The plan depends on the math sequence enrollment, success and retention.

**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).**

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? yes.

Are courses offered face-to-face as well as have distance education offerings? yes, mostly hybrid courses with online lecture and in person lab.

Are they offered on the main campus as well as the off-site areas? No, only on the main campus

Different times of day? for introductory courses yes, for second year courses we do not have enough enrollment to do that.

## Program and Resource Analysis

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**Please list the number of Full and Part Time faculty, staff and/ or managers/ administrator positions in this program over the past three years. Focus on your individual program.**

Program and Resource Analysis

1. **2018**

**How many students did your area serve in this year (if you don't have an exact count, please provide an estimate)?**

213

**Full Time Faculty**

1

**Part Time Faculty**

2

**Full Time Staff**

0

**Part Time Staff**

0

**Full Time Mgr/Admin**

0.00

**Part Time Mgr/Admin**

0.00

2. **2019**

**How many students did your area serve in this year (if you don't have an exact count, please provide an estimate)?**

264

**Full Time Faculty**

1

**Part Time Faculty**

3

**Full Time Staff**

0

**Part Time Staff**

0

**Full Time Mgr/Admin**

0.00

**Part Time Mgr/Admin**

0.00

3. **2020**

**How many students did your area serve in this year (if you don't have an exact count, please provide an estimate)?**

348

**Full Time Faculty**

1

**Part Time Faculty**

4

**Full Time Staff**

0

**Part Time Staff**

0

**Full Time Mgr/Admin**

0.00

**Part Time Mgr/Admin**

0.00

**Faculty Percentages**

## Percentage Full to Part Time Faculty

Year:2018

FT = 33.30%

PT = 66.70%

Year:2019

FT = 25.00%

PT = 75.00%

Year:2020

FT = 20.00%

PT = 80.00%

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

Currently the full-time faculty is also the Activity Director for the STEM IV grant (60% reassigned time). In the next year, the reassigned time will increase to 80% - 100%. One of the biggest challenges in ENGR and Physics is to find qualified part-time faculty to teach the courses. We do not have a pool of qualified applicants, and a small set of applications every year. Usually from out of state applicants. We asked for another full-time instructor to share with CS, but we were denied.

**Additional Comments**

### Evaluation of Resource Allocations

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**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.**

**Did you receive additional funds?**

Yes

**Resource Allocation****1. STEM IV (NIH) Grant****Funding Source**

Grant

**Academic Year**

2021 - 2022

**Purpose of Funding**

Develop the Engineering Program

**Result**

ongoing

**Program Productivity****Program Productivity Measurements**

Determine the number of students you assist annually. Using the data provided by the business office, calculate your average cost effectiveness per student. **If you do not have student contact, please fill out Total allocated budget and Total spending.**

- 2021 - 2022**

**Total Number of student contacts**

255

**Total allocated budget****Total spending****Total cost per student (Student Contact/ Total Spending)****Year and Student count**

**Evaluate your program costs. Are your costs in alignment with your budget? If not, what improvements can be made? Please explain any trends in spending, inconsistencies and unexpected results.**

FTEs	Physics	ENGR
2019-20	63.16	2.20
2020-21	79.89	9.29
2021-22	91.10	9.29
total 3 years	234.15	20.78

Total 254.93

\$ FTEs	Physics	ENGR
2019-20	266029.92	9266.4
2020-21	336496.68	39129.48
2021-22	383713.2	39129.48
total 3 years	986239.8	87525.36

Total 1073765.16

## Integrated Planning and Initiatives

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**What other areas is your program partnering with (i.e. guided pathways, grant collaboration, etc.) 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)?**

Increase Efficiency

## Other Opportunities and Threats

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**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, EMSI data and etc. Helpful Question: What are the departmental plans for the next three years (200 words or less)?**

Threat: decrease in overall enrollment. Our program depends on the enrollment in the calculus sequence in math. If we do not remove the barriers for our students to enroll at Gavilan and succeed in their courses, our program will not grow and we risk not been able to offer certain upper-division courses.

Opportunity: dual-enrollment programs with our local HS. We are planning to approach our local HS with maps with suggested coursework for HS students, so they are ready to come to Gavilan and complete a transfer degree in 2 years.

Opportunity: SJSU is applying for grants in Data Science and Semiconductor technologies. Gavilan is listed as a partner institution in those grants.

Threat: Our neighboring schools have well-developed and strong STEM programs with the ability to offer courses in all modalities in the fall/spring/summer. We are at a disadvantage, because we sometimes can only offer sections in a single semester and with only one modality.

Opportunity: Market ourselves as a local college that emphasizes an experiential learning environment, where students get both flexibility and a strong sense of community. To achieve this, we must balance face-to-face offerings with online offerings for our degrees.

**What are you discovering about instruction and/or services in this remote environment that you would want to maintain post-pandemic?**

I have found that a version of the flipped classroom provides more flexibility for students and also increase their ability to learn.

Reducing lecture time, and increasing student-centered learning activities has had a positive impact in knowledge and skill acquisition among students.

**What kinds of issues are exacerbated or emerging that are likely to remain, unless addressed?**

I don't think that the answer to student success in the academic career is to increase the number of units to

"remediate" the knowledge they are missing. I think students end up taking too many courses with too many units, while they don't develop skills to become self-reliant learners. We ought to revise our curriculum to reduce busy work and reduce memory-based tasks. Reducing content, while emphasizing critical thinking, creativity, projects and problem solving will in the long run help students become stronger learners. Recently Large Language Models (AI) like ChatGPT have been developed, and we need to address how we plan to use/ban the new technologies in our classroom. This also bring into questions, what are we really assessing in our classroom. A student can always prepare to get an A in a class, but is that A in a class a good indicator of future success of the student in their academic and professional paths?

## Additional Questions

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**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.**

**1. Does your division (or program) provide any training/mentoring for faculty and/ or classified professionals regarding professional development?**

Yes. For instance: humanizing Online STEM summer course, and several communities of practice that are led between Physics/ENGR and MATH.

**2. If there is a need for more faculty and/ or classified professional support in your area, please provide data to justify request. Indicate how it would support the college mission and college goals for success and completion.**

Yes we need more faculty. It is difficult to find part-time instructor to teach physics and especially engineering.

The Physics/ENGR full time instructor (me) is currently also one of the activity directors for the STEM IV grant and working in SJSU collaboration grant. Currently, I am only teaching 1 class per semester to fulfill my duties in the grants.

On the fall we offer: 5 Physics Sections (25.5 LEH), 3 ENGR course sections (11.2 LEH) and 3 Astronomy sections (9 LEH).

On the spring we offer: 6 Physics Sections (30.6 LEH)), 3 ENGR course sections (12.3 LEH) and 3 Astronomy sections (9 LEH)

Total = 97.6 LEH.

To be able to full-fill my duties I can do between 6-10.4 LEH per year.

So 87.2 LEH has to be distributed among our Part-Time faculty. In Physics and Astronomy we have (4 consistent part-time faculty) and in ENGR we have (2 consistent part-time faculty). Most of our part-time faculty have full time jobs elsewhere, so they only teach for us between 3-10 LEH per year.

Yes. We need a lab technician for Physcis/ENGR. Currently we offer the following courses that require a lab:

\* Fall: Physics 1 (2 sections), Physics 2A (2 sections), Physics 4B (1 section), ENGR 10 (2 sections)

\* Spring: Physics 1 (2 sections), Physics 2B (1 section), Physics 4A( 2 sections). Physics 4C ( 1 section), ENGR 10 (1 section).

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

We are promoting Faculty Led Summer Internships and creating communities of practice such that faculty can

explore their professional interests.

#### **4. Are there program accomplishments/ milestones that have not been mentioned that you would like to highlight?**

Not at the moment. The pandemic took a toll in enrollment numbers, we were growing the program before 2020, and right now it is almost as if we are starting all over again.

**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.**

Reduce the length of the report. The report is useful because it forces faculty to carefully think about the plans for the program. The report should be a way to write down our plans in a concise and clear manner that will help us achieve the goals we set for our programs.

## Goals

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### Three-Year Program Plan Goals

- 1. Create a newly developed track in electrical/computer engineering that emphasizes the use of programming as a tool for engineers.**

**Connection of Goal to Mission Statement, Strategic Plan ([http://www.gavilan.edu/administration/master\\_plan/docs/SP\\_GoalsStrategiesDraft-final.pdf](http://www.gavilan.edu/administration/master_plan/docs/SP_GoalsStrategiesDraft-final.pdf)) and SAO Results**

Mission Statement: Prepare students for the rigors of an engineering and physics careers. Strategic Goal: 3

**Proposed Activity to Achieve Goal\*\***

Updating our engineering and physics courses curriculum to include programming projects.

**Responsible Party**

Full time Faculty

**Fund amount requested. If a collaboration, what % required from each partner?**

n

**Total Three Year Resource Allocation Request**

0

**Timeline to Completion Month / Year**

May/2026

**How Will You Evaluate Whether You Achieved Your Goal**

The goal is to offer all the courses required for an electrical/computer engineering major to transfer to a 4-year school. We will assess if we achieved the goal by looking at our course offerings on May 2026.

- 2. More than double the total number of students who take Engineering 10: Introduction to Engineering in an academic year from the 2022 baseline. Baseline: 35 Target: 100**

**Connection of Goal to Mission Statement, Strategic Plan ([http://www.gavilan.edu/administration/master\\_plan/docs/SP\\_GoalsStrategiesDraft-final.pdf](http://www.gavilan.edu/administration/master_plan/docs/SP_GoalsStrategiesDraft-final.pdf)) and SAO Results**

Mission Statement: Increase the Engineering program's visibility to the Gavilan community, and motivate engineering students to continue their academic path by providing a course that focuses on hands-on application of STEM. Strategic Goal: 1

**Proposed Activity to Achieve Goal\*\***

Explore different modalities to offer ENGR 10 including 8 week courses, dual enrollments, summer courses.

**Responsible Party**

Full time and part time faculty

**Fund amount requested. If a collaboration, what % required from each partner?**

0

**Total Three Year Resource Allocation Request**

0

**Timeline to Completion Month / Year**

May 2026

**How Will You Evaluate Whether You Achieved Your Goal**

Count the enrollment in ENGR 10 in an academic year.

3. **Physics/Engineering labs fully outfitted with up-to-date technology and serving students by the end of Year 3**

**Connection of Goal to Mission Statement, Strategic Plan ([http://www.gavilan.edu/administration/master\\_plan/docs/SP\\_GoalsStrategiesDraft-final.pdf](http://www.gavilan.edu/administration/master_plan/docs/SP_GoalsStrategiesDraft-final.pdf)) and SAO Results**

Mission statement: Increase the efficiency and quality of laboratory activities; organize the laboratory space. Strategic Plan: Goal 2

**Proposed Activity to Achieve Goal\*\***

Purchase, Arduino UNO kits, robotic kits, 3D printing materials, tensile test machine to be used in our introduction to engineering course. To help develop our Electrical/Computer engineering track we are planning to buy oscilloscopes, curve tracer and spectrum analyzers.

**Responsible Party**

full-time and part-time faculty

**Fund amount requested. If a collaboration, what % required from each partner?**

0

**Total Three Year Resource Allocation Request**

10000

**Timeline to Completion Month / Year**

May, 2026

**How Will You Evaluate Whether You Achieved Your Goal**

Evaluate if we have a fully functional engineering/physics lab that supplies the equipment that we need for all of our courses.

4. **More than double the number of students enrolled in Physics 4A in an academic year. Baseline: 35 and Goal: 75**

**Connection of Goal to Mission Statement, Strategic Plan ([http://www.gavilan.edu/administration/master\\_plan/docs/SP\\_GoalsStrategiesDraft-final.pdf](http://www.gavilan.edu/administration/master_plan/docs/SP_GoalsStrategiesDraft-final.pdf)) and SAO Results**

bla

**Proposed Activity to Achieve Goal\*\***

Offer Physics 4A in the Fall and or Summer. Promote our offerings as a dual enrollment course for local HS in the area.

**Responsible Party**

Full time Faculty

**Fund amount requested. If a collaboration, what % required from each partner?**

None

**Total Three Year Resource Allocation Request**

0

**Timeline to Completion Month / Year**

May 2026

**How Will You Evaluate Whether You Achieved Your Goal**

See the enrollment in our courses.

## Executive Summary

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**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 overall goal of our program is to address the significant obstacles facing Gavilan's Hispanic and low-income students in accessing and succeeding in STEM fields. We aim to provide access to in-demand, high-value STEM careers that have the potential to break cycles of socioeconomic inequity. Our strategic plan is designed to prioritize areas where our students are currently underserved in STEM fields, and to close equity gaps in student outcomes by enacting a culture that enhances the educational experiences of Hispanic students. Our plan includes a high-quality engineering program that is both sustainable and responsive to the needs of our community. We have identified 3 systemic deficits that disproportionately create barriers for our students, and limit the program's ability to serve its community. The deficits are:

1. Our enrollments are unique in the sense that we directly depend on the math department. Due to recent changes in legislation and the pandemic, math enrollments declined substantially.
2. We currently provide inadequate Support that Fosters Hispanic Students' Academic and Social Identities.
3. Our Engineering/physics program has been unable to create the conditions that will guarantee Hispanic students success in their transfer process.

We will address those deficits by:

1. We will keep growing our program by offering more flexible and high-quality online and hybrid courses, which will improve our success rates, foster the sense of community and increase enrollment.
2. Work with MESA to create a new Engineering Academy that fosters a sense of belonging and provides early career experience in STEM .
3. Developing a more robust long-term articulation agreement with our local 4-year colleges: San Jose State University and UC Santa Cruz.

## Attach Files

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**Attached File**