



## Physical Science - - Physical Science

### Main

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#### Overview

Academic Year 2024 - 2025

Originator Argudo, David

Division

Department Physical Science

Programs

### Co-Contributors

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Questions? Find answers in [CurricUNET User Manual](#).

Contributor

Open the Form Properties to select co-contributors and assign permissions.

### Annual Update

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#### 1. Academic Year 2024 - 2025

##### New Goal

Goal from 2022-2023 PIPR: Increase Hands-On Research and Internship Opportunities

End of Year Status In Progress

Please describe your status (No more than 200 words)

We aim to expand undergraduate research projects and industry internships to enhance experiential learning, increase student engagement, and improve workforce preparedness.

##### Planning

Identify industry partners for internships.

Develop research projects that integrate with course curricula.

Seek funding to support student stipends and research equipment.

**Proposed Activity to Achieve Goal** Establish a summer research internship program with local tech companies. Integrate research-based projects into ENGR and PHYS courses. Host annual student research symposiums showcasing hands-on projects.

**Responsible Party** Full-time faculty in engineering and physics. Industry partners. Career and transfer center at Gavilan College

**Total Three Year Resource Allocation Request** 0

**Timeline to Completion Month / Year** December 2027

**How Will You Evaluate Whether You Achieved Your Goal** Number of students participating in internships and research. Feedback from industry partners and students. Post-program employment

and transfer rates

#### **Additional Comments**

### 2. **Academic Year 2024 - 2025**

#### **New Goal**

Goal from 2022-2023 PIPR: Expand Dual Enrollment and Outreach to Local High Schools

**End of Year Status** In Progress

#### **Please describe your status (No more than 200 words)**

We will strengthen partnerships with local high schools to provide dual enrollment physics and engineering courses, allowing students to complete foundational STEM coursework earlier and accelerate their transfer readiness.

#### **Planning**

Identify local high schools with strong STEM interest.

Develop articulation agreements and curriculum alignment with high school math and science departments.

Conduct outreach events to inform students and parents about STEM pathways.

**Proposed Activity to Achieve Goal** Offer ENGR 10 (Introduction to Engineering) and PHYS 4A (Mechanics) as dual enrollment courses. Develop a structured pathway for students to complete an AS degree in two years post-high school. Organize STEM workshops and summer boot camps for high school students.

**Responsible Party** Full-time faculty in engineering and physics High school administrators and STEM coordinators Gavilan College outreach team

**Total Three Year Resource Allocation Request** 0

**Timeline to Completion Month / Year** December 2027

**How Will You Evaluate Whether You Achieved Your Goal** Number of dual enrollment students in STEM courses. Retention and success rates of dual enrollment students. Transfer rates of dual enrollment participants

#### **Additional Comments**

### 3. **Academic Year 2024 - 2025**

#### **New Goal**

Goal from 2022-2023 PIPR: Develop a Data Science and Semiconductor Technology Pathway

**End of Year Status** In Progress

#### **Please describe your status (No more than 200 words)**

In collaboration with San Jose State University, we will integrate data science and semiconductor-related coursework into our engineering curriculum to prepare students for high-demand STEM careers. This initiative aligns with industry needs and new grant opportunities.

#### **Planning**

Identify key courses to introduce data science and semiconductor topics.

Partner with SJSU faculty to align curriculum with transfer pathways.

Seek grant funding for lab equipment and industry collaboration.

**Proposed Activity to Achieve Goal** Develop and offer a new elective or certificate focused on data science and semiconductor applications in engineering. Incorporate hands-on labs using

semiconductor fabrication and data analysis tools. Establish guest lectures and mentorship from professionals in semiconductor industries.

**Responsible Party** full time and part-time engineering faculty

**Total Three Year Resource Allocation Request** 0

**Timeline to Completion Month / Year** December 2027

**How Will You Evaluate Whether You Achieved Your Goal** Course enrollment and completion rates.

Number of students transferring to semiconductor-related programs. Internship placements in semiconductor and data science industries

**Additional Comments**

#### 4. Academic Year 2024 - 2025

**New Goal**

New Goal 2024-2025: Integrate AI-Assisted Programming into Engineering and Physics Curriculum

**End of Year Status** In Progress

**Please describe your status (No more than 200 words)**

To prepare students for modern engineering problem-solving, we will introduce AI-assisted coding tools such as Python-based machine learning frameworks and Physics-Informed Neural Networks (PINNs) into coursework.

**Planning**

Identify key courses for AI-assisted programming integration.

Develop instructional materials and hands-on coding labs.

Collaborate with AI researchers and industry professionals.

**Proposed Activity to Achieve Goal** Modify ENGR 5, ENGR 2 and PHYS 4C to include AI-based simulations and data analysis. Offer workshops on AI-assisted engineering and scientific computing. Develop an AI-in-STEM learning module for broader curriculum integration.

**Responsible Party** Full-time faculty in engineering, physics, and computer science. AI and machine learning professionals (guest lecturers, mentors). Gavilan College instructional design team

**Total Three Year Resource Allocation Request** 0

**Timeline to Completion Month / Year** December 2027

**How Will You Evaluate Whether You Achieved Your Goal** Student proficiency in AI-assisted programming (assessed through projects). Industry feedback on AI skills of graduates. Student enrollment in AI-enhanced courses

**Additional Comments**

## Resource Requests

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Click Add Item to Enter a Resource Request

## 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 this year. Your audience will be your Peer Review Team, the program review Committee, President's Cabinet, Dean's Council, ASGC, Academic Senate, Budget Committee and Board of Trustees (300 words or less).

The Engineering and Physical Sciences program at Gavilan College prepares students—especially Hispanic and low-income students—for successful STEM careers. Our mission aligns with the college’s goals of academic excellence, equity, and workforce development, focusing on transfer readiness and hands-on learning.

Key trends:

- **Enrollment Challenges:** STEM enrollments remain impacted by declining math course enrollment, limiting advanced course offerings like ENGR 3 (Circuits).
- **Equity and Inclusion:** Women in our program outperform men in success rates but remain underrepresented. Hispanic students show strong success in physics but face a gap in engineering.
- **Program Growth:** The launch of the AS in Physics for Transfer and redesigned Engineering AS degree has strengthened transfer pathways, but retention gaps persist.

Goals for the coming year:

1. **Expand Course Access** with more hybrid/online sections to increase enrollment.
2. **Enhance Student Support** by launching an Engineering Academy with MESA.
3. **Strengthen Transfer Pathways** through formalized agreements with SJSU and UCSC.
4. **Invest in Labs and Curriculum** to improve hands-on learning and workforce readiness.

By addressing these challenges, we aim to create an inclusive, high-quality STEM pipeline that empowers students for academic and career success.

## Attach Files

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If there is any additional information regarding your program that you will like to have uploaded, please attach it here.

Attached File