YEARLY PLANNING DISCUSSION

General Questions

Program Name: Engineering Technology Academic Year 2024-25

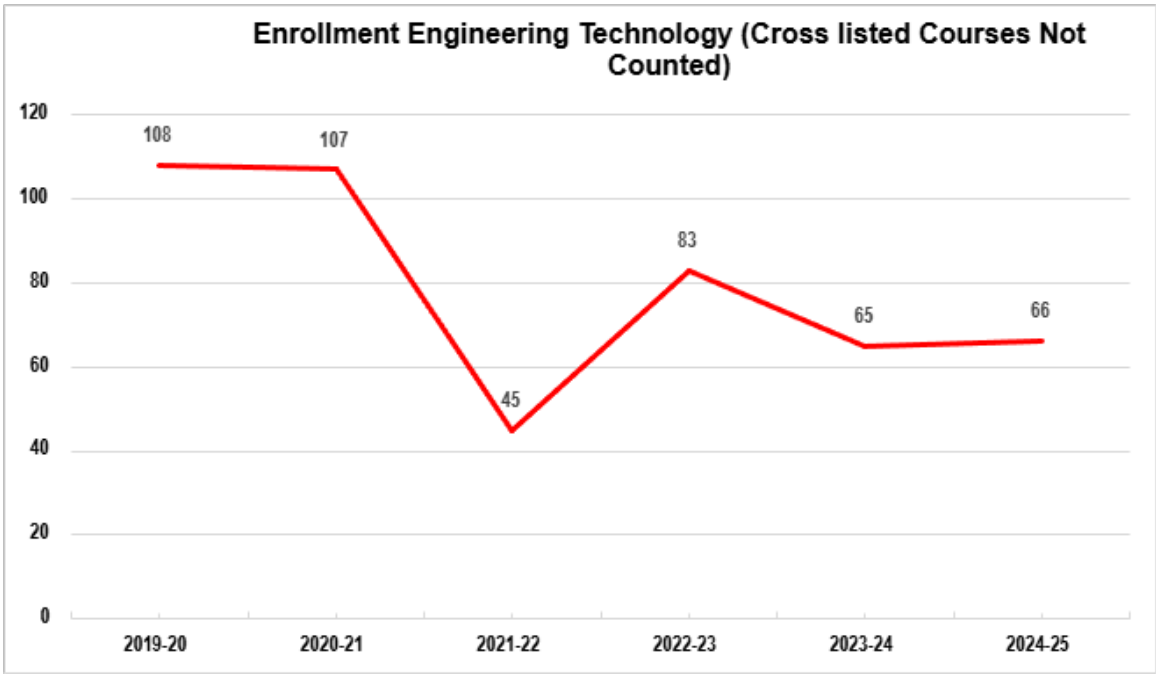
1. **Has your program mission or primary function changed in the last year?**

   There were no changes in the program's mission or primary function in the last year.

2. **Were there any noteworthy changes to the program over the past year? (e.g., new courses, degrees, certificates, articulation agreements)**

   In the spring of 2025, a new ET instructor was hired to replace the outgoing instructor. The new instructor taught two courses, ET 145 and ET 117. The ET program is recovering a dip in enrollment caused by the cancellation of courses due to the previous instructor taking a leave of absence. Currently, the program is back on track, and there is a plan to boost enrollment by offering a summer course in ET 100, which is a foundation course.

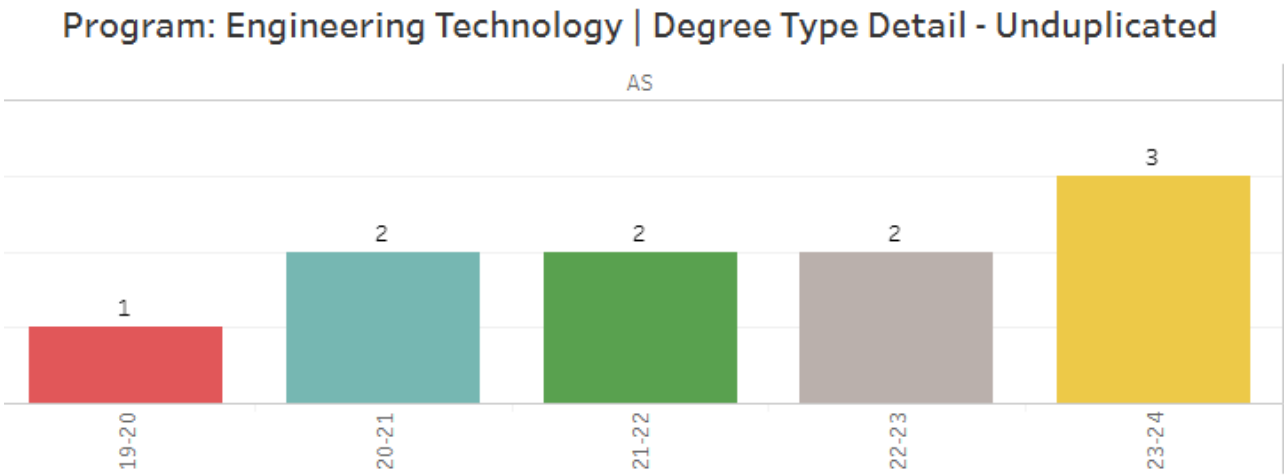
   (Figure 1) in 2010-22 enrollment dipped to 45 but bounced back in 2022-23 to 83 which was an increase of 84% from the previous year. Enrollment dipped to 22% of the peak value in the two years following the peak.



Source: Program Review: Enrollment & Headcount

3. **Is your two-year program map in place and were there any challenges maintaining the planned schedule?**

   There has been no change in the two-year program map. The engineering technology courses are designed to eliminate scheduling conflicts. in 2023-24 three AS degrees were earned. More time and effort are needed to facilitate the earning of more AS degrees as well as drafting certificates. (See figure 2 below).



Degree Description Detail

		19-20	20-21	21-22	22-23	23-24
AS	Civil Engineering			1		1
	Engineering Technology		2		2	2
	Engr Tech: Mechatronics	1		1		
Grand Total		1	2	2	2	3

(Figure 2) There was an increase in the number of Engineering Technology AS degrees awarded in 2023-24. There is a need to increase the number of both AS degrees and certificates.
Source: Program Review: Awards

4. **Were there any staffing changes?**
   In the spring of 2025, a new ET instructor was hired to replace the outgoing instructor. The new instructor completed the teaching of two spring courses; ET 117 and ET 145. The courses and helping with the restoration of enrollment.

5. **What were your program successes in your area of focus last year?**

   - Enrollment numbers dipped in 2021-22 due to the outgoing ET instructor not teaching the intermediate and advanced ET courses. The new instructor has just completed the teaching of two ET courses; ET 117 and ET 145. The enrollment numbers are expected to increase. In addition, ET 100 is being offered in the summer of 2025 to provide incoming students with the opportunity to get a head start. Enrollment numbers of ET100 at the writing of this report total 21.

- There was a jump in the number of AS degrees earned (see figure 2). The number rose from two in 2022-23 to three in 2023-24. More time and effort are needed to help retain students and increase their success rate.

Learning Outcomes Assessment

a. Please summarize key results from this year's assessment.

- In the Fall of 2023, Program learning outcome ET10- Be able to use computer-aided drafting and design CADD software to create, modify, delete, transfer, and plot graphic files used to produce complete engineering drawings, was assessed in the foundation course ET100: Computer Aided Drafting. 75% of students met the standards and 5% exceeded the standards.
- In the Spring of 2025, Program learning outcome ET12- Develop graphic communication skills including orthographic projection; detail and assembly drawings; auxiliaries; sections; dimensioning; and surface development., was assessed in the foundation course ET100: Computer Aided Drafting. 61.11% of students met or exceeded the standards, which is 8.89% below the 70% needed rate.

b. Please summarize your reflections, analysis, and interpretation of the learning outcome assessment and data.

- The assessment result of ET10 above shows that the foundation course success rate meets the minimum requirements. More than 70% of students met or exceeded standards. There was, however, a dip in meeting standard ET12. This result will be discussed with the instructor to find ways to increase the success rate.
- Data entry into SPOL by part time instructors needs to be encouraged. Currently, the program coordinator is assuming this task.

c. Please summarize recommendations and/or accolades that were made within the program/department.

- The CAD lab was updated with new computers capable of meeting the needs of newer software. A total of 36 student stations were replaced in addition to the instructor's station.
- There is a need to develop courses in introductory civil engineering including civil engineering drafting software Civil 3D. Other possible civil engineering branches to explore include surveying, transportation engineering, construction engineering, geotechnical engineering, structural engineering, and municipal or urban engineering.

d. Please review and attach any *changes* to planning documentation, including PLO rubrics, associations, and cycles planning.

No changes to the planning documentation or the PLO rubrics were made. Work on the revision of the rubric was completed three years ago. The revised outcomes were more comprehensive.

Distance Education (DE) Modality Course Design Peer Review Update (Please attach documentation extracted from the *Rubric for Assessing Regular and Substantive Interaction in Distance Education Courses*)

a. Which courses were reviewed for regular and substantive interactions (RSI)?

The engineering technology program does not have distance learning courses at this time.

b. What were some key findings regarding RSI?

- Some strengths:
  N/A
- Some areas of possible improvement:
  N/A

c. What is the plan for improvement?
N/A

CTE two-year review of labor market data and pre-requisite review

- Does the program meet documented labor market demand?
  - According to the US Bureau of Labor Statistics, 16,900 openings for drafters are projected each year, on average, over the decade. All of those openings are expected to result from the need to replace workers who transfer to other occupations or exit the labor force, such as retiring.

    Source: https://www.bls.gov/ooh/architecture-and-engineering/drafters.htm
  - In May 2023, the employment of architectural and civil drafters in California was estimated at 13,350. Source: https://www.bls.gov/oes/current/oes173011.htm#st
  - According to Labor Market Information Reports F23 published by Lightcast, SLO and SB counties are hotspots for architectural and civil drafters' jobs. The national average for an area this size is 243 employees, while there are 271 here. This higher-than-average supply of jobs may make it easier for workers in this field to find employment in this area.

  Source: https://www.hancockcollege.edu/ie/documents/F23_Architectural_and_Civil_Drafters.pdf

- How does the program address needs that are not met by similar programs?

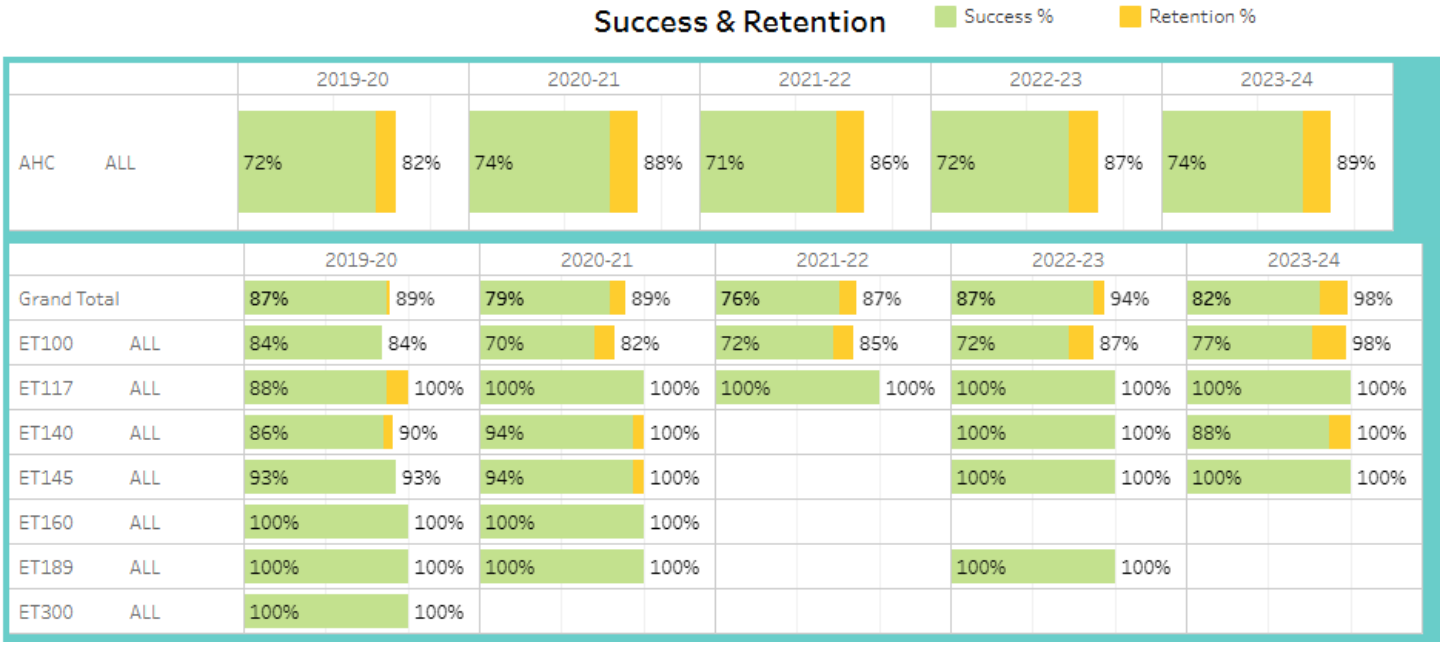
The Engineering Technology program (ET) is committed to providing students with the knowledge and skills they need to enter the engineering profession as beginning and/or intermediate CAD drafters and 3D modelers. In addition, the ET program is committed to preparing students to transfer to universities that offer degrees in mechanical engineering, industrial & manufacturing engineering, civil engineering, structural engineering, and other engineering related fields. Furthermore, the ET program is committed

to meeting the needs of industry professionals by offering courses in technical drawing, design drafting applications, 2D modeling using AutoCAD, and 3D solid modeling using SOLIDWORKS.

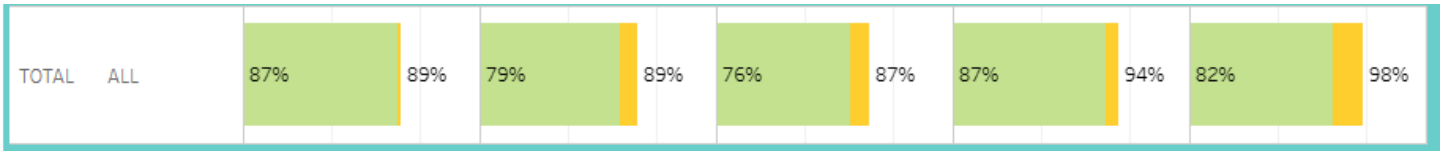
There are no other community college programs in Santa Maria that offer a comprehensive engineering technology program that prepares students for employment and transfer. The nearest engineering drafting technology program is offered at Cuesta College in San Luis Obispo County.

- Does the employment, completion, and success data of students indicate program effectiveness and vitality? Please explain.

  - The success rates of the engineering technology program (see bar chart below) were consistently higher than the success rates of the college over the five calendar years 2019-20 to 2023-24. In addition, the engineering technology retention rates over the same five-year period were higher than the college's retention rates.



	2019-20		2020-21		2021-22		2022-23		2023-24	
Grand Total	87%	89%	79%	89%	76%	87%	87%	94%	82%	98%
ET100 ALL	84%	84%	70%	82%	72%	85%	72%	87%	77%	98%
ET117 ALL	88%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ET140 ALL	86%	90%	94%	100%			100%	100%	88%	100%
ET145 ALL	93%	93%	94%	100%			100%	100%	100%	100%
ET160 ALL	100%	100%	100%	100%						
ET189 ALL	100%	100%	100%	100%			100%	100%		
ET300 ALL	100%	100%								



  - There was a jump in the number of AS degrees earned (see figure 2). The number rose from two in 2022-23 to three in 2023-24. More time and effort are needed to help retain students and increase their success rate.

- Has the program met the Title 5 requirements to review course prerequisites, and advisories within the prescribed cycle of every 2-year for CTE programs and every 5 years for all others?

  We are currently waiting for the new CurriQunet process for course review to be finalized. We have reviewed pre-requisites, co-requisites and advisories of all classes and there were no changes needed.

- Have recommendations from the previous report been addressed?
  - Work with employers on ways to increase entry-level qualifications: this recommendation continues to be work-in-progress. There are two part time instructors teaching in the engineering technology program who are connected to industry. The two instructors are valuable resources for knowledge about industry needs. Both instructors are also part of the advisory committee and continue to help.
  - Work with employers on enhancing internship opportunities: time and effort is ongoing towards fulfilling this recommendation. One of our engineering technology students found success with employment at a local engineering firm.

Use the tables below to fill in **NEW** resources and planning initiatives that **do not apply directly to core topics.** ***This section is only used if there are new planning initiatives and resources requested.***

Resource Requests: Please use the Resource Request Excel template located on the Program Review web page to enter resource requests for equipment, supplies, staffing, facilities, and misc. resources needed. Send completed excel document along with completed program view core topic for signature.

New Program Planning Initiative (Objective) – Yearly Planning Only	
Title (including number:	3D printers for machine component modeling
Planning Years:	*2025-26 2026-27*
Description: 3D printed parts are essential for engineering technology machine component modeling. Students will utilize 3D printers to produce machine parts. The 3D printed parts will help students better visualize the geometry of their parts and the mechanism of their assemblies. The production of high-quality 3D printed parts and assemblies is essential to the success of students in both transfer and workforce entry. *(A more detailed version of the initiative. Please include a description of the initiative, why it is needed, who will be responsible, and actions that need to happen, so it is completed.)*	
What college plans are associated with this Objective? (Please select from the list below): **Ed Master Plan** **Student Equity Plan** **Guided Pathways** **AB 705/1705** **x Technology Plan** **Facilities Plan** **Strong Workforce** **Equal Employment Opp.** **Title V**	

Area of Focus Discussion Template
ENROLLMENT TRENDS AND EFFICIENCY

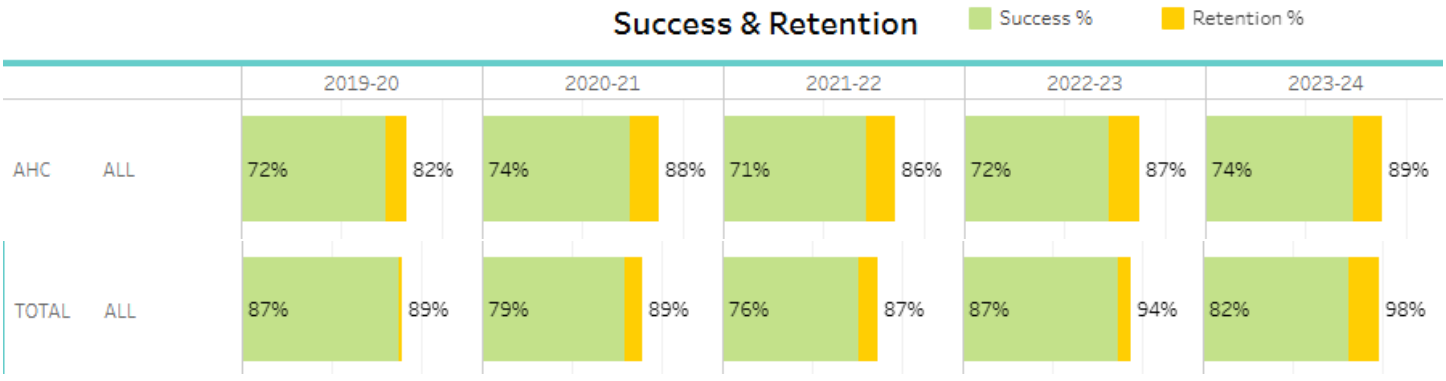
Enrollment Trends and Efficiency – look for areas of growth or decline, relationships to the college and similar programs, and head count (enrollment and full-time equivalents for students and full-time equivalents for faculty). Sample activities include the following:

Possible topics:

- Review FTES, headcount and enrollment trends disaggregated by population groups.
- Assess trends in productivity.
- Review retention and success rates by modality and disaggregated by population groups.
- Analyze the throughput of students from every completion and assess time to completion and disproportionate impact.
- Collaborate with guided pathways success teams to determine if programmatic barriers exist.
- Establish program goals for success rates.

- **What data were analyzed and what were the main conclusions?**

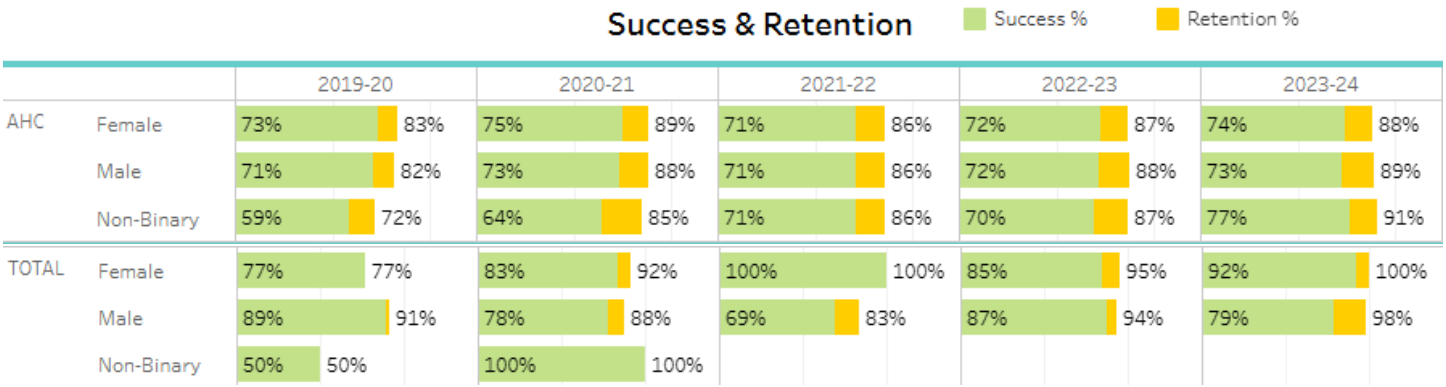
Success and Retention Rates:



Source: https://www.hancockcollege.edu/ie/Program%20Review%20Success%20Retention%20Persistence.php

The success rates of the engineering technology program (bottom bar chart) were consistently higher than the success rates of the college over the five calendar years 2019-20 to 2023-24. In addition, the engineering technology retention rates over the same five-year period were higher than the college's retention rates.

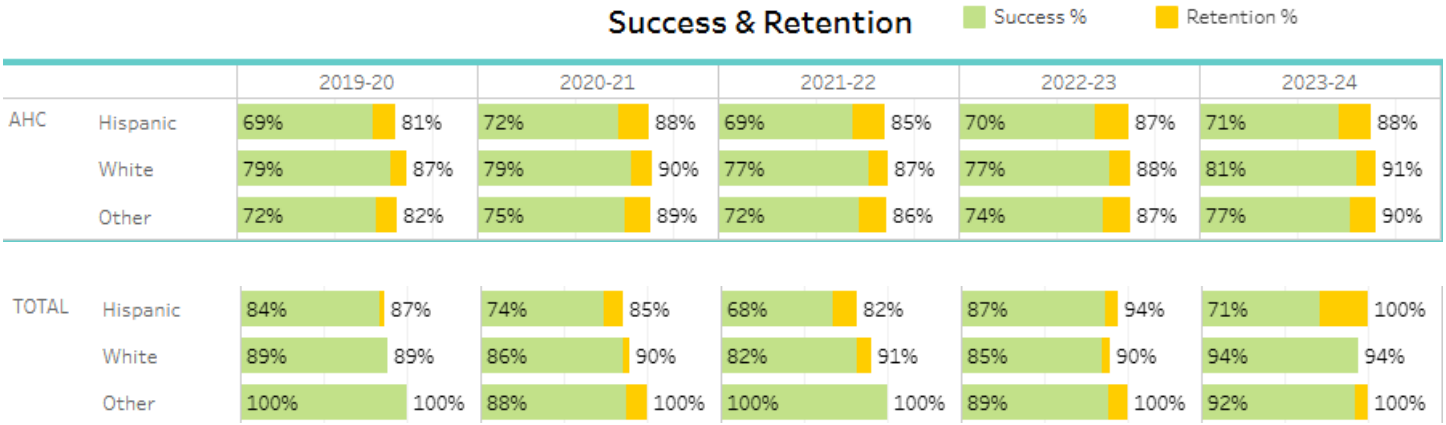
Success and Retention Rates by Gender:



Source: https://www.hancockcollege.edu/ie/Program%20Review%20Success%20Retention%20Persistence.php

The bottom bar chart shows that between 2021-22 and 2023-24 calendar years; the retention rates of engineering technology female students consistently exceeded the rates of male students. Over the same four calendar year period, female students had more success rates except for 2022-23. Furthermore, engineering technology female students' success rates between 2019-20 and 2023-24 consistently exceeded AHC female retention and success rates. Engineering technology male students had higher retention and success rates than the AHC male retention rates in four out of the five calendar years.

Success and Retention Rates by Ethnicity:



Source: https://www.hancockcollege.edu/ie/Program%20Review%20Success%20Retention%20Persistence.php

The success rates of engineering technology Hispanic students were consistently lower than that of White students except for 2022-23 (see bottom bar chart in the image above). In addition, the non-White and non-Hispanic engineering technology student population had higher success rates than Hispanic students. Hispanic students, on the other hand, were closely behind White and other students in the retention rates. In 2022-23 and 2023-24 Hispanic students had higher success rates than White students. When the retention rates of the engineering technology program are compared with the rates of the college from 2019-21 and 2023-24, all ethnic groups within the engineering technology program had consistently higher retention and success rates

Efficiency FTES/FTEF:

A comparison between the overall efficiency of the college (lower graph) and the engineering technology program efficiency shows that the efficiency rates of the engineering technology program were lower than the overall efficiency rate of all programs. Missing from this data, however, are enrollments from cross-listed courses of ET100 and ET 117.

Based on the data analysis and looking through a lens of equity, what do you perceive as *challenges* with student success or access in your area of focus?

- There is a need to enhance outreach activities and promotional materials.
- More space is needed to meet future growth.
- Limited awareness of related engineering fields including civil, mechanical, environmental, transportation, and construction. Such fields are offered by universities including Cal Poly SLO and Cal Poly Pomona.
- Civil engineering with its many branches is mainly absent in US K-12 education and, therefore, misses an early opportunity to attract potential engineers-to-be.

What are your plans for change or *innovation*?

- Increase transfer-with-award rate, the rate at which students who transfer to a four-year institution within six years complete a certificate or associate degree prior to their earliest four-year institution enrollment. Source: https://ccrc.tc.columbia.edu/tracking-transfer-state-outcomes.html

- Enhance enrollment by exploring College NOW and dual enrollment opportunities. One challenge with dual enrollment is the lack of engineering technology programs and qualified instructors at the high school level.
- Offer summer sessions in foundation courses in engineering technology to help new students get a head start.
- Increase awareness of engineering technology at the high school level through workshops conducted either at high school or college. The introduction to engineering technology workshops would help spark more interest in engineering and related areas such as civil engineering, mechanical engineering, and environmental engineering and provide incoming high school students with the opportunity to make informed decisions.
- Attract a larger proportion of existing high school graduates to pursue engineering careers.
- Work with facilities on a master plan for O-300 replacement to include a digital fabrication lab. Fabrication labs enable students and faculty members to construct digital and physical three-dimensional scale models of machine parts and components.

Source: Shop & Digital Fabrication Lab | School of Architecture, Planning & Preservation

How will you *measure* the results of your plans to determine if they are successful?

- Monitor enrollment, retention, and success rates. In addition, track transfer rates to university engineering programs.
- Track enrollment in the engineering technology foundation courses including ET 100: Computer Aided Drafting to better assess the success of the summer outreach program. One important goal for the summer program is to increase the number of students who plan to explore the option of starting their engineering education.
- Track enrollment in advanced engineering technology courses including capstone classes ET 140 and ET 145. Improvement in enrollment in advanced courses is an indicator of improved retention

Validation for Program Planning Process: If you have chosen to do the Validation this year, please explain your process and the findings.

1. Who have you identified to validate your findings? (Could include Guided Pathway Success Teams, Advisory Committee Members, related faculty, industry partners or higher education partners)

Advisory committee members and related faculty members.

2. Are there specific recommendations regarding the core topic responses from the validation team?
   - There is a need to enhance outreach activities and promotional materials.
   - More space is needed to meet future growth.
   - Limited awareness of related fields in structural engineering, mechanical engineering, transportation engineering, and environmental engineering that are offered by universities including Cal Poly SLO, and Cal Poly Pomona.

Based on the narratives for the prompts above, what are some program planning initiatives and resources needed for the upcoming years? Use the tables below to fill in **NEW** resources and planning initiatives. ***This section is only used if there are new planning initiatives and resources requested that pertain to the Core Topic only.***

Sample:

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Program Review Signature Page:

Saad Sadig — 05/29/2025

Program Review Lead _____ Date

Thomas Lamica — 05/29/2025
Thomas Lamica (May 29, 2025 12:37 PDT)

Program Dean _____ Date

07/17/2025

Vice President, Academic Affairs _____ Date

ET 2024-25 Program Reivew_Enrollment and Efficiency

Final Audit Report 2025-07-17

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