CALIFORNIA STATE UNIVERSITY EAST BAY

ACADEMIC SENATE

Committee on Academic Planning and Review

ANNUAL PROGRAM REPORT

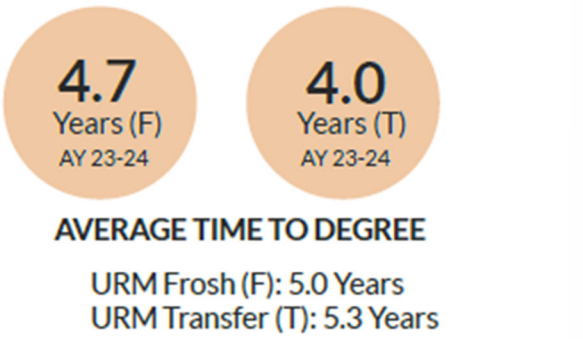
College	College of Science
Department	Engineering
Program	Computer Engineering
Reporting for Academic Year	2023-2024
Last 5-Year Review	2022-2023
Next 5-Year Review	2027-2028
Department Chair	Cristian Gaedicke
Author of Review	Cristian Gaedicke / James Tandon
Date Submitted	10/13/2025

I. SELF-STUDY *(suggested length of 1-2 pages)*

A. Five-Year Review Planning Goals

Present your planning goals from your last 5-year plan.

1. Summary of program changes: The computer engineering was formally assessed for ABET accreditation in 2021-2022. The department met the needs of accreditation and continues to fulfill the needs of the students. A review of the courses required for graduation found that the course dependencies in the Computer Engineering major required students to take a minimum of 3.5 years prior to graduation. Students who need remediation or who do not follow the program roadmap precisely will be held back for extra years at the university. In order to alleviate this concern, we have modified the course prerequisites and adapted course materials to ensure that students can have a shorter time to graduation.



2. Program learning outcomes: As mentioned in the ABET review, we have to address their concern before the next visit.

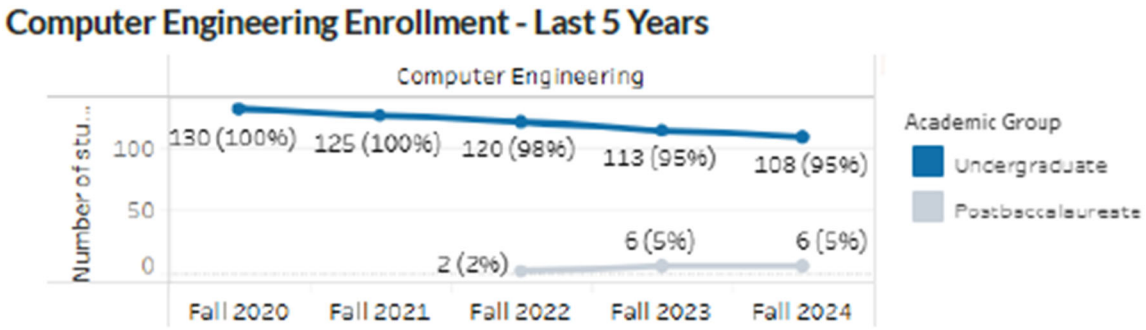
3. Research: The Computer Engineering faculty are active in research and are being successful in securing funds for their research. Growth in research is a goal that the engineering faculty are pursuing.

4. Laboratory Development: Engineering has been allocated space for faculty research and teaching in the Valley Business Building, VBT 230. This space will be used to develop an electronics laboratory equipped with high-speed RF equipment, enabling students to complete state-of-the-art circuit designs. Two Computer Engineering faculty members will utilize this lab for research and instructional support. Additionally, we maintain a Computer Engineering laboratory in the Braddock Building.

5. Equipment: Through A2E2 annual funding and other College of Science resources, we continue to purchase lab equipment that will partially be used to equip the VBT 230 space and the Braddock building lab.

6. Growth: The Computer Engineering program was a fast growing undergraduate program in Engineering, but enrollment declined when the COVID pandemic hit. Between 2020 and 2024, we observed a downward trend consistent with the overall enrollment decline at CSUEB. We expect these numbers to stabilize.

   To support future growth, we have implemented a college ambassador program in which our engineering students visit local high schools. This initiative is designed to promote all undergraduate programs within our School of Engineering.



B. Progress Toward Five-Year Review Planning Goals

Report on your progress toward achievement of the 5-Year Plan. Include discussion of problems reaching each goal, revised goals, and any new initiatives taken with respect to each goal.

1. We have addressed the program learning outcomes weakness mentioned in the ABET review by working with the industry advisory board.

2. Faculty have created a Computer Engineering research program whitepaper

which we distributed to donors in Silicon Valley and to companies at large. This is to help increase investment in our program from industry. Based on this whitepaper, we have received funding from industry for our senior design program. Faculty continue to aggressively pursue a research agenda and publish papers.

3. Both Dr. Tandon and Dr. Sumarsono have successfully published their research at multiple conferences and in multiple journal articles. Additionally Dr. Doering has continued to develop his free chip design and his free MIPS simulator tools such that students in the Computer engineering program may continue to use quality software for free.

4. The COVID-19 pandemic caused student enrollment to drop by approximately 15%, though enrollment has declined across the university. Additionally, changes in the industry due to AI and tech layoffs in the Bay Area may have impacted enrollment. As students return to campus and the industry stabilizes, we expect the program to increase enrollment at a faster rate than other programs at the university. We are developing a recruitment plan but need student hours and faculty time support to maximize the success of this initiative.

C. Program Changes and Needs

Report on changes and emerging needs not already discussed above. Include any changes related to SB1440, significant events which have occurred or are imminent, program demand projections, notable changes in resources, retirements/new hires, curricular changes, honors received, etc., and their implications for attaining program goals. Organize your discussion using the following subheadings.

Overview: The most significant change was the reorganization of course prerequisites. Due to the unreasonably long time to graduation due to the course requirements. We noticed this deficiency and figured out that some of the course prerequisites in the program were overly conservative, we took steps to remedy the situation. Now a students have a shorter time to graduation and (we expect) they will be able to graduate faster.

Curriculum: This past year, the most major change was the recognition that CMPE 321 and CMPE 322 were a lecture/lab class pair that complimented each other. In order to reduce the probability that students would be held back an extra year due to prerequisites not being allowed, the two classes have been merged into a single class: CMPE 323. Additionally, prerequisites for classes were reviewed to reduce year-over-year dependencies between classes. The following prerequisite changes were implemented: CMPE 492 now requires CMPE 330; CMPE 344 now requires only CS 201.

Students: As indicated in the previous section, student enrollment declined between 2022 and 2024. However, this trend is not unique to our program. We fully expect enrollment to grow as conditions return to a new normal.

Faculty: No significant changes in faculty for the program since the previous 5-year assessment.

Staff: Our department administrative tasks are fulfilled by a HUB of 3 staff members serving Computer Science as well as other programs in the school of Engineering (undergraduate and graduate programs in Industrial Engineering and Construction Management and Civil Engineering). Also, we have an engineering technician who is responsible for managing lab hardware, and purchases, and information technology. We have one SSP, she advises students in the program

Resources: *(facilities, space, equipment, etc.)* We have launched a new quadcopter/drone lab featuring a functional quadcopter drone cage. While the original cage was closed, a new laboratory has been opened in the Braddock Center. This lab is a shared space with the Computer Science department.

Assessment: We submitted our ABET self-study report to the accreditation commission in 2021-2022, and the program has been reviewed by the representatives. We received ABET accreditation for another 5 years.

Other: *(e.g., major program modifications)* none.

II. SUMMARY OF ASSESSMENT *(suggested length of 1-2 pages)*

A. Program Learning Outcomes (PLO)

List all your PLO in this box. Indicate for each PLO its alignment with one or more institutional learning outcomes (ILO). For example: "PLO 1. Apply advanced computer science theory to computation problems (ILO 2 & 6)."
Program Learning Outcome(S) Assessed. *List the PLO(s) assessed. Provide a brief background on your program's history of assessing the PLO(s) (e.g., annually, first time, part of other assessments, etc.)*

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. (ILO 1)
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. (ILO 1 & 5)
3. An ability to communicate effectively with a range of audiences. (ILO 2)
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. (ILO 3, 4 & 5)
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. (ILO 3 & 4)
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. (ILO 1 & 2)
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. (ILO 1, 2, & 4)

B. Summary of Assessment Process

Summarize your assessment process briefly using the following sub-headings.

We have assessed the following PLOs for the Computer Engineering program during the 2023-241 Academic Year:

The following SLOs for the **Computer Engineering Bachelor Program** were assessed during the 2024-25 Academic Year:

11. Which PLO(s) to assess	2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. **(ILO 1 & 5)**
12. Assessment activity	Exam Problems
13. Assessment instrument	Program rubric
14. Sample (courses/# of students)	ENGR 230 Electric Circuits
15. SLO from the course	Understand the operation of basic circuit elements - resistors, capacitors, inductors, operational amplifiers 2) Analyze and compute electrical quantities of voltage, current, and power in a circuit with DC and sinusoidal inputs 3) Utilize circuit analysis software and hardware to compute electrical quantities 4) Develop greater general knowledge of household electronic devices
16. Time (which semester(s))	Fall 2019
17. Responsible person(s)	Prof. Sumarsono
18. Ways of reporting (how, to who)	The results (quantitative and qualitative) will be reported by faculty to the department chair via completion of the course Faculty Self-Assessment form.

C. Summary of Assessment Results

Summarize your assessment results briefly using the following sub-headings.

Main Findings:

A name-redacted copy of a top student exam is available at:

https://drive.google.com/file/d/1hx1QBUDYThTPu0JYOawWPelPehCRxCTi/view?usp=sharing

This student's performance reflects that the desired outcomes have been achieved. Over 90% of all students demonstrated competence in the Student Learning Outcome (SLO), as measured by the final exam.

A few students with poor attendance, who did not complete the assigned exercises and failed the final exam, did not pass the course.

Next Step(s) for Closing the Loop:

Understanding the material in this course is essential for success in many subsequent major requirements. It is recommended that students who begin missing class be proactively followed up with by the instructor, program faculty advisor, SSP, and Chair.

D. Assessment Plans for Next Year

Summarize your assessment plans for the next year, including the PLO(s) you plan to assess, any revisions to the program assessment plan presented in your last five-year plan self-study, and any other relevant information.

We will assess the following PLO's in this academic year.

11. Which PLO(s) to assess	6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. **(ILO 1 & 2)**
12. Assessment activity	Final Project report and presentation
13. Assessment instrument	Program rubric
14. Sample (courses/# of students)	a-CMPE 321 Computer Architecture
15. Time (which semester(s))	a-Fall 2020
16. Responsible person(s)	a. Prof. Tandon
17. Ways of reporting (how, to who)	The results (quantitative and qualitative) will be reported by faculty to the department chair via completion of the course Faculty Self-Assessment form.
18. Ways of closing the loop	Interaction between chair, faculty and industrial advisory board

III. DISCUSSION OF PROGRAM DATA & RESOURCE REQUESTS *(suggested length of 2 pages)*

Each program should provide a one-page discussion of the program data available through University Dashboard. This discussion should include an analysis of trends and areas of concern. Programs should also include in this discussion requests for additional resources including space and tenure- track hires. Resource requests must be supported by reference to University Dashboard data.

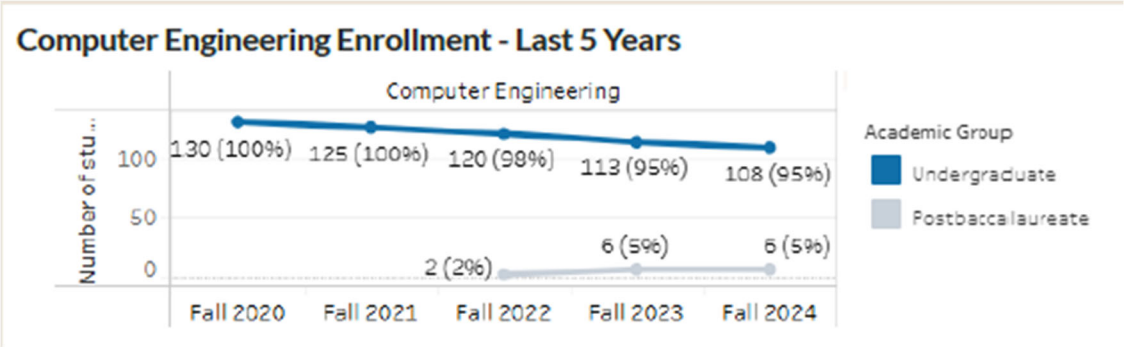
Requests for tenure-track hires should indicate the area and rank that the program is requesting to hire. If a program is not requesting resources in that year, indicate that no resources are requested.

A. Discussion of Trends & Reflections Notable Trends;

Summarize and discuss any notable trends occurring in your program over the past 3-5 years based on program statistics (1-2 paragraphs). You may include 1-2 pages of supplemental information as appendices to this report (e.g., graphs and tables).

During the COVID-19 pandemic, we experienced a loss of students due to several factors beyond our control that impacted enrollment. This trend was consistent across the university.

Faculty are planning activities and events to promote the program among high school and community college students. The School of Engineering has also implemented a college ambassador program designed to promote all its undergraduate programs to K–12 students.



Reflections on Trends and Program Statistics:
Provide your reflections on the trends discussed above and statistics and supplemental information presented in this report.

The census collected in CMPE classes for Fall 2024 indicate that we have a large number of underrepresented minorities in the major which comports with the greater population of CSU East Bay:

UG MAJORS

Enrollment has decreased 17% in the last 5 years

DIVERSITY

Less than half (43%) are URM (35% Latinx, 7% Black)

B. Request for Resources *(suggested length of 1 page)*

1. Request for Tenure-Track Hires: provide evidence from trends provided
   We do not have requests for tenure-track hires at this time.

2. Request for Other Resources
   We request $50 per student in the program ($6,000 annually) to purchase

consumable lab supplies. Additionally, we request $10,000 per year to repair or replace lab test equipment that has become obsolete or worn due to regular use in the learning process.

As our students learn to use hardware safely and effectively, we place strong emphasis on teaching proper lab equipment handling. Faculty provide step-by-step instruction to ensure students understand the risks and responsibilities involved. The total funding requested is $16,000 per year.

We also request a part-time hourly student worker with experience in Computer Engineering to assist faculty in promoting the CMPE program through ambassador initiatives and outreach visits to high schools and community colleges.