

**Internal Reviewer Review Report – B.S. Programs of the College of Engineering (Aerospace Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Construction Engineering and Management, Electrical Engineering, Electromechanical Systems Engineering Technology, Electronic Systems Engineering Technology, Industrial Engineering, Manufacturing Engineering, and Mechanical Engineering)
California State Polytechnic University, Pomona**

The purpose of this internal review of the College of Engineering’s ABET-accredited undergraduate Bachelor of Science programs is to provide an unbiased examination of the quality of education and service in these programs, and to identify opportunities for improvement and growth. After carefully reviewing the programs’ Self Studies and Abbreviated Self Studies, we took part in two internal visits on Friday, April 18 with College of Engineering faculty and Tuesday, April 22 with College of Engineering department chairs and assessment leaders. This report is divided into sections based on the lines of inquiry and highlights strengths, challenges, and recommendations.

Inclusive Polytechnic Identity	Strengths	<ul style="list-style-type: none"> • The College of Engineering holistically incorporates the polytechnic identity at all levels of the program, including curricular elements and co-curricular elements. Some highlights of the inclusive polytechnic identity are listed here and are incorporated into all programs. • The First Year Experience (EGR 1000 and EGR 1000L) is completed by all first-time freshmen and some transfers. The FYE course “Engineering, Society, and You” introduces students to the fields of engineering and incorporates field trips where students see firsthand the role and impact of engineering. The FYE course is offered at the College level, giving all engineering majors a common experience to build upon. • Laboratory-Based Courses/Corequisites infused throughout programs provide opportunities for students to connect theories and concepts to real engineering problems and applications. Students develop critical thinking and problem skills, and use tools, technologies and methods aligned with what they will encounter in the industry. • The Senior Design Capstone Project (EGR 4810, EGR 4820, and EGR 4830) is required for all students. This course sequence addresses all the elements of the inclusive polytechnic education and culminates with students presenting their work in a symposium to their peers, professors, and industry professionals. These projects can be interdisciplinary and lead to collaborations among teams of students – as an example, an ECE capstone project may have a structural component, which allows students with different backgrounds to contribute to the same project. • Faculty include students in their research, giving students the opportunity to engage in mentor-led projects. Several faculty are very active, engaging dozens of students in multiple projects. • The College of Engineering is home to myriad student clubs and Engineering majors are often active in co-curricular competitions. Some departments (example: Civil Engineering) have more than two dozen competition teams and 16 – 17 student-led clubs. The competition teams are frequently highly rated in their respective competitive events.
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	Challenges	<ul style="list-style-type: none"> Facilities and space can be a limiting factor on the scope, reach, and number of “learn by doing” opportunities. Demands on faculty time limits the number of faculty-led research projects, and not all students interested in joining a research project can be accommodated. The portion of tenure/tenure-track faculty engaged in research varies by department, as described in the abbreviated self-studies.
	Recommendation	<ul style="list-style-type: none"> Departments should continue engaging with Engineering majors through the many and varied inclusive polytechnic education opportunities. Departments may consider pursuing the PolyX designation for the capstone project or other faculty-led research experiences, as the designation can open additional resources for use. If courses have PolyX designations, ensure that students are aware of the benefits of engaging in PolyX experiences. Additional University support related to infrastructure and space should be considered to extend the reach of these experiences to as many students as possible.

Department Structure and Organization	Strengths	<ul style="list-style-type: none"> For smaller departments (example: Chemical Engineering), some key committees are committees of the whole (example: search committees). The use of committees of the whole ensures that all voices are heard when making key decisions. Larger departments are supported by associate chairs to alleviate the workload placed on the department chair. Some departments (example: Electromechanical Engineering) use student graders and TAs to assist with larger class sections. Departments remain responsive to developing new programs and curricula. For example, the Chemical Engineering Department will begin offering a B.S. in Materials Engineering beginning in Fall 2026. Several departments (example: Civil Engineering, Chemical Engineering) have very dedicated full-time adjunct faculty who generously engage in advising, club mentorship, and assessment.
	Challenges	<ul style="list-style-type: none"> The College draws heavily on part-time and non-tenure track faculty to teach courses within the various programs. While this can be a strength as many of these faculty are active in industry and serve as a bridge for graduates to employment, some lecturer faculty may feel overlooked or excluded from department culture. Within some larger departments, committees are populated by opening committee rosters to any interested faculty. These committees can be overly large and result in the committee chair and associate chair doing the bulk of the work. The service workload in these situations is not balanced. While on the surface a very good thing, the amount of growth within some programs (Aerospace, Civil, Electrical and Computer, Electromechanical, and Mechanical) has led to programs reaching a ceiling in terms of capacity, where further growth would require additional faculty and resources. The process of developing new programs (at least two programs mentioned an interest in a blended 4+1 type program) can be slow and cumbersome, with the length of the approval process slowing initiatives.

		<ul style="list-style-type: none"> Communication across engineering departments appears to be limited. Faculty mentioned “working in bubbles” and commented “We can’t learn from other departments and grow if we don’t know what is happening.”
	Recommendation	<ul style="list-style-type: none"> Intentionally consider including non-tenure track faculty in department activities (extend meeting invitations) while recognizing that NTT involvement beyond instructional assignments is at NTT faculty discretion. In departments with large committee rosters, consider limiting committee membership and clearly delineating roles within the committees to ensure transparency and more equal service workloads. For departments where adjunct faculty assist in mentoring senior project students, explore avenues for recognizing the effort of those faculty. Facilitate cross-department meetings and communication so faculty know what is happening across the College and departments can learn from one another.

Assessment	Strengths	<ul style="list-style-type: none"> ABET accreditation provides each program with a consistent set of program educational objectives and goals. Each program clearly outlines the program educational objectives and goals on their websites, accompanied with information related to ABET accreditation. Regular curricular updates take place (example: EMSET/ESET) to incorporate changes in the field and to reflect industry expectations/needs. Recent efforts include adding content around artificial intelligence and artificial intelligence competency.
	Challenges	<ul style="list-style-type: none"> Assessment workload can be uneven, falling more heavily on assessment committee faculty in a cyclical nature tied to the ABET review cycle.
	Recommendation	<ul style="list-style-type: none"> Departments should continue collecting artifacts, assessing their program learning objectives, and closing the loop. Departments should feel free to engage with the Office of Assessment and Program Review as needed. As discussed in abbreviated self-studies (example: Mechanical Engineering) departments should review their curriculum to ensure alignment with ABET accreditation requirements including ABET student outcomes.

GI 2025	Strengths	<ul style="list-style-type: none"> Proactive engagement by the College of Engineering Advising Center in picking math and physics courses for students prior to orientation and registration. This advising strategy has streamlined and simplified getting students registered for their first semester of classes at Cal Poly Pomona and helps ensure they are on the right trajectory from the beginning.
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		<ul style="list-style-type: none"> • Various departments (example: Aerospace Engineering) offer multiple sections of the highest DFW and bottleneck courses, as permitted by faculty availability. • The Maximizing Engineering Potential (MEP) program supports students by targeting high DFW courses for tutoring. • The Mechanical Engineering program hosts a YouTube channel with over 600 video tutorials that are available as a resource for students. • Student clubs and other programs within the College of Engineering incorporate industry networking experiences, where students engage in these events <i>early</i> in their undergraduate careers. This practice allows students to envision themselves in these professions. • Lunch and learn events are held for first-time freshmen and transfer students. At these lunches, alumni network with students so they can envision themselves more easily in these careers and positions. • Programs have industry or other advisory boards, as required by ABET. These boards offer input on courses and course content, and also are sources for funding scholarships and offering mentorship.
	Challenges	<ul style="list-style-type: none"> • As noted during the external review conducted by ABET, the number of academic advisors is not sufficient. Students may not have an assigned advisor or may experience long waits to meet with their assigned advisor. • Limited funds are available to support student retention efforts – the funds must be drawn from departments, which (when coupled with Foundation challenge discussed later under ‘Support’) can be difficult. • There is a shortage of appropriate teaching spaces (classrooms) to accommodate additional sections of high demand classes, leading to waitlists and increased time to graduation. With continued growth within the College of Engineering, the average time to graduation may increase. • Transfer students have an outsized reliance on permission numbers (supplied solely by Department ASCs) to enroll in courses because their Degree Progress Reports are not updated in a timely manner with their transfer transcripts. By the time students have their permission numbers, classes have filled which then increases time to graduation. • Departments noted the need for targeted interventions for at-risk students such as early alert systems and proactive advising.
	Recommendation	<ul style="list-style-type: none"> • The University should prioritize maintaining enough academic advisors to serve the College of Engineering majors and targeted interventions (e.g., early alert systems and proactive advising) for at-risk students. • The University should explore creative avenues to increase available teaching and lab spaces across campus to maximize usage. • The University should explore supporting College and program retention efforts or increase transparency around retention efforts that may not be as visible to faculty. • The Registrar’s Office should explore avenues to ensure that transcripts for transfer students are applied to Degree Progress Reports as quickly as possible to minimize the reliance on permission numbers. • Departments should continue to communicate and collaborate with the Advising Center to meet student needs. • As proposed by faculty, departments can further coordinate with the College of Engineering Advising Center by sharing tentative/confirmed

		<p>course sequencing and course offerings so that academic advisors are fully informed and have accurate information to share with students.</p> <ul style="list-style-type: none"> As proposed by one department, consider rotating newer faculty through a “liaison” process with the Advising Center as a means of building capacity, maintaining relationships between the Center and the departments, and as a means of helping new faculty learn their program’s curriculum in a way that supports student progress towards degree.
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Technology	Strengths	<ul style="list-style-type: none"> The websites for each program reflect the unique aspects of their home departments. For research projects, faculty support students by supplying resources obtained through SCHOLARS or ENGAGE programs. Departments (example: Aerospace Engineering) have expressed interest in curricular redesign to address data-intensive and artificial intelligence-focused trends. Students gain hands-on experience using industry-standard software, such as MATLAB and Simulink.
	Challenges	<ul style="list-style-type: none"> Students must purchase their own equipment or supplies (\$30 - \$100; example is Digital Logic Design Laboratory). Limitations on lab space are common and are a limiting factor for program growth. There is a need for upgrades in certain classrooms, laboratories, and facilities.
	Recommendation	<ul style="list-style-type: none"> For departments that post only program educational objectives and goals, consider developing (or posting) the mission and/or vision statement for your program(s). The University should support the College of Engineering in maintaining and improving computational, lab, and research spaces with industry-standard software and equipment. The University should provide departments with more access to classroom space to support course scheduling. The departments should collaborate with CPP IT&IP to coordinate the refresh of lab computers.

Support	Strengths	<ul style="list-style-type: none"> Faculty in the College of Engineering have been very successful in obtaining external grants and other awards to support research and academic activities. Recent reclassification of Cal Poly Pomona as an R2 institution may help the programs within the College of Engineering. Academic innovations support initiatives at the individual and college level.
	Challenges	<ul style="list-style-type: none"> The ratio of students to academic advisors is quite high and results in long waits for students to get assistance from their academic advisor. Grant support (pre- and post-) is not sufficient. Faculty spend more time than they should handling the administration of their external awards.

		<ul style="list-style-type: none"> • Both Enterprise and Philanthropic branches of Foundation are pain points – major bottlenecks due to staffing shortages. These delays will only worsen with the VSIP program further reducing the available support. • Obstacles in using grant monies can be discouraging to faculty. For example, some grants include funds for administrative support, but faculty/departments are prohibited from filling this type of position. Instead, administrative staff or coordinators are paid up to a 25% overload or overtime to assist with grant administration. Since overload is on top of normal workload and bandwidth is an issue.
	Recommendations	<ul style="list-style-type: none"> • The University should work to fill the open academic advisor roles to meet the recommended student to academic advisor ratio. • The faculty within the College of Engineering should continue working to obtain external funding to support research endeavors that incorporate student researchers. • The University should make sure that the philanthropic and enterprise branches of the Foundation have adequate staff to support the College of Engineering • The University should consider avenues to further support faculty that are successful in obtaining major external grants beyond approving overtime or overload pay to existing employees.

Summary

The B.S. programs offered by the College of Engineering are individually [ABET](#)-accredited. Each department prepared an abbreviated self-study document that reflected on areas of their B.S. programs that were not included in the full ABET program review process. Subsequently, one meeting was held that was open to the faculty of the College, and one meeting was held that was open to Department Chairs and Assessment leaders. One caveat of this report is that it draws from a subset of specific departments that were represented during those meetings.

The College of Engineering is the largest college at Cal Poly Pomona with over 7000 students enrolled as of Fall 2024. The B.S. programs within the College do an admirable job of embodying the learn by doing ethos of the institution, especially considering institutional constraints. The College is commended for maintaining up to date curricula that reflect the needs of industries that hire their graduates. The departments within the College of Engineering also take collaborative approaches to addressing challenges (for example, equity gaps) by working with their College of Engineering Advising Center to identify high-demand courses and to adjust in real-time to needs. The departments also work together through programs such as Maximizing Engineering Potential (MEP), which target specific courses for tutoring. Each program effectively uses both the First Year Experience course and Senior Design Capstone Project as bookends of an engaging, hands-on educational experience. There are dozens of clubs and competitive teams within the College, students can take part in research under the supervision of faculty mentors, and each program is supported by an advisory board that includes industry representatives.

A significant challenge facing each of the B.S. programs within the College of Engineering centers on keeping pace with the growth of the College. Throughout the abbreviated self-studies, talking with faculty, and meeting with department leadership, the theme of resource limitations arose repeatedly. The

major-to-faculty ratio in some departments is very high, classroom availability limits the ability of programs to add sections of in-demand classes, and the College of Engineering Advising Center is understaffed. Continued growth without additional space (classroom and laboratory), faculty, and staff will not be sustainable and could impact the educational experience of the B.S. programs.

To summarize, the College of Engineering continues to deliver a strong, hands-on education aligned with industry needs, even as the B.S. programs within the College navigate institutional constraints. As the College grows, ongoing challenges related to space, staffing, and faculty capacity have become more critical. Addressing these resource limitations will be important to ensuring that programs remain high-quality and responsive to student needs.

Sincerely,

Reviewer 1: Kathryn McCulloch, Ph.D. Signature/Date: 05/02/2025 

Reviewer 2: Amy Gimino, PhD Signature/Date: 5/2/2025 

Reviewer 3: Jian Lee, MFA Signature/Date: 5/2/2025 

Reviewer 4: Hao Ji, PhD Signature/Date: 5/2/2025 Hao Ji