October 23, 2017

To Whom It May Concern:

Earlier this fall, the Berkeley EECS faculty, after an extensive period of deliberation, voted not to renew our ABET accreditation for our undergraduate EECS major. This decision is based on what we strongly believe is best for our students, as we make significant changes in our curriculum and create new degree programs to accommodate the burgeoning interest in computing across the campus. Berkeley students with a strong background in computing are in very high demand with industry, and our various majors command salaries that are among the very highest of all the majors on campus. We have also been asked to provide our curriculum to other universities across the UC system and the country. As we take on this leadership role in curricular innovation, it does not make sense to limit ourselves by metrics that were previously developed based on a much narrower set of students and career paths. We are not the only university to have made this decision recently.. In addition to consulting with our peers at other institutions, we have consulted with other faculty in the College of Engineering and at higher levels on the UC Berkeley campus. We understand the value of our position as the top EECS department at a public university in the United States[1] and one of the top programs in the country.[2]

We intend to focus as much energy as ever on improving the quality of the programs that we provide to our undergraduate students in the College of Engineering (which is what ABET assesses) and beyond. Though we won't participate in the six year benchmark of ABET reports and site visits, we plan to continue the more productive processes that we have developed in working out how to determine whether our students are attaining student learning outcomes. We will now be able to develop a unified set of student learning outcomes for our department, rather than having two sets for the two different ABET commissions to which we have been responsible for reporting. As an integrated EECS Department, we are proud of the ways in which our students and faculty can take advantage of the cross-department fertilization that is a hallmark of our departmental structure.

Responding to ABET through their self-studies and site visits has imposed a number of constraints on us that we have worked with for many years, but as their requirements have continued to grow more stringent, we have concluded that the energy necessary to meet them could better be directed elsewhere. In requiring us as an EECS Department to report to two separate commissions within ABET, the Engineering Accreditation Commission (EAC) and the Computing Accreditation Commission (CAC), ABET has given us two different lists of student learning outcomes for us to prove that our students attain. We do not have a clear process for distinguishing our "EE" from our "CS" students, wanting all of our students to make the most of their experience in this cross-disciplinary major. Therefore, we find their processes that require distinguishing various groups of our students at odds with the goals of our program. Not only does the EAC divide Electrical and Computer Engineering (ECE) and Computer Science and Engineering (CSE), but then the CAC has us separately report on CS. More recently, ABET has introduced the requirement that we produce our evidence about outcomes in terms of numbers of "EE" students and numbers of "CS" students meeting each goal. All of our EECS students receive a Bachelor of Science in Engineering degree, and while we do allow them to

---

[1] U.S. News and World Reports' 2018 rankings

[2] U.S. News and World Reports ranks our EE undergraduate program #3 after MIT and Stanford, and our CS program #2 after MIT.

designate a computer science emphasis for their transcripts, many of them do so only late in their careers. Campus data does not distinguish between our students, so any sorting must be done by hand at this point. In addition, ABET stresses the need for uniformity of requirements; for example, they have critiqued our allowing students a choice of courses to fulfill their ethics requirement. From our perspective, it is to the students' advantage that we allow them a number of options to complete this requirement. In addition to our one unit CS195, "Social Implications of Computing" course, they can also take ERG100, "Energy and Society."

Berkeley EECS places a great deal of emphasis on students' freedom to construct their own program within certain broad parameters, and we are continuing to develop new programs that give students the flexibility to both broaden their knowledge of topics in EECS and explore areas outside our department in some depth. One such program is Data Science, with two new proposed majors (to be offered both by Letters & Science and Engineering), with course requirements in computer science, statistics, machine learning, and their applications to data studied in courses chosen from a long list of other departments, from Political Science to English to Public Health. We are already teaching a much broader set of Berkeley students from these other majors, introducing them to the computing aspects of their fields. Another program we are currently developing is Electronic Intelligent Systems (EIS). EIS is a new emphasis within the L&S CS major for students who enter Berkeley as undeclared Letters & Science students, those who are interested in electrical engineering, robotics, machine learning, and artificial intelligence. We are focusing such programs on some of the same core courses at the center of our world-class EECS program and forming new interactions with Berkeley's other top-ranked departments in ways that an assessment system designed to calibrate single engineering programs has trouble appreciating. We have seen quite a number of our students seeking double and even triple majors, so we know that they appreciate the value of working across department lines; our faculty frequently have dual affiliations as well, spanning the spectrum from Math and Statistics to Psychology. Rather than defining ourselves narrowly within our department, we feel that now is the time to expand our connections across the campus. At the same time, even units from outside our campus are asking to use our materials.

We will continue to use our online grading system, GradeScope, to provide us with statistical analysis about the large and small student outcomes for our courses. In addition, we have been collecting information from student evaluations about our students' sense of what they are gaining from their courses and what areas might require further development. ABET regards student evaluations as indirect evidence of attainment of student learning outcomes, but we find them a useful addition to what we are learning in other ways.

Our campus holds departmental reviews on a six to eight year cycle, which include a self-study and a site visit by external reviewers, and we plan to use that occasion to examine our programs for areas needing attention of the sort for which ABET might fruitfully have been searching. Our next such review is coming up in 2018. Any weaknesses that we do find will be referred to our Undergraduate Study Committee for their recommendations about how to proceed in rectifying them. We think that this will be a very effective process to help us locate programs that need development or enrichment.

We have consulted with the members of our Industrial Advising Board about this change in our procedure, and we have received quite a number of letters of support. When we discussed this matter at a previous IAB meeting, the board supported our moving away from ABET accreditation, so long as we had plans in place to assess our programs ourselves.

Since our campus as a whole is accredited by the WASC Senior College and University Commission (WSCUC), our students will not face the prospect of being in an unaccredited program. In the past ABET accreditation was required for professional examinations such as the Professional Engineer (PE) and for consideration for certain positions at the federal level. However, these requirements have more recently been lifted.

We look forward to continuing to strengthen our EECS programs in an era when more and more students want to gain at least some background in our field. We have been evolving at a rapid pace as demand for our courses has grown over the last few years, and we look forward to continuing changes in the years ahead.

Sincerely yours,

James Demmel
Chair
Electrical Engineering and Computer Sciences