

January 26, 2023

HERBERT LEE
Vice Provost for Academic Affairs

RE: Computer Science & Engineering Enrollment Management Plan

Dear Herbie,

The Academic Senate has reviewed the updated Enrollment Management Plan from the Computer Science and Engineering (CSE) Department. The Committees on Admissions and Financial Aid (CAFA), Educational Policy (CEP), Graduate Council (GC), and Planning and Budget (CPB) have reviewed and responded. The committee responses include very specific purview-related commentary, and they are enclosed in their entirety.

Some major points of the committee feedback are highlighted here:

- The challenges facing the undergraduate programs in Computer Science and Engineering have been the topic of extensive discussion over the past ten years. The CSE Enrollment Management Plan reviewed by the Senate suggests that the previous and proposed mechanisms merely stabilized CSE enrollments at an unacceptably high level. The number of degrees awarded per faculty are the highest in the UC system and among the highest in the country. As noted by the CSE faculty, impaction disproportionately affects underrepresented students and contributes to the high percentage of non-passing grades and large equity gaps in CSE courses. This situation is likely to get much worse due to the higher than expected yield of frosh admitted as proposed Computer Science BA and BS majors in the fall of 2022. If the BSOE DEI plan is successful, the size of the CSE undergraduate programs will grow even larger, making it even more difficult for the faculty to deliver a high-quality educational experience to its students.
- The Senate supports CSE's proposed maximum enrollment management target. We do not believe it would be appropriate to continue to limit admission to only the Computer Science major since the same faculty and advisors serve both CS and CE students and the requirements of the two programs significantly overlap. The proposed 4 to 1 ratio of CS to CE admits seems appropriate given the relative popularity of the two programs.
- We are concerned that the proposed enrollment targets do not adhere to the 2:1 ratio of native:transfer students guideline required for all UC campuses. Increasing the number of transfer students admitted to the program might help deal with the unexpected increase in enrollments in the fall of 2022, since transfer students do not take as many foundational courses as frosh admits. We encourage the department to collaborate with the administration to fine tune the ratio of students admitted to the program as frosh vs transfer students to maximize the capacity of the CS and CE programs.
- This fall, the pass rate in Math 19A (part of the first year CSE gating policy) approached 98%. In the fall immediately before the pandemic, the pass rate was 78%. Course GPAs have also increased dramatically. There has not been as much of a change in foundational CSE courses, but the department should anticipate an increase in the number of students

who maintain proposed major status into the second year based on the Math 19A data alone.

- It would have been helpful for the CSE proposal to include more details on how the department envisions a long-term solution to impact in its majors. For instance, a year-by-year breakdown of enrollment targets, projections, and commitment in terms of undergraduate instructional workload, number of CSE faculty, and number of students.
- There are two areas of broad concern to GC (please see the GC response for further details on these considerations):
 - the impacts on faculty, limiting their ability to raise external funds and support/mentor graduate students through collaborative research, and
 - the impacts on TAs and GSIs who may be overloaded in completion of teaching tasks.
- CAFA and the Data Sub-Committee (DSC) will work with BE and CSE to implement admissions scenarios that meet our admissions goals, including goals related to student diversity and the ratio of frosh to transfers, while also achieving the proposed enrollment cap of 500 Computer Science (CS) majors (including both frosh and transfers) for the Fall 2023 enrollment cohort.
- The BS in Computer Engineering (CE) is not currently designated as an officially impacted major, as such, CAFA will not directly manage CE enrollments through the selection process for applicants who list CE as their primary intended major. However, the CAFA Data Subcommittee will consider the proposed enrollment targets and issues surrounding CE the major (especially its potential use as a “backdoor” to the CS major) when determining how to treat applicants to the CS major who list CE as an alternate major. Such decisions will be data driven (e.g., the treatment of applicants who list CE as an alternate major will depend in part on the numbers and characteristics of such applicants). Likewise, CAFA is prepared to take a data-driven approach (in consultation with CSE and BE) to determine the appropriate target for transfer enrollments in CS.
- To reduce the risk of over-enrollment due to higher-than-predicted yield in the CS major, CAFA and Enrollment Management will determine the appropriate size of the waitlist buffer (i.e. students offered a place on the waitlist rather than an initial offer of admission) for CS separately from the non-CS waitlist.

The Senate appreciates the opportunity to comment on the revised CSE Enrollment Management Plan.

Sincerely,



Patty Gallagher, Chair
Academic Senate

Enc: Bundled Senate Committee Responses

cc: Lori Kletzer, CPEVC
Alexander Wolf, Dean, Baskin Engineering
Richard Hughey, Vice Provost and Dean of Undergraduate Education
Michelle Whittingham, Associate Vice Chancellor, Enrollment Management
Alexander Brondarbit, Senior Academic Planning Analyst
Laura Giuliano, Chair, Committee on Admissions and Financial Aid
David Cuthbert, Chair, Committee on Educational Policy
Andy Fisher, Chair, Graduate Council
Dard Neuman, Chair, Committee on Planning and Budget
Daniele Venturi, Chair *Pro Tem*, Committee on Planning and Budget
Matthew Mednick, Executive Director, Academic Senate

January 25, 2023

PATTY GALLAGHER, Chair
Academic Senate, Santa Cruz Division

Re: Computer Science and Engineering Enrollment Management Plan

Dear Patty,

At its meeting on January 25, 2023, the Committee on Admissions and Financial Aid (CAFA) reviewed the Computer Science and Engineering (CSE) Enrollment Management Plan as well as the letter of Nov. 21, 2022 from Dean Wolf commenting on the proposed plan. Due to time constraints – and the urgency of developing procedures for implementing the proposed enrollment targets – the discussion focused less on the merits of the proposed targets and more on the details of implementation for the current admissions cycle. Member Luca de Alfaro recused himself from commenting on the overall merits of the proposal, but contributed to the discussion about implementation by answering questions and providing contextual details.

CAFA is broadly supportive of the proposal to limit UG enrollments in the Computer Science (CS) major as a short-run solution to the problems that are clearly laid out in the proposal and summarized in Dean Wolf’s letter. We thank the authors of the proposal for the significant time and careful thought invested in their report. CAFA also believes that the tremendous growth in demand for CSE’s undergraduate programs – which, members noted, strains resources not only in CSE but also in other departments that service these students – must be addressed in the long-run by an appropriate shift of resources to those departments.

In the meantime, CAFA and the Data Sub-Committee (DSC) will work with BE and CSE to implement admissions scenarios that meet our admissions goals – including goals related to student diversity and the ratio of frosh to transfers – while also achieving the proposed enrollment cap of 500 Computer Science (CS) majors (including both frosh and transfers) for the Fall 2023 enrollment cohort.

Importantly, since the BS in Computer Engineering (CE) is not currently designated as an officially impacted major, CAFA will not directly manage CE enrollments through the selection process for applicants who list CE as their primary intended major. However, the DSC will consider the proposed enrollment targets and issues surrounding CE the major – especially its potential use as a “backdoor” to the CS major – when determining how to treat applicants to the CS major who list CE as an alternate major. Such decisions will be data driven – e.g., the treatment of applicants who list CE as an alternate major will depend in part on the numbers and characteristics of such applicants. Likewise, CAFA is prepared to take a data-driven approach – again, in consultation with CSE and BE – to determine the appropriate target for transfer enrollments in CS. Finally, to reduce the risk of over-enrollment due to higher-than-predicted yield in the CS major, we will determine the appropriate size of the waitlist buffer (i.e. students offered a place on the waitlist rather than an initial offer of admission) for CS separately from the non-CS waitlist.

Finally, CAFA encourages the CSE Department to develop a plan for the CE major that is consistent with the desire to closely manage enrollments in both the CS and CE majors. Indeed, because CE is not alone in lacking formal impactation status while at the same time being greatly affected by a growth in demand that has outpaced resources per student, it may be time for a broader discussion on how to manage selection and enrollments in high-demand majors without compromising our broader goals for diversity and student success.

Sincerely

/s/

Laura Giuliano, Chair

Committee on Admissions and Financial Aid

cc: David Cuthbert, Chair, Committee on Educational Policy (CEP)
Daniele Venturi, Chair pro tempore, Committee on Planning and Budget (CPB)
Andy Fisher, Chair, Graduate Council (GC)

January 25, 2023

Patty Gallagher, Chair
Academic Senate, Santa Cruz Division

Re: Computer Science and Engineering Enrollment Management Plan

Dear Patty,

With members Flanagan and Harrison recused, the Committee on Educational Policy (CEP) discussed the Computer Science and Engineering (CSE) Enrollment Management Plan (November 2022) as well as all supporting materials including Dean Wolf's letter.

The challenges facing the undergraduate programs in Computer Science and Engineering have been the topic of extensive discussion over the past ten years, culminating in [the report of the 2020 CEP/CPB Program Impaction Working Group](#). Several approaches have been employed to mitigate these challenges. Beginning in the fall of 2017, entering frosh were required to complete one quarter of calculus and two other foundational courses in their first year to maintain their status as a proposed Computer Science or Computer Engineering major. Computer Science was designated as an impacted major shortly thereafter, with caps on the number of frosh and transfer students admitted to the campus beginning in the fall of 2018.

Unfortunately, the CSE Enrollment Management Plan reviewed by our committee suggests that the above mechanisms merely stabilized CSE enrollments at an unacceptably high level. The majority of classes - including upper-division classes - continue to have enrollments in excess of one-hundred students. The number of degrees awarded per faculty are the highest in the UC system and among the highest in the country. As noted by the CSE faculty, **impaction disproportionately affects underrepresented students** and contributes to the high percentage of non-passing grades and large equity gaps in CSE courses. This situation is likely to get much worse due to the higher than expected yield of frosh admitted as proposed Computer Science BA and BS majors in the fall of 2022. If the BSOE DEI plan is successful, the size of the CSE undergraduate programs will grow even larger, making it even more difficult for the faculty to deliver a high-quality educational experience to its students.¹

We therefore strongly support CSE's request for a maximum enrollment management target of 500 total frosh and 120 total transfer students for the Computer Science BA and BS and Computer Engineering BS programs. We do not believe it would be appropriate to continue to limit admission to only the Computer Science major since the same faculty and advisors serve both CS and CE students and the requirements of the two programs significantly overlap. The proposed 4 to 1 ratio of CS to CE admits seems appropriate given the relative popularity of the two programs.

¹ This fall, the pass rate in Math 19A (part of the first year CSE gating policy) approached 98%. In the fall immediately before the pandemic, the pass rate was 78%. Course GPAs have also increased dramatically. There has not been as much of a change in foundational CSE courses, but the department should anticipate an increase in the number of students who maintain proposed major status into the second year based on the Math 19A data alone.

We are concerned that the *proposed enrollment targets do not adhere to the 2:1 ratio of native:transfer students* guideline required for all UC campuses. Increasing the number of transfer students admitted to the program might help deal with the unexpected increase in enrollments in the fall of 2022, since transfer students do not take as many foundational courses as frosh admits. We encourage the department to collaborate with the administration to fine tune the ratio of students admitted to the program as frosh vs transfer students to maximize the capacity of the CS and CE programs.

We hope that the reduction in CSE's enrollment targets will not be permanent, and the increased hiring of faculty coupled with the implementation of strategies for curricular and pedagogical re-structuring suggested in the VPAA's Guidelines for Enrollment Management² will help increase the capacity of these popular programs. Dean Wolf's proposal to require a further justification only if there is a significant change in the CSE's enrollments or faculty size seems quite reasonable.

We encourage the department to work closely with the Committee on Admissions and Financial Aid (CAFA) and the Office of Admissions to ensure that the size and diversity of the entering classes of proposed CSE majors is appropriate.

Sincerely,



David Lee Cuthbert, Chair
Committee on Educational Policy

cc: Laura Giuliano, Chair, Committee on Admissions and Financial Aid
Andrew Fisher, Chair, Graduate Council
Daniele Venturi, Chair *Pro Tem*, Committee on Planning and Budget

² Last revised on May 20, 2021

January 25, 2023

Patty Gallagher, Chair
Academic Senate

RE: Computer Science & Engineering Enrollment Management Plan

Dear Patty,

With member Larrabee recused, the Committee on Planning and Budget (CPB) has reviewed the Enrollment Management Plan proposal from the Computer Science and Engineering (CSE) Department, as well as a letter from Dean Wolf commenting on the proposed plan.

The proposal aims at addressing a persistent critical situation in CSE by setting an enrollment target cap (not an enrollment cap) for undergraduate admissions in CSE in fall 2023, and continuing indefinitely beyond.

In CPB's opinion, the proposed enrollment management plan may not be sufficient to fully address impaction in CSE and in other over-enrolled majors on campus. CPB recalls that CSE was officially in an "impacted status" during 2018-2022, with an enrollment target cap set at 600 for CS majors, when higher-than-predicted yield (25% versus 15%) on 2022 offers ignited an unprecedented spike in CS BA and BS admissions, with consequent serious concerns on CSE's ability to deliver instruction. Indeed, CSE had to request an emergency authorization to CEP in May 2022 for remote offering of lower-division courses right after the 2022 undergraduate admission data became available.

Given the conditions in which the campus is currently operating, in particular the level of undergraduate enrollment and the shortage of office, lab and classroom space, the admission process in impacted undergraduate programs, such as the CS BA and BS programs, requires a fundamental restructuring. It may well happen again that even with the proposed new enrollment target cap the number of students admitted in CSE is beyond the capacity of the department. In other words, there needs to be a discussion about how enrollment is managed in impacted undergraduate programs on campus, including CSE and other programs. Such discussion should consider how other impacted programs and departments across the UC system (in particular CS departments) are managing their enrollment systems. Rather than trying to predict admission yields based on mathematical models (which may result in dire situations), it may be beneficial to proceed with a first round of offers not exceeding the target enrollment cap, followed up by a second round of offers in which the yield is adjusted based on the first round, e.g., using a slightly higher yield for students in the waiting list. This iterative process based on waiting lists may increase the workload of the undergraduate admission office and CAFA (or a subcommittee of CAFA) for a few months. At the same time, it will mitigate the risks of over-enrolling students in severely impacted majors, which could overwhelm CSE faculty, affect students, and campus for many years to come.

There should be a point at which, given current campus conditions, capping impacted majors at a legitimate/appropriate size is about **rebalancing the campus at large**, which in turn may have beneficial effects on UCSC faculty welfare and student experiences/satisfaction. On the other hand, accommodating growing student demands without consideration of the holistic impact that such growth can have on campus may yield serious imbalances. Capping enrollment of heavily impacted majors, such as the CSE majors, can also open opportunities for student admissions in other (under-enrolled) majors. It can also be used as an opportunity to create **new X+CS majors**, where X is any discipline other than CS, to divert enrollment from the impacted CSE programs to other departments. This, in turn, can improve retention rates of students

in Baskin Engineering and catch students who fall out of pathways, e.g., students who were not able to complete all requirements for the CS major.

CSE has really done an admirable job in sustaining impactation of its undergraduate programs for so many years. The undergraduate instructional workload per payroll CSE faculty during 2018-2022 was the highest on campus, with a relatively flat trend that is consistently above twice the campus average. Such a persistent critical situation in CSE has been slowly eroding the department's educational strengths, the CSE faculty research output, student success and retention rates, and equity gaps in CSE classes.

In summary, CPB supports the CSE enrollment management plan until proper balance in CSE is restored. It would have been helpful for CPB if the CSE proposal included more details on how the department envisions a long-term solution to impactation in its majors. For instance, a year-by-year breakdown of enrollment targets, projections, and commitment in terms of undergraduate instructional workload, number of CSE faculty, and number of students. CPB recommends BE and CSE continue to work with the administration and the Senate to assess the effectiveness of target enrollment caps in restoring balance. CPB also recommends that, over the longer term, the administration initiates a broader discussion on how undergraduate enrollment is managed in impacted programs across campus.

CPB appreciates the opportunity to comment on the CSE enrollment management plan proposal.

Sincerely,



Daniele Venturi, Chair *Pro Tem*
Committee on Planning and Budget

cc: CEP Chair Cuthbert
Graduate Council Chair Fisher
CAFA Chair Giuliano

January 17, 2023

Patty Gallagher, Chair
Academic Senate

RE: CSE Enrollment Management Plan (Fall 2023)

Dear Patty,

At its meeting on January 12, 2023, and with member Musacchio recused, Graduate Council reviewed documents associated with an updated Enrollment Management Plan from the Computer Science and Engineering (CSE) Department, as well as a letter from Dean Wolf commenting on the proposed plan. The focus of this plan is on enrollment management for undergraduate students, but there are two areas of broad concern to GC: (a) the impacts on faculty, limiting their ability to raise external funds and support/mentor graduate students through collaborative research, and (b) the impacts on TAs and GSIs who may be overloaded in completion of teaching tasks.

The academic ecosystem of teaching, research, funding, mentoring, and other activities requires balance in order to function properly. To the extent that CSE faculty and staff are overloaded by teaching too many undergraduate students, there is likely to be harm in other important areas. Faculty, in particular, must balance time between teaching, research, and graduate supervision, and over enrollment in intensive classes (especially electives for majors) must take time and energy from other work. Over enrollment at the undergraduate level seems likely to displace effort that could be directed towards writing proposals, engaging graduate students, teaching graduate courses, and completing research and other activities that are essential to the UCSC enterprise and weigh heavily on faculty and departments when they are reviewed.

GC is also concerned that overloaded classes and sections place unreasonable burdens on TAs and GSIs. There are clear limits on TA and GSI workloads. While some lower level classes might be streamlined so that less TA/GSI oversight is needed, without sacrificing quality of course content, this is likely to be more problematic for upper level courses, both required and elective. There needs to be capacity so that participating students get enough contact time and can thrive in challenging classes, and so TAs and GSIs are able to work within agreed limits and complete other work (including their own classes and research).

In summary, it does not make sense to allow undergraduate enrollments in any program to balloon to the point where critical work is compromised. GC supports CSE efforts to cap admissions until proper balance can be restored in this program. It is appropriate for CEP and CAFA as Senate representatives with a focus on undergraduate education to work with CSE, Dean Wolf, and others as they develop necessary admissions goals and enrollment limits.

Sincerely,



Andrew T. Fisher, Chair
Graduate Council

cc: CEP Chair Cuthbert
CPB Chair Neuman
CAFA Chair Giuliano