



BOARD OF ADMISSIONS AND RELATIONS WITH SCHOOLS (BOARS)

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The Honorable Gavin Newsom
Lieutenant Governor
State Capitol, Room 1114
Sacramento, CA 95814

Lieutenant Governor Newsom,

Thank you for sharing your concerns about the challenges of expanding computer science education in high schools throughout California. We agree that our state leaders and the University of California can collaborate productively in the efforts to advance student learning in computer science. UC is happy to play a role in the expansion of rigorous computer science coursework through our annual review and approval of high school courses considered to be “college preparatory” based on criteria determined by UC faculty through the systemwide Board of Admissions and Relations with Schools (BOARS).

To address the K-12 system’s need for clarified criteria for “a-g” course approvals in light of new K-12 curriculum standards (i.e., Common Core and Next Generation Science Standards), BOARS in April 2014 approved revisions across all of the “a-g” subject areas after consulting with key stakeholders, including UC and CSU faculty content experts as well as K-12 teachers, curriculum developers, and administrators. Our comprehensive revision process not only improved K-12/higher-education curriculum alignment across the “a-g” areas, but also specifically reiterated that UC faculty encourage the development and submission of computer science courses in either mathematics (“c”) or the college-preparatory elective area (“g”), both of which are required for students to be minimally eligible for UC and CSU admissions.

UC maintains “a-g” course lists for nearly 2,500 high schools and programs statewide. In the 2015-16 academic year, approximately 900 high schools (or close to 35% of institutions with “a-g” course lists) are offering at least one UC-approved computer science course to their students, totaling just over 1,500 computer science offerings across the state. This is a considerable increase from only last academic year, 2014-15, when fewer than 900 UC-approved computer science courses in total were offered in high schools across the state.

BOARS has discussed the issue of computer-science course offerings extensively and affirms its objective that all freshmen who matriculate to the UC have received sufficient high-school math preparation. Automatically allowing all computer-science courses to substitute for a foundational math course would be inconsistent with this intent. To be clear, BOARS does indeed recognize and approve computer-science courses to fulfill the mathematics (“c”) subject requirement, so long as they contain mathematics content sufficient to warrant area “c” approval. Some examples of computer science courses approved for area “c” in 2015-16 include Computer Programming; Beginning Data Structures and Algorithms; Introduction to Algorithms; Cryptography; Advanced Math for Computing; Integrated Mathematics 1 with Computing and Robotics.

UC is committed to working with high schools as they address the many barriers to developing more computer science course offerings. Based on our consultations with K-12 educators and administrators, these challenges include:


- ***Designing computer science curriculum.*** The state of California does not yet have approved K-12 content standards for computer science. Without these, high school teachers are not able to rely upon a curriculum framework and instructional material supported by the California Department of Education. This stands as a major barrier to establishing a more universal way of teaching computer science, which, in turn, prevents the subject from being taught at more high schools and becoming a core part of California's secondary education.
- ***Identifying the appropriate instructor.*** Local school/district requirements may differ with regard to the type of instructor credential or certification required to teach computer science: a math teaching credential versus a career technical education (CTE) certification (typically in the Information & Communication Technologies career sector). Given such variability, well-resourced and under-resourced schools alike may struggle to find appropriately trained teachers, even after UC has approved a computer science course that the school intends to offer its students.

Another important consideration for BOARS is the question of equity for students from less-resourced schools. Especially given the challenges noted above, schools already under pressure due to reduced budgets may not be able to implement computer science or other types of courses that might fall outside California high school graduation requirements. The majority of schools that were successful in 2015-16 in obtaining area "c" approval for math-based computer science courses are private high schools or science academies. BOARS is concerned that implementing a specific computer science requirement at this point would further disadvantage students from under-resourced schools.

BOARS will continue to identify clear avenues where UC's admissions policies and procedures can lend greater support to the state's goals of improving the college and career readiness of all California high school graduates, including with respect to computer science. As an example, BOARS last month initiated a faculty review of the laboratory science ("d") requirement to bring it into closer alignment with the state's new Next Generation Science Standards (NGSS) for K-12. NGSS includes a category of standards for Applied Science and Technology, which has a strong concentration on engineering and computer science. We also ask the state to consider ways to incentivize the development of more computer science courses in K-12, including those that meet the area "c" expectations—for example, by establishing content standards for computer science and introducing a combined math/CTE teaching credential.

In continued partnership, we look forward to being on the receiving end of a strengthened K-12 pipeline to higher education.

Sincerely,



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cc: University of California Board of Regents
BOARS